Wellhead Protection Plan
(Drinking Water Protection Plan)

City of Cave Junction

Developed By
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References:

Oregon Well head Protection Guidance Manual, prepared by Dennis Nelson of Department of Human Services-Drinking Water Program and Sheree Stewart of Department of Environmental Quality.

City of Hubbard's Drinking Water Protection Plan, prepared by the Hubbard Drinking Water Protection Committee, Hubbard's Public Works Department

Source Water Assessment Report prepared by Department of Human Services-Drinking Water Program.

EPA Office of Groundwater website: www.epa.gov.ogwdw.

DEQ www.deq.state.or.us

Oregon Department of Agriculture: www.oda.state.or.us

Drinking Water Academy: Source Water Protection: Best Management Practices for drinking water supplies. 2003

Section One

1.1 INTRODUCTION:

Traditionally, water systems have relied on proper water system management, water quality monitoring, and if necessary, water treatment to ensure that the water they serve meets drinking water standards.

The 1996 Amendments to the Safe Drinking Water Act requires that all states, through a "**proactive**" approach to conduct a Source Water Assessment for public water systems within their boundaries. This thought process was a shift from the **"reactive"** approach, understanding that preventative measures regarding contamination are less costly than treatment actions of found contaminated water.

The state of Oregon through Department of Human Services-Drinking Water Program and Department of Environmental Quality has completed an assessment report to assist public water system in completing drinking water protection programs. The Source Water Assessment, which facilitates the wellhead protection program, consists of:

a) The identification of the area that directly overlies that part of the aquifer supplying drinking water to the well or spring,
b) Provides an inventory of potential sources of contamination within that area,
c) Performs an evaluation of the susceptibility of the water system to contamination from those sources.

The information found in this report (Wellhead Protection Program) identifies and prioritizes those possible weaknesses in the water system which will assist management personnel to understand those items of weakness which are often overlooked.

The wellhead protection program establishes protocol to:

a) Raise the awareness level of those consumers in regard to activities which may cause harm to the drinking water supply,
b) Establish procedures to supply clean drinking water for both short and long term intervals in the event that the water is deemed unsafe for consumption,
c) Provide a conduit with both local and regional emergency services to assist in the response to a crisis with the thought of controlling the situation with the drinking water being a priority.

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With the collective information from the Source Water Assessment (SWA), delineation and potential contaminant source inventories (PCS), the wellhead protection program will outline the area at the surface that overlies that part of the aquifer that supplies groundwater to the wells.

The focus of the plan is risk reduction recommendations centered on developing a "state certified" Drinking Water Protection Plan.

Mr. Paul Anderson, lead water operator for the City of Cave Junction decided to pursue the implementation of the wellhead protection program as a result of being contacted by the Groundwater Technician at Oregon Association of Water Utilities. Mr. Anderson realized that the significant growth the City of Cave Junction has seen in the past twelve months that further protection of the water system would enhance the community through proactive collaboration.

The groundwater technician will review the list of potential contaminant sources and gather information for City of Cave Junction to use and provide information to its consumers that reside within the drinking water protection area. A contingency plan will be developed in the event that the water supply becomes either contaminated or disrupted. The contingency plan will review both short and long term replacement of water supplies to meet the minimum requirements of the system.

Once the wellhead protection plan is completed and submitted to the Department of Environmental Quality for certification, the water system becomes eligible for monitoring waivers, as well as a number of benefits, such as a positive impact on the future quality of the drinking water resource.

1.2 COMMUNITY OUTLINE:

The City of Cave Junction was incorporated in 1948, as the township was built around the logging industry. The City of Cave Junction is located 28 miles south of the City of Grants Pass, in Josephine County. The City of Cave Junction is located in the southern section of Josephine County, approximately 15 miles north of the Oregon / California border in the scenic Illinois Valley. Josephine County has a population of approximately 75,000, with 1,363 people living within the city limits of Cave Junction. The area is predominantly white @ 92.3 percent, with the remaining ethnic percentages made up of Hispanic, American Indian and other races, respectively.

The City of Cave Junction receives their water from a surface water intake at the Illinois River, with this connection in conjunction with the Daisy Hill well as being their primary source of water. The Daisy Hill well was developed to secure water for the community. The Daisy Hill well has been determined to have an output capacity of 165.0 gallons per minute.

The City of Cave Junction receives an average of 62 inches of precipitation annually with the monthly low and high temperatures being 32^0 F and 89^0 F respectively.

The City of Cave Junction supplies water to approximately 570 connections that involve serving a population of 1265. With new development in the area, water connections could increase approximately twenty five (25) percent. The reservoir capacity for the City of Cave Junction is 2.33 million gallons; with a daily summertime average usage to be approximately 680,000 gallons; which gives the consumers approximately 3.4 of days of water supply in the event of a disruption in water supply or contamination found in the water supply.

1.3 DRINKING WATER COMMITTEE:

The City of Cave Junction's assembly team for the wellhead protection program consists of approximately 5-7 people and the groundwater technician from Oregon Association of Water Utilities. Information regarding the assembly team and regular meetings will be distributed to the property owners who reside within the drinking water protection area.

1.4 COMMUNITY PARTICIPATION:

The City of cave Junction feels that it is essential for as many people as possible to participate in order for this program to prevail and be deemed a victory. The assembly team will hold regular meetings, timeframes will be determined at a future date, inviting the general public through fliers that are sent through the mail. Information, such as posters, may be placed at locations such as post offices, markets and areas where people congregate.
As the wellhead protection program develops, continued information will be delved out to the consumers through fliers, articles in the local newspapers and meetings of general information conducted by the assembly team. See Appendices A-1 / A-2

Section Two

DELINEATION

2.1 INTRODUCTION:

Groundwater is obtained by drilling through a distance of soil, sediments and bedrock in which the open spaces in the soil are filled with air. As the depth of the drilling increases, those open spaces of air will become filled with water. This is groundwater and the water table has just been penetrated. Groundwater does not occur as underground rivers, pools and veins, but rather occurs within the open spaces within the geologic materials. This geologic materials that contain water and that can yield the water to a well is considered the aquifer.

Virtually without exception, the groundwater originates as precipitation at the surface that sinks through the soil and percolates down to the water table. The downward percolating water has to pass through whatever is at the surface or just below it. As it does so, the water can dissolve contaminants and carry them downward to the aquifer. The fact that groundwater originates at the surface is what makes it vulnerable to contamination. Recharging groundwater can carry contaminants downward into the aquifer, which in large enough quantities; can make the water become contaminated.

2.2 DELINEATION METHOD OF THE WELLHEAD PROTECTION AREA:

The delineation for the City of Cave Junction's water system was performed by Department of Human Services-Drinking Water Program using an **analytical element model**. For groundwater systems serving a population of more than 500, a conceptual model identifies critical characteristics of the groundwater system, allows for the close proximity of the groundwater flow boundary associated with Illinois River and provides a better representation of the actual groundwater conditions. SEE Appendix B Delineation Map Figure 1.

2.3 METHOD LIMITATIONS:

One of the limitations of most of the analytical methods is that the equations assume that the aquifer is homogeneous, which is a great oversimplification based on review of sediments that lay in a stream bank.
Based on the delineation analysis; the primary aquifer supplying water to the Daisy Hill well is associated with the **Illinois River Alluvium.**

2.4 AQUIFER GEOLOGY CHARACTERISTICS:

The **Illinois River Alluvium aquifer**, which supplies water to the City of Cave Junction, is made up of silty sand and gravel deposits. (Ramp and Peterson 1979), describe this material as being chiefly composed of sand, silt and gravel, which have been deposited during a temporary interruption of the Illinois River drainage as a result of movement along a prominent fault on the west side of the Illinois Valley.

According to well logs, the first water bearing zone is estimated to be encountered at a depth of 50 feet below ground. The aquifer materials are directly overlain by 38 feet of silt, 5 feet of silty sand and gravel and 7 feet of silt at the surface. Water in the well was reported to be pressurized at 21 pounds per square inch of artesian pressure, the static water level equivalent to approximately 9 feet above ground level. **Therefore, we consider the aquifer penetrated by the City of Cave Junction's Well to be composed of silty sand and gravel with a minimum depth of 50 feet.**

2.5 TIME OF TRAVEL:

The area identified within the drinking water protection area is designed to approximate the next ten (10) years of groundwater supply for the City of Cave Junction's Water System. Additional five-year, two-year, and one-year time-of-travel zones are identified inside each drinking water protection area. The area within each of the two-year time-of-travel zones shown is specifically used as a conservative estimate of the survival time of some viruses in groundwater.

2.6 DELINEATION UPDATE SCHEDULE:

The delineation performed by Department of Human Services-Drinking Water Program was completed in April 2004. An updated version of the delineation should be performed in the year 2009. Upon completion of the drinking water protection plan and approval from the office of Department of Environmental Quality for certification, the update for the wellhead protection program will coincide with that of the delineation.

Section Three

INVENTORY OF POTENTIAL CONTAMINANT SOURCES

3.1 INTRODUCTION:

The intent of analyzing a drinking water protection area for potential contaminant sources is to identify and locate any contaminants of concern within the drinking water protection area of the City of Cave Junction. Significant sources of contamination can be defined as any facility or activity that stores, uses, or produces the contaminants of concern and has sufficient likelihood of releasing such contaminants into the environment. These would-be contaminants at high enough levels could contribute to concentrations in the drinking water supply that would then deem the water non- drinkable. The inventory provides:

- Information on the locations of potential contaminant sources, especially those that present the greatest risks to the water supply;
- An effective means of educating the local public about potential problems;
- A reliable basis for developing a local management plan to reduce the risks to the water supply.

Contaminants can reach the groundwater supply from activities occurring on the land surface or below it. Primary focuses on the following potential contaminant sources regulated under the federal Safe Drinking Water Act and are listed below:

- Contaminant regulated under the Safe Drinking Water Act, which includes those contaminants that have a maximum contaminant level – MCL.
- Micro-organisms such as Cryptosporidium, viruses, Giardia lamblia, bacteria.
- Inorganic Compounds – nitrates and metals.
- Organic Compounds – solvents, petroleum compounds and pesticides.

3.2 METHODOLOGY:

In completing this inventory, Department of Environmental Quality (DEQ) used readily available information including review of DEQs and other agencies' databases of currently listed sites: The state and federal regulatory databases includes:

DEQ Environmental Clean up site Information System (ECSI) which includes the USEPA National Priorities List (NPL) and CERCLA list:
DEQ leaking underground storage tank (LUST) list:
DEQ registered underground storage tank (UST) list:
DEQ Source information system (National Pollutant Discharge Elimination System) list:

METHODOLOGY CONTINUED:

DEQ Active Solid Waste Disposal Permits:
DEQ Dry Cleaners List:
State Fire Marshall (SFM) Hazardous Materials Handlers (HAZMAT) site list:
USEPA (RCRA) generators list:
USEPA (RCRA) Treatment, Storage Disposal, Facility Permits List:
DEQ Hazardous Waste Management Information System (HWIMSY) list:

Department of Environmental Quality verified the presence and approximate location of potential contaminant sources within the drinking water protection area by consulting with local community members and / or driving through the area (windshield survey). Public water system officials or someone knowledgeable of the area, were interviewed to identify potential contaminant sources that are not listed elsewhere in databases and / or maps.

3.3 RISK RANKING RESULTS:

The following potential contaminant sources are listed according to the relative risk level that has been designated to a particular potential contaminant source and its proximity to the wellhead. The list is intended to assist the community in an orderly approach in implementing best management practices for those potential contaminant sources that are determined to possess higher and moderate risk levels to contaminating the water supply. Those potential contaminant sources that pose a lower risk will NOT be evaluated based on best management practices. Positions of potential contaminant sources can be found in Appendix C Figure 2:

Two (2) potential contaminant source locations with two (2) potential contaminant sources were identified as a relative risk ranking of ***moderate and / or high*** inside the two (2) year time-of-travel. Appendix C: Figure 2 Reference # 16 and 17

Eight (8) potential contaminant source locations with nine (9) potential contaminant sources with a relative risk ranking of **moderate and high** were identified between the two (2) and ten (10) time-of-travel. Appendix C: Figure 2 Reference # 18 – 22, 24, 25 and 27

3.4 PCS SUSCEPTIBILITY:

The purpose for the "Susceptibility" of the drinking water protection area is to review the potential contaminant sources and assist in the prioritization of the community efforts for minimizing the risks associated with those threats. The susceptibility analysis is dependent of four (4) factors; **a)** identify the location of the drinking water protection area, **b)** sensitivity of the constructed intake, **c)** sensitivity of the aquifer to contamination and **d)** the occurrence and distribution

of ***high and moderate*** potential contaminant sources within the drinking water protection area.

By overlaying the potential contaminant sources map onto the aquifer sensitivity map, we begin to understand where the potential contaminant sources are located, and if the location of such sources is conducive to infiltration probability, therefore the contamination factor could be increased.

This susceptibility analysis is being used to develop best management practices for those potential contaminant sources that are recognized to be a concern. In the succeeding section, BEST MANAGEMENT PRACTICES, an outline of the potential contaminant sources posing a risk categorized either ***high or moderate risk*** will be addressed with the high risk sources given the most attention.

In general, the land uses activities which pose the greatest threat to the drinking water supply are those that are closest to the wells and have the highest associated risk ranking. All ***high and moderate risks*** that occur within the drinking water protection area will be addressed to reduce the potential risk of the contaminant.

Table 3-1 City of Cave Junction Susceptibility as a Function of PCS Risk, TOT Zone, and Aquifer Sensitivity

	2-Yr TOT			***2- to 5-Yr TOT***			***5- to 10-Yr TOT***		
	High	*Mod*	*Low*	*High*	*Mod*	*Low*	*High*	*Mod*	*Low*
High Risk PCSs		1						5	
Moderate Risk PCSs		1			1			3	
Low Risk PCSs		1			1			3	
Total PCSs		3			2			11	

Based on the above table, those risks that are shaded in the grey areas will be addressed in the best management practices, Section Four. Most efforts from the drinking water protection team will be delegated to mitigating the highest potential contaminant sources within the two (2) year time-of-travels, 2-5 year time-of-travel and 5-10 year time-of-travel respectively.

Listed on the next page, in order of risk and susceptibility, are the potential contaminant sources that will be addressed in the best management practices section of the wellhead protection plan. Lower risk potential contaminant sources, regardless of their location to the well, will not be addressed.

High Risk:

- Chemical / Petroleum Processing /Storage:
- Elementary School: "DEQ Clean up Program Site"
  - Underground Storage Tank "unknown"
- Dry Cleaners:
- Auto Repair:
- Historic Landfill

Moderate Risk:

- Potential Development:
- Above Ground Storage Tanks
- Bus Maintenance Shop
- Food Processing Plant
- High Density Housing

3.5 PCS / Aquifer Susceptibility Correlation: 2 YEAR TIME-OF-TRAVEL

Potential Contaminant Source:	Level of Risk:	Aquifer Sensitivity:
♦ Chemical / Petroleum Storage:	Higher Risk	Moderate Risk
♦ Potential Development:	Moderate Risk	Moderate Risk

PCS / Aquifer Susceptibility Correlation: 2-10 YEAR TIME-OF-TRAVEL

Potential Contaminant Source:	Level of Risk:	Aquifer Sensitivity:
♦ Above Ground Storage Tank:	Moderate Risk	Moderate Risk
♦ Clean up Site Program:	Higher Risk	Moderate Risk
♦ Underground storage tank:	Higher Risk	Moderate Risk
♦ Historic Landfill	Higher Risk	Moderate Risk
♦ Auto Repair Shop	Higher Risk	Moderate Risk
♦ Dry Cleaners	Higher Risk	Moderate Risk
♦ Bus Maintenance Shop	Moderate Risk	Moderate Risk
♦ High Density Housing	Moderate Risk	Moderate Risk
♦ Food Processing Plant	Moderate Risk	Moderate Risk

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3.6 MICROBIAL SUSCEPTIBILITY:

The Source Water Assessment specifically includes an evaluation on the basis of aquifer characteristics, water intake construction, and potential microbial contaminations stemming from surface water bodies, septic tanks and drain fields and / or sewer lines, along with a few other sources that are not relevant to this water system. The focused area is the two (2) year time-of-travel that will yield groundwater supplies for the City of Cave Junction. **No viral contaminants** were identified inside the two year time-of-travel at the time the potential contaminant source inventories were completed.

Based on the source water assessment results provided by the Department of Human Services-Drinking Water Program, **the construction of the Daisy Hill well is not considered sensitive to viral contamination. However, the aquifer is considered sensitive to viral contamination.** Even though the aquifer is susceptible to viral contamination, it is believed that the water supply to the Daisy Hill well is susceptible to viral contamination. It is in the best interest of the water system to reduce the potential for future viral contamination through compliance with all Oregon Department of Human Services-Drinking Water Program **setback standards** related to the public drinking water supply sources.

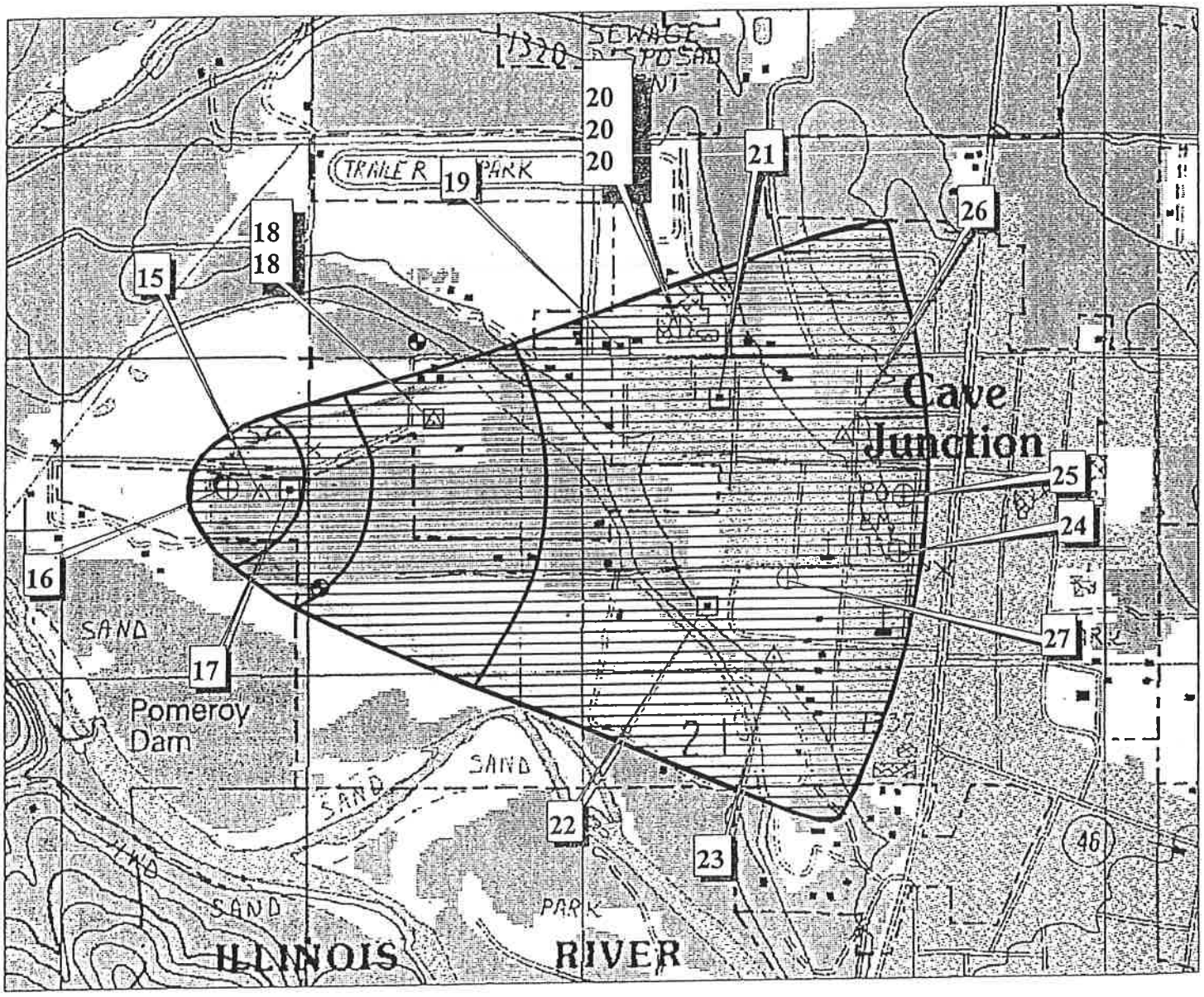
For more detailed information regarding the actual location and type of potential contaminant sources, please review Appendix C: Figure 2 and 3 Information provided in Tables 1 and 2 was provided by Department of Environmental Quality and Department of Human Services-Drinking Water Program staff.

To further enhance the drinking water protection area and the points of concern, Section four (4), best management practices, will also include a review of the aquifer sensitivity and characteristics that may be conducive to contaminating the water table. Those points will assist in the understanding of depth of water table, geology materials, infiltration potential, well construction, other wells and monitoring history. Review of these categories will bring into focus how important the actions that occur above the surface may affect the water table below the surface.

For example, if a contaminant is released to soils or groundwater in an area of high sensitivity, it is likely that contamination of the aquifer will occur if remedial action is not taken. Particular areas that are categorized with high sensitive soils indicate that a contaminant could reach the water table in less than 65 hours.

Section Four (4) on this report will outline ideas on how to better educate the community in regard to the above potential contaminant sources, specifically with informational fliers, future articles and pamphlets to be included with monthly water bills.

Figure 3. City of Cave Junction Susceptibility Map



1000 0 1000 2000 3000 4000 Feet

Scale 1: 12,000

USGS Cave Junction, OR
Quadrangle (part section)
7.5' Series (Topographic)

Drinking Water Protection Area (DWPA)

Potential Contaminate Sources

- ⊕ Higher Relative Risk
- ⊡ Moderate Relative Risk
- △ Low Relative Risk

Sensitivity Analysis

- High Sensitivity
- Moderate Sensitivity
- Low Sensitivity

N

Prepared by: KK
Project Manager: TP RG# G-1874
PWS#: 4100971

Note: Sites and areas noted in this figure are potential sources of contamination to the drinking water as identified by

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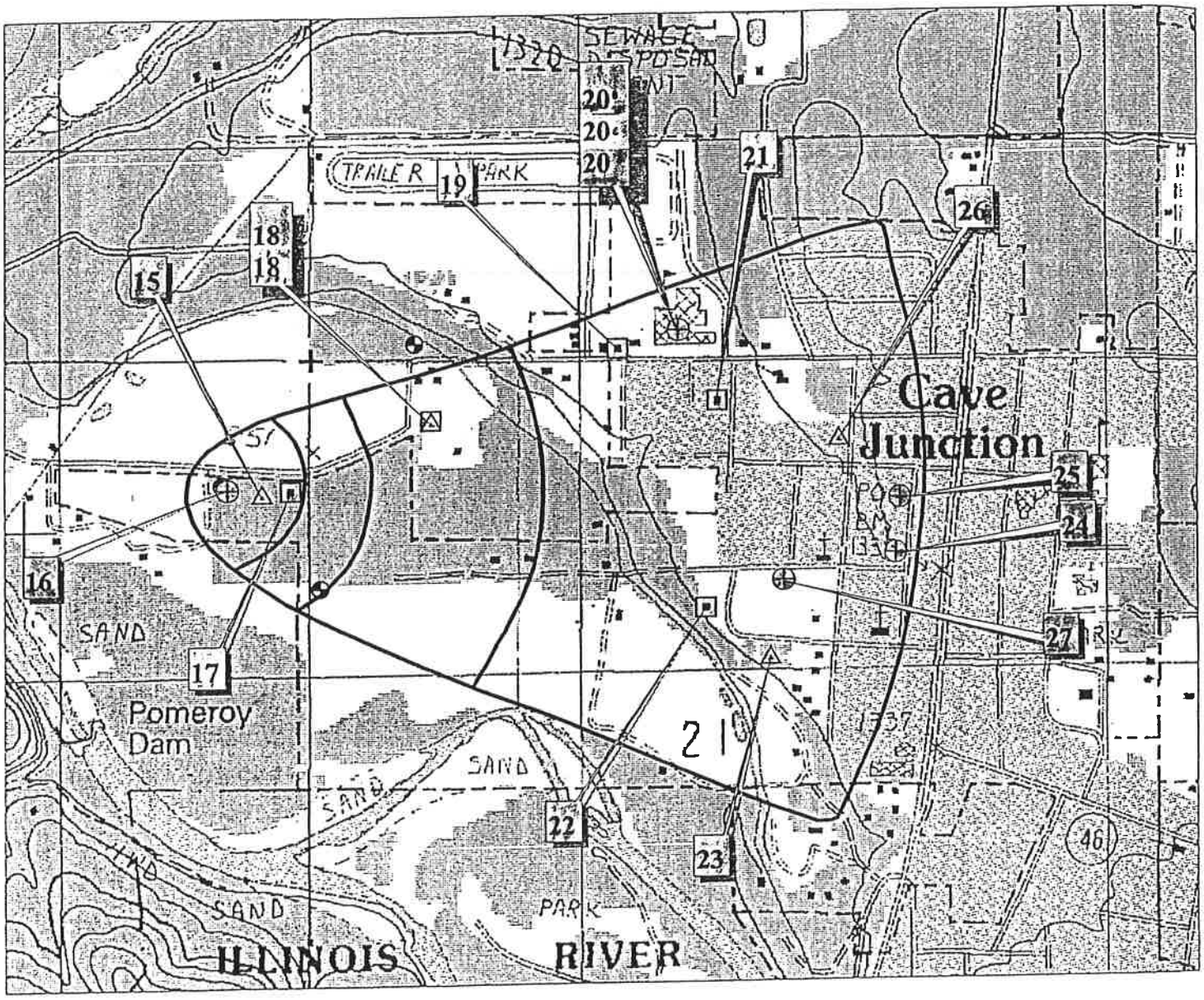
Figure 2. City of Cave Junction Potential Contaminant Sources



1000 0 1000 2000 3000 Feet

Scale 1: 12,000

USGS Cave Junction, OR
Quadrangle (part section)
7.5' Series (Topographic)

Drinking Water Protection Area (DWPA)
1, 2, 5, and 10 Year Time of Travel (TOT)
Analytic Element Method

N

Potential Contaminate Sources

⊕ **Higher Relative Risk**

⊡ **Moderate Relative Risk**

△ **Low Relative Risk**

Prepared by: KK
Project Manager: TP RG# G-1874
PWS#: 4100971

Note: Sites and areas noted in this figure are potential sources of contamination to the drinking water as identified by

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Section Four

BEST MANAGEMENT PRACTICES

4.1 INTRODUCTION:

This section of the wellhead protection program outlines the best management practices associated with those potential contaminant sources. The section is divided into categories **a)** those factors that will naturally determine the aquifer distinctiveness to vulnerability, **b)** those potential contaminant sources that have been determined to have a ***high or moderate*** risk ranking to the drinking water supply based on the proximity to the wellhead in terms of distance and aquifer susceptibility.

4.2 AQUIFER SUSCEPTIBILITY:

Aquifer susceptibility depends on two factors; **1)** are there potential contaminant sources within the drinking water protection area, and **2)** is the aquifer sensitive to contamination, i.e. is it likely that a contaminant at the surface would migrate to the water table and into the well or otherwise stated, the natural environment's characteristics that permit migration of a contaminant into the aquifer. See Appendix D Susceptibility Map Figure 4

4.3 AQUIFER SENSITIVITY:

After the drinking water protection area has been identified, aquifer sensitivity to contaminants inside the drinking water protection area can be evaluated. Aquifer sensitivity refers to those factors characteristic of the aquifer and overlying materials, in addition to those that are imposed upon the aquifer, **such as well construction**, that increase the potential for both surface and subsurface contaminants to gain access to the aquifer. **Those factors related directly to the well or well field are conditions that can be corrected by the water system, thus potentially lowering the overall sensitivity.** Factors considered during the sensitivity analysis are described below:

- Depth to First Water Bearing Zone:
- Aquifer Characteristics:
- Overburden Thickness:
- Soil Types:
- Infiltration Potential:
- Water Intake Construction
- Other Wells:
- Microbial Sensitivity:

Each of the elements below either contributes or hinders the downward movement of water, water that will come into contact with contaminants, which will eventually become part of the drinking water supply. An explanation as to the above factors will be presented in order to assist in the understanding of the analysis with a **colored coded risk** level for City of Cave Junction's well water supply. See Table below:

Table 4.1 Aquifer Sensitivity Analysis.				
	Sensitivity			
Parameter	***H***	***M***	***L***	***Comments***
Depth to first water-bearing zone below casing seal.				50 feet.
Aquifer characteristics and hydraulic nature.			✓	*Confined silty sand and gravel aquifer, 50 feet below ground.*
Overburden thickness and characteristics.			✓	*Aquifer directly overlain by 38 feet of silt.*
Highest soil sensitivity in Protection Area.	✓			*Contributes to moderate overall aquifer sensitivity.*
Traverse potential score (10 = High).			✓	*Score = 2.5*
Infiltration potential score (10 = High).		✓		*Score = 6.0*
Organic chemical detections.	✓			*Ethylbenzene and Total Xylenes at concentrations less than EPA MCLs (06/11/2003).*
Inorganic chemical detections.		✓		*Potentially natural concentrations of arsenic, barium, & chromium (01/24/2001).*
Source related coliform detections.			✓	*None detected.*
Nitrate concentrations (Drinking Water Standard = 10 mg/L).		✓		*Up to 1.44 mg/L (02/08/2003), contributes to moderate overall aquifer sensitivity.*
Fractured bedrock near surface in Protection Area.			✓	*None present.*
Other wells score (Significant Risk = 400).			✓	*Score = 10*
Surface water within 500 feet of wellhead.			✓	*None present.*

4.3.1 AQUIFER RELATED FACTORS:

The following results outlined are from the source water assessment report and encompass only those factors that are regarded as creating a ***high or moderate risk*** to the aquifer, as well as their location to ***high or moderate sensitive areas of the aquifer.***

- Soil sensitivity in the protection area:
- Organic Chemical Detection:
- Infiltration Potential:
- Nitrate chemical detection:
- Inorganic Chemical Detection:

High Sensitivity Risk

Moderate Sensitivity Risk

Low Sensitivity Risk

- Soil sensitivity in the protection area: High Sensitivity Risk

On a scale of 1.0 to 10.0, and 10.0 being the worse, the soil sensitivity of the drinking water protection area was stated as having a ***high sensitive risk.*** Highly sensitive soils are those soils for which it has been estimated to take less than 65 hours for water to pass through their structure during saturated conditions. This means that there is little opportunity of degradation of a contaminant within the drinking water protection zone.

- Organic Chemical Detection: High Sensitivity Risk

Organic chemicals (specifically Ethylbenzene and Total Xylenes) have been detected in monitoring results (06/11/03) at concentrations less than EPA maximum contaminant levels. These results show the potential for these and like substances to continue to enter into the water table if inadequate or careless guidelines were practiced in regard to both residential and business locations.

- Infiltration Potential: Moderate Sensitivity Risk

The Infiltration Potential (IP) is estimated on the ability of water to infiltrate from the surface to the aquifer. It is determined on three (3) factors. **A)** the depth of the aquifer, **B)** an estimate of the weighted permeability of the materials between the surface and the aquifer, and **3)** the hydraulic surplus, or amount of water available from precipitation and/or irrigation at the surface that is able to infiltrate into the aquifer. The IP score (6.0) for the drinking water protection area based on the presence of highly permeable soils, nitrate concentrations and a moderate IP, deems the water system to be graded as a ***moderately sensitive risk.***

- Nitrate chemical detection: Moderate Sensitivity Risk

Drinking water test results (02/08/03) show a nitrate concentration of up to 1.44 mg/L, which is less than the maximum contaminant levels, but will indicate as a precursor that a pathway to the aquifer may be developed, which will allow other contaminants to enter the aquifer. The movements of nitrate through the soil are usually more rapidly than those other such contaminants, so continued monitoring from the water system is recommended for the future.

- Inorganic Chemical Detection: Moderate Sensitivity Risk

The inorganic detections found in the water monitoring results (01/24/01) show amounts of barium, chromium and arsenic. These inorganic materials may be occurring naturally as they may leach from the geologic materials.

- Aquifer Characteristics, Overburden Thickness, Other Well Scores:

The above parameters are determined to be considered ***low sensitivity risk*** based on the results from the source water assessment. The first water bearing zone is 50 feet below the surface, and the soils are made up of confined silty sand and gravel. The overburden thickness is estimated to be 38 feet of silt, is directly overlaying the aquifer. The aquifer supplying the Daisy Hill Well has been identified as a silty sand and gravel deposit associated with the Illinois River Alluvium. (Ramp and Peterson, 1979) It is suggested that this material was deposited during a temporary interruption of the Illinois River drainage as a result of movement along a prominent fault on the west side of the Illinois Valley. Water in the well was reported to be pressurized at 21 pounds per square inch of artesian pressure. The static water level was equivalent of rising 9 feet above ground level. The other wells within the drinking water protection area number few, and are rather far between, which determines the well score to be 10.0. Other well scores equal to 400 indicate a significant risk to the aquifer.

4.4 POTENTIAL CONTAMINANT SOURCES RISKS:

There are a total of eleven (11) potential contaminant sources that are rated ***high and moderate risks*** found within the drinking water protection area, which encompasses the City of Cave Junction's well. The total numbers of potential contaminant sources within the drinking water protection area are sixteen (16).

4.5 POTENTIAL CONTAMINANT SOURCES RESULTS:

High Risk:

- Chemical / Petroleum Processing /Storage: City of Cave Jct.
- Evergreen Elementary: "DEQ Clean up Program Site"
  - Underground Storage Tank "unknown"
- Dry Cleaners:
- Auto Repair:
- Historic Landfill

Moderate Risk:

- Potential Development:
- Above Ground Storage Tanks
- Bus Maintenance Shop
- Food Processing Plant
- High Density Housing

4.6 BEST MANAGEMENT PRACTICES:

The concept surrounding best management practices is to develop an awareness to those activities and facilities that may pose a potential threat to the drinking water protection area, thus reducing the risk associated with such. Improper or indifferent attitudes will only raise the potential level of risk when discussing drinking water supplies. It is apparent the cost associated with best management practices is predictably less than trying to remediate water that is contaminated beyond the standards designated by both Federal and State regulations. The following list is those potential contaminant sources that were deemed ***a high or moderate risk*** in terms of contamination of the drinking water source. It is these items that this section of the wellhead protection program will devise a method for establishing methods in order to reduce the potential risk.

The following list is ascertained by an established two factors; **a)** the risk levels of the potential contaminant sources and **b)** the proximity of the contaminant source to the well(s). A high risk ranking on a potential contaminant source is NOT necessarily determined to be categorized at the top of the list of concerns. A high risk source that is found a greater distance from the well is judged lower than a moderate risk source that is closer to the water supply.

In developing this outline, the order found below is speculation to the severity prospective of the contaminant source on the drinking water protection area. It is by no means steadfast, but subjective on the basis of information gathered to complete this plan

High Risk:

- Chemical / Petroleum Processing /Storage: City of Cave Jct.
- Evergreen Elementary: "DEQ Clean up Program Site"
  - Underground Storage Tank "unknown"
- Dry Cleaners:
- Auto Repair:
- Historic Landfill

Moderate Risk:

- Above Ground Storage Tanks
- Bus Maintenance Shop
- Food Processing Plant
- High Density Housing
- Potential Development

The subsequent paragraphs summarize those potential contaminant sources that can pose a risk to the public water system. They are not all inclusive to the number of management options that can be available through a quantity of resources.

- Chemical / Petroleum Processing / Storage Higher Risk Ranking

After speaking with the public water system contact, the conclusion of the chemical/petroleum storage listed on the potential contaminant source is a 250 gallon oil tank that is part of the generator system that powers the well in case of a power outage. The generator well house was revamped with a new concrete floor and building when the generator was replaced with a newer model. This well is considered secondary source of water for the City of Cave Junction.

- Chemical / Petroleum Processing / Storage Continued:

In regard to best management practices, regular inspections of the inside of the building to determine if leakage has occurred, or placement of a secondary container under the tank so as to contain any spillage during the filling of said tank, should be considered. It should be noted that if the wellhead surface area was not sealed with the existing concrete pad, then an attempt to do so should be implemented.

- DEQ Clean up Site: Higher Risk Ranking

The potential contaminant source in question is the fuel oil tank at the local elementary school. After speaking with the custodian of the school, the tank is checked for both level of fuel and water content each week. There is no indication that the tank is showing signs of leakage. It is the understanding that the tank was replaced and upgraded at the same time a second tank was installed at the rear of the school. At the present time two (2) underground storage tanks at located at the school, which contain PS 300 diesel fuel. Two (2) fuel tanks were removed and replaced in June 1993 at Evergreen Elementary School. School District's records indicate no remediation of the site was necessary, since both tanks passed the tightness test.

- Underground Storage Tanks (UST): Higher Risk Ranking

Underground storage tanks are a source of large volumes of materials that easily may percolate into the soils and ground water. The transferring of gasoline and other large quantity substances, when spilled, migrates through soils and is a cause for many sources of ground water that cannot be used. Secondary containment, leak detection equipment and daily monitoring are practices, (i.e. check level of fuels) to insure materials are secured and maintained in the tanks. Historical gas stations are known for poor operations when handling petroleum products during filling and pumping from underground storage tanks, (UST's). Abandoned UST's may be present in a community or may have been forgotten. In determining if such tanks exist and if leakage from such tanks has occurred, efforts to locate the extent of the soil contamination should be performed. Removal of abandoned underground storage tanks would assist in mitigating any potential future concerns.

- Dry Cleaners: Higher Risk Ranking

Dry cleaning operations most often handle chlorinated solvents, which are heavier than water, making them favorable to seepage through floors, even floors made of cement. Any equipment and /or machines that use treat or store chlorinated solvent, must have a secondary containment, which has the capacity of 110 percent of the largest quantity stored in that particular containment pan. In discussions with the public water system contact, the dry cleaners manage the hazardous waste generated and are connected to the sanitary sewer. The operations have not had any violations recorded to suggest that management of the facility is inadequate. Review of the dry cleaners list does not show any response actions from regulatory agencies.

- Auto Repair Shop: Higher Risk Ranking

Improper handling of automotive fluids, solvents, cleaners and repair materials during transportation, use, storage and disposal may impact the drinking water supplies. Washing of shop floors to areas with no drains will eventually contaminate the soils and potentially move to the groundwater supply. Service centers are locations where leaks, spills or improper handling of fuels and other chemicals from vehicle servicing and parking areas may impact the drinking water. During storms, these materials can be washed away in the storm water run-off or infiltrate into the drinking water source. Review of the shop's drainage system, (connected to sanitary sewer or closed) and clean up procedures would ensure materials were NOT coming in contact with soils that may lead to groundwater contamination. A covered structure where vehicle service actions occur will greatly reduce the amount of spilled materials from being carried away with storm water.

- Historic Landfill: Higher Risk Ranking

Historic landfills will allow precipitation and water percolation through the surface of old waste sites and cause leaching of contaminants to enter the groundwater supplies. After speaking with the public water system contact, the certainty of the existence of a historic landfill is still pending. The thought behind the landfill was that it may have been a discard area for the few homes that were established many years ago. If a concern that the landfill did exist, monitoring wells could be placed in approximate locations of potential boundaries, if boundaries were able to be determined. These monitoring wells would allow for assessment of ground water as it moved throughout the drinking water protection area.

- Above Ground Storage Tanks: Moderate Risk Ranking

Above ground storage tanks may leak, or spillage during filling and product removal resulting in ground contamination and the potential for leaching into the ground water. Impervious ground material or secondary containment will greatly reduce such materials gaining access to the soils. A key note with above ground storage tank is the ease in which a leak may be detected and repaired.

- Implementation of a standard operating procedure would be to visually check the area for signs of spillage and incorporate any clean up procedures.
- An ordinance is being written to require above ground storage tanks that are larger than 275 gallons, to develop a secondary containment system. **Informational fliers will be sent to those consumers within the drinking water protection area on the proper aspects of maintaining above ground storage tanks.**

- Bus Maintenance Shop: Moderate Risk Ranking

Vehicle maintenance shops are locations of large volumes of materials that may easily percolate into the soils and ground water. These facilities typically have underground storage tanks containing fuels which should be monitored for leaks. Secondary containment and leak recognition equipment are ways to assist in automatic detection. Daily monitoring practices are good manual detection methods i.e. check levels of fuels; help to insure materials are being maintained in the tanks. Washing of shop floors in areas with no drains will eventually contaminate the soils and potential move to the groundwater supply, if containment of rinse water is not implemented.

Fleet truck repair shops use oils, fuels, solvents, antifreeze and cleaning supplies to perform a service at the facility. Handling of these materials improperly will result in spills, leaks, thus contaminating the ground.

Parking areas, after years of dripping engines, transmissions and hydraulic systems is a cause for soil contamination which may create contamination of the groundwater through storm water run-off. Containment options such as clarifier placement, buffer strips or covered area are ways to control potential pollutants run-off and / or mitigate the area prior to allowing contaminants per se, to leach into the soils and eventually reach the groundwater.

In establishing best management practices for local businesses, the City of Cave Junction should invite those local owners to participate in the wellhead protection program, insuring a proactive stance. Include the names of the businesses on posters and fliers outlining their participation in the wellhead protection program and their efforts to insure clean business operations. Notification announcements of proactive businesses are good for public relations for all entities, as well as reduced risk of liability for the business.

- Food Processing Plant: Moderate Risk Ranking

Food processing plants consume large quantities of water due to the wash process and cleaning. Spills, leaks and improper handling of chemicals during the process may impact the groundwater and the drinking water supply. Large effluents at times may overload the sewer system which may create leaks and overflows. In discussions with the public water system contact, it was stated that the facility had not had an effluent violation over the past eight (8) years and the city has an inspection program in place to monitor the effluent. The facility maintains a grease sump that they have pumped regularly to insure effluent criteria is not exceeded. Pertaining to storage of chemicals and petroleum products, in large quantities, discussions with the management of the facility will be encouraged. Inviting personnel at the facility to participate on the assembly team of the wellhead protection plan should be considered.

- High Density Housing: Moderate Risk Ranking

The goal of the Wellhead protection program team is to increase the awareness among community members about groundwater vulnerability, types of contamination that are associated with residential living and how to manage those potential contaminant sources.

The following are examples of action taken to increase the awareness.

- Informational pamphlets on consumer's activities, i.e. gardening, watering, use of household hazardous materials, will likely reduce the potential contributing contaminants of the groundwater. SEE HANDOUT
- Articles will be regularly placed in the local newspaper informing local citizens on conservation measures.
- Posters placed in strategic locations throughout the community reminding the consumers of their potential effect on the contamination of the drinking water.
- Regular information should be delved out to the consumers who are using septic tanks, information that instructs on the proper maintenance and pumping schedules for septic tank systems. SEE HANDOUT

It is recommended that the Assembly Team for City of Cave Junction to stay in communication with the City of Grants Pass regarding household hazardous waste events. Regularly scheduled household hazardous waste events will prevent a large percentage of like materials to be possibly poured down the drain, septic system or discarded in the trash or backyard.

Hi-Density / Household Hazardous Wastes:

1. Host or facilitate household hazardous waste collection events.

- Call DEQ's Waste Management and Cleanup Division at 503-229-5913 for more information on collection events in your area or how to coordinate a collection event;
- Coordinate a household hazardous waste event with adjacent communities.

2. Increase awareness of safe disposal of household wastes by:

- Facilitating community workshops/school projects; call DEQ's Waste Management and Cleanup Division at 503-229-5913 for more information and free literature.

3. Increase awareness of less toxic alternatives that can be used in the home:

- *Distribute DEQ's Hazardless Home Handbook, 1995.*

Hi-Density / Septic Systems - especially high density areas with greater than one house per half acre parcel.

1. Encourage best management practices such as:

- Pump out septic tank solids every 2-3 years;
- Limit use of drain cleaners and phosphate soaps;
- Never use chemical treatments for septic tanks;
- Never pour household hazardous wastes down drains or toilets;
- *Septic system maintenance or requirements.*

Hi-Density / Lawn/Garden Care:

1. Encourage best management practices (BMPs) such as:

- Reducing Fertilizer Use - addition of nutrients already in sufficient amounts causes the leaching of nutrients into groundwater through soil layers, or into surface water through runoff;
- Limiting Mowing - frequent mowing is stressful to lawns, weakening their resistance to disease and drought;
- Selecting Grass Varieties - grass varieties that grow more slowly and require less fertilizer;
- Avoiding Pesticide Use - physical removal, such as digging weeds and defoliation can work effectively, minimizing the need for chemicals;

- Maintaining Natural Shore/Lawn Barriers - lawn care for areas adjacent to waterways can include using trees, ground cover, and other plants to help minimize runoff and fertilizer loss.

♦ Potential Development: Moderate Risk Ranking

Potential development within the two (2) year time-of-travel has been proactive in regard to the subdivisions that are adjacent to the existing well. The City of Cave Junction and the developers have come to an agreement to change the existing idea of septic system usage to a sanitary sewer system, which will include lift stations. The city will accept responsibility of the maintenance and repair of the system. The City of Cave Junction will update their inspections to include that of the new sewer system to its existing inspection schedule.

4.7 FUTURE POTENTIAL CONTAMINANT SOURCES:

The City of Cave Junction's assembly team can assist any future growth within the drinking water protection area by continually participating in regular discussions with those already residing in the area. Like a community watch program, people can assist any potential new development by informing those of the boundaries of the wellhead protection area. Determining setback standards for the wells, incorporating land practices, and discussing issues pertaining to water protection efforts with neighbors will insure a sense of confidence among the users of the water.

4.8 RESPONSIBLE PARTIES:

Implementation of the drinking water protection area plan will be the responsibility of the assembly team of Cave Junction with assistance from the Groundwater Technician at Oregon Association of Water Utilities for the present time. The plan will share the responsibility by segregating the segments with other interested people who wish to volunteer. SEE APPENDIX A-1 or A-2

4.9 PLAN TIMELINE:

The timeline for implementation of this plan will be foregoing as a continual effort to maintain an awareness of the importance of groundwater and potential contamination. Regularly scheduled meetings will include an invitation to those consumers within the drinking water protection area to participate in all aspects of the wellhead protection program. The overall goal of this wellhead protection program is to consciously raise the awareness level of all people who live and work in the drinking water protection area.

Appendix G and H:

These appendices are example letters that will be sent to respective families and businesses that reside in the Cave Junction drinking water protection area. The letters are intended to encourage proactive participation in helping to reduce the potential risks to the water sources.

Note:

Review of the best management practices ***summary table*** will focus the efforts of the assembly team for protection of the drinking water protection area. A "**Date Column**" will be a guide as to a time line for implementation of such practices.

SUMMARY TABLE OF POTENTIAL CONTAMINANT SOURCES RISK AND BEST MANAGEMENT PRACTICES COMPLETION DATE

Table 4-2 Summary Table for PCS Risk and BMP Implementation Date:				
PCS REF. #	POTENTIAL CONTAMINANT SOURCES	RISK RANKING	BEST MANAGEMENT PRACTICES	COMPLETED DATE
16	Chemical / Petroleum Storage	Higher	City Personnel Educational Information	
20	Department of Environmental Quality Clean úp Site	Higher	Educational Info. for Maintenance Personnel.	
20	Underground storage tank	Higher	Improved Maintenance Procedures	
25	Dry Cleaners	Higher	DWPA Brochure	
24	Automotive Repair	Higher	Educational Info. distributed to owners.	
27	Historical Landfill	Higher		
17	Potential Development	Moderate	DWPA Brochure	
18	Above Ground Storage Tank	Moderate	DWPA Brochure	
19	Bus Maintenance Shop	Moderate	Improved Maintenance Procedures	
22	Food Processing Plant	Moderate	Timely Inspections	
21	High Density Housing	Moderate	DWPA Brochure	
15	Burn Area (< 10 years)	Lower	Run-off Brochure	
18	Homesteads – RURAL (Septic System < 1/acre)	Lower	DWPA Brochure	
20	Schools	Lower	Educational Info.	
23	Non- Irrigated Crops	Lower		
26	Apartments / Condominiums	Lower	Educational Info.	

Section Five

CONTINGENCY PLANNING

5.1 INTRODUCTION:

Contingency planning is an essential component of the Oregon Drinking Water Protection Program that focuses on water purveyor's response to the contamination or disruption of the groundwater supply to a public water system. Generally, these plans should focus on:

- *The recognition of potential threats to the supply, and*
- *The development of procedures to be followed should these threats materialize.*

Contingency planning for the City of Cave Junction's public water system is based on the scope of handling an emergency that will ill-effect the supply of water to those consumers. This plan is written to reduce the probability of such an emergency through a check and balance of personnel, resources and proactive efforts to maintain the level of awareness in regard to keeping clean quality water supplied to those consumers.

5.2 OREGON'S TEN ELEMENTS:

The City of Cave Junction's contingency plan addresses the ten (10) elements required by the Oregon drinking water protection program, including:

i. Potential threats to drinking water supply.
ii. Prioritization of Water Usage
iii. Protocols for Responding to Potential Incidents
iv. Identification of Key Personnel and Development of A Notification Roster
v. Short-Term and Long-Term Replacement of Potable Water Supplies.
vi. Identification of Short-Term and Long-Term Conservation Measures
vii. Provisions for Plan Testing, Review and Update
viii. Personnel Training
ix. Provisions for Public Education
x. Identification of Logistical and Financial Resources

1. POTENTIAL THREATS TO THE DRINKING WATER SUPPLY:

The potential threats to the drinking water supply were evaluated from the inventory list prepared by the Department of Environmental Quality and those threats that are inherent with natural disasters, i.e. earthquakes, floods, fires. Also reviewed for thoroughness; the contingency plan addresses other potential concerns. See list below:

A. Mechanical problems i.e. pump failure, broken main lines, and power outage:
B. Detection of contaminants at the wellhead:
C. Chemical spill:
D. Sabotage; disgruntled employee or citizen:

2. PROTOCOLS FOR RESPONDING TO POTENTIAL INCIDENTS:

5.2.1 A) MECHANICAL INTERRUPTION:

In the event of a **mechanical interruption,** the City of Cave Junction's public water system will rely on reservoir capacity of **2.33 million** gallons. For the time being, an evaluation of the size of the reservoir in terms of future capacity requirements will be studied. In the event that a longer term interruption has been determined, then mandatory water conservation measures along with transportation of water from an outside source will be implemented. The City of Cave Junction's Daisy Hill well is actually a secondary supply source, which allows them the convenience of having a supply of water from two distinct supply sources.

- In the event of a power failure, call the power supplier to determine the longevity / extent of the outage;
- In the event of a pressure loss situation or leak, locate the problem, make adjustments or repairs, and disinfect the system and place back in service.
- Rely on storage capacity of **3.4** days of usage.
- Make available telephone numbers of local equipment Rental Company to obtain back up power supply.
- Apply water conservation measures.
- Implement water replacement measures through transportation services/

5.2.1 B) CONTAMINANT IN WATER SYSTEM:

Detections of a contaminant at the well will be responded to based on the type of contaminant and if contaminant reaches or exceeds the maximum contaminant levels (MCL) of the substance. If the contaminant is found during regular monitoring procedures, but is **below** the MCL, then monitor testing adjustments based on Department of Human Services-Drinking Water Program recommendations will be implemented. If concentrations of the substance exceed the MCL, the following procedures will be followed:

- Shut down the contaminated well, or source of contamination and follow public notices requirements from Oregon Department of Human Services-Drinking Water Program;
- Determine if water in reservoir and/ or system is contaminated;
- Determinate where the source of contamination, if backflow contamination, then shut down affected area;
- Implement containment procedures to prevent it from spreading throughout entire distribution system;
- After containment of contaminated area, flush the contaminant from the system, test, disinfect and place back in service;
- Implement conservation program when contaminated system will be out of service for a period that is beyond the capacity of the reservoir, or more than 24 hours;
- Send statement to the local news agency, i.e. paper or broadcast;
- Notify residents and businesses about local conservation measures.

5.2.1 C) CHEMICAL SPILL:

Chemical Spill within the drinking water protection area:

Response to a large chemical / petroleum spill depends upon the time-of-travel zone in which the spill occurs. Large quantity spills in the City of Cave Junction's drinking water protection area will be most likely occur on Redwood Highway (199), which is just outside the ten (10) year time-of-travel area. The City of Cave Junction's Streets Distribution and Collections assist the Illinois Valley Rural Fire Department in responding to all spills. The following procedural outline will assist in assuring proper notification of all pertinent parties if such an event occurs.

CHEMICAL SPILL CONTINUED:

- Notify Josephine County Emergency Response Office (HAZMAT);
  - Specify that spill is within drinking water protection area.
- Notify local office of Oregon Department of Transportation;
- Follow notification procedures outlined on the emergency response flow chart. Found at the end of Section Six (6).
- Allow only trained personnel to enter the contaminated HOT zone;
- Employ a method to dike or ditch the area maintaining sufficient distance (**upwind, upgrade and upstream**) between workers and spilled materials;
- Notify local residents of situation and begin conservation measurements.
- Leave clean up to responsible personnel;
- Determine the speed in which the chemical may infiltrate into the soil for future possibilities of groundwater contamination and adjustments to water sampling procedures.

5.2.1. D) SABOTAGE / TERRORISM:

Depending on the of vandalism event encountered, different parts of the plan could go into effect immediately. For the worst case scenario, a lethal contaminant would be placed at the water source:

- The wells should be shut down immediately;
- Send news release to the local media;
- Implement water conservation measures;
- Contact local, county and state agencies;
- Locate alternative source of water, if necessary;
- Work cooperatively with the regulatory agencies during the investigation.

Review of the existing public water system will determine where the points of vulnerability are found as well as the methods, practices and barriers to be employed to strengthen the public water system in the event of a disgruntled employee, citizen or terrorist should choose to attempt to incapacitate the system.

5.2.1 E) NATURAL DISASTERS:

Review of the history of the types of natural disasters that have occurred in the area of the City of Cave Junction during the past 50 years will assist in providing information on the relief operations if such event should occur. After speaking with public water system operator, it was mentioned that the City of Cave Junction has an earthquake preparedness plan established.

3. PRIORITIZATION OF WATER USAGE:

The prioritization of water usage will be based both on the short and long term replacement. The reservoirs in use with the public water system of the City of Cave Junction have approximately **3.4** days of supply of water on average to its existing consumers during summer months. In the event that all water supplies are deemed non potable, prioritization of water usage from the highest to the lowest is as follows:

- Fire Service (1) including forest.
- Residents (2) (no vehicle washing, lawn watering, etc.)
- Industrial, commercial and agricultural (3).

During the occurrence in which the water supply is threatened, knowledgeable people will be notified and will implement emergency procedures. In the event of a major spill, the Josephine County Emergency Management (HAZMAT) team will be notified. SEE Emergency Notification List: Appendix E-1 / E-2

4. IDENTIFICATION OF KEY PERSONNEL:

In the event of an emergency situation that threatens the water supply, key personnel should be notified and response protocols coordinated between the local residents, City of Cave Junction, Josephine County and other government agency personnel.

Appendix E-1/ E-2 are lists of key personnel and an order of notification in the event of such a catastrophe should occur. At least one person on the list will pursue and stay updated on emergency response techniques and maintain a First Responders Awareness training certificate.

5. SHORT TERM AND LONG TERM WATER REPLACEMENT:

The City of Cave Junction's public water system has storage capacity from their surface water intake and one (1) well(s) at 2.33 million gallons. Based on the preceding water usage numbers, water can be supplied to the consumers on the following proximities of time, with ***NO conservation efforts*** being factored into the equation

- Winter Months Usage: 9.7 days
- Summer Month Usage: 3.4 days

In the event of an emergency, the minimum water needs of the community must be met with water meeting applicable health standards. **Short term** options are determined to meet the needs of the consumers for approximately four (4) hours, while **long term** options must consider an alternative water supply.

The Wellhead protection program assembly team will evaluate the capacity of the reservoir in order to determine the supply of water usage based on time continuum. This will determine the necessary steps to implement in order to meet both long term and short term water supplies.

SHORT TERM:

- Bottled water supplied to consumers on an as needed basis.
- Implement conservation program.

INTERMEDIATE TERM:

- Bring water in from neighboring communities or farmers using tank trucks.
- Implement conservation program.

LONG TERM:

- Drill a new well.
- Develop treatment operations.

6. CONSERVATION MEASURES:

Conservation of water usage will reduce demands on the City of Cave Junction's public water system in the event of an emergency situation. This element identifies the short and long term conservation practices that could be put into practice as a function of user needs identified in prioritization of water usage.

Fire Department:

The Fire Department will be given top priority in water usage in the event of a fire. The local fire department should be notified when emergency conservation measures are in effect so to identify ***alternative*** sources of water supply or fire response resources to ensure fire protection.

Business / Commercial:

Businesses will be informed that in the event of an emergency their water supply will be curtailed and that it is in their best interest to develop a conservation plan if they do not already have one implemented. Conservation practices for businesses will reflect positively to the citizens of the community. The Wellhead protection assembly team will pursue dialogue with local businesses on the implementation of conservation plans.

Residents:

Common conservation measures for residential use include limiting practices such as lawn watering, car washing, and laundry use. Conservation devices such as low flow toilets and shower heads should be installed. The Oregon Water Resources Department publishes a variety of informational pamphlets letting residential users know how to reduce water. Using such materials, the City of Cave Junction's public water system should be able to identify procedures to limit water usage among residential customers and educate them prior to an emergency.

7. PROVISION FOR PLAN TESTING, REVIEW AND UPDATING:

This contingency plan will be reviewed and updated annually by the assembly team or water system personnel. The public water system coordinator will review any personnel or changes to the emergency management team to ensure the plans effectiveness is to the highest level of accomplishments. The plan should include assistance from Josephine County Emergency Management office, which will receive a copy of the plan annually. The coordinator of the City of Cave Junction's public water system plan will confirm personnel names and telephone

numbers of those individuals that participate in emergency efforts. To fully understand the effectiveness of this plan, a mock emergency situation should be performed. However, it has yet to be determined if the City of Cave Junction has the manpower and time to assimilate a mock exercise. Coordination efforts with Josephine County Emergency personnel may assist city personnel in an attempt to keep training cost to a minimum.

8. PERSONNEL TRAINING:

To be effective, contingency planning must rely on properly trained personnel operating within a well organized and effective system with up-to-date information. County and state officials have been trained to deal with hazardous materials responses. It is the advice from the groundwater technician that someone from the City of Cave Junction should study the specific aspects on the ***First Responders Awareness (FRA)*** level response program. A person living in the area would probably be the first to arrive on site of a hazardous materials incident. This training enables someone to recognize hazardous materials identification insignias and initiate appropriate response, **as a defensive method only.**

9. PUBLIC EDUCATION:

The City of Cave Junction's public water system intends to accomplish drinking water protection with a strong educational campaign. Public education is an effective tool for preventing contamination of a community's drinking water supply. Informational fliers, discussing best management practices applicable to the community, such as fertilizer management, vehicle repair and other strategies towards groundwater protection will be mailed to consumers living in the drinking water protection area. Initial fliers will be mailed with a copy of the delineated area. Any new businesses or residences will be given an informational packet when new permits are issued. This attempt to inform new businesses and residents shall be accomplished through the city's planning department. This informational packet will be written from the Home*A* Sys Packet.

Fliers developed to specific purposes, i.e. septic systems, underground storage tanks, shall be developed and mailed to consumers within the drinking water protection area. These fliers shall be created by using information from Home*A*Sys program and other sources of information. The Oregon Association of Water Utilities Groundwater Technician shall attempt to keep the public water system updated to flier information.

10. LOGISTICAL AND FINANCIAL RESOURCES:

At least one person living within the City of Cave Junction's Water System and employed through the City of Cave Junction should be on site of an emergency response situation only to the extent of providing assistance and information regarding the water system and the particular needs of the community. If hazardous materials were found by the people living in the community, they should not attempt any clean up efforts on its own, although cordon off the area may be appropriate. If containment efforts are necessary, then someone associated with City of Cave Junction should be notified. Appropriate clean up measures will be dependant on the type and quantity of the chemical released. Responsible party to the spill is legally obligated to report the release and clean up the chemical release.

5.3 SITE OF NEW WATER WELLS:

There are no immediate future plans to further expand City of Cave Junction's public water system. Although new development has increased in the past 6-12 months, the City of Cave Junction will consider expansion of storage capacity with an additional 2.0 million gallon separate reservoir. Also, consideration to supply water to the Kerby area may be implemented. If the City of Cave Junction determines the need to plan for further expansion, it will be done in accordance with the Department of Human Services and the Water Resources Department

CONTINGENCY PLAN

EMERGENCY RESPONSE PLAN

6.1 INTRODUCTION:

This contingency plan (*Emergency Response Plan*) is developed for the wellhead protection program in response to a disruption of water or contamination of the water supply. In an effort to produce a thorough document, it is the intent to disclose as much information in order to mitigate the problem should such event occur. The ***Emergency Response Plan,*** an addendum of the contingency plan will outline the procedures written in the Oregon Administrative Rules 333-061-0064 / Emergency Response Plan and Water System Operations Manual.

333-061-0064 (1) (a) (C):

For the City of Cave Junction, the population served by the water system, 1265 consumers, the implementation of the plan shall be completed by June 30, 2005, reviewed and updated by June 30, 2010.

333-061-0064 (1) (b):

The staff at the Water Department of the City of Cave Junction shall submit a statement to the Department of Environmental Quality outlining that the Emergency Response Plan has been completed and that the staff have been instructed in the use of the emergency response plan.

333-061-0064 (1) (d):

The Responsible Management Authority shall coordinate with the lead County Emergency Coordinator when preparing or revising an emergency response plan.

333-061-0064 (1) (e) (A) (i) (ii) (iii):

The emergency response plan shall include but is not limited to the following elements:

- Develop an emergency **contact list**, and review and update the list at least, annually. See Appendix E-1 or E-2
- Decision making authorities and responsibilities of water system personnel shall be determined and detailed in the emergency response plan.
- Procedure for notification of agencies, water users and the local media.

333-061-0064 (1) (e) (C) (i) (ii):

- Public water systems shall conduct an inspection of the water system **annually** to identify the hazards that could affect the water system.
- Public water systems shall correct construction deficiencies to eliminate hazards, correct major sanitary survey deficiencies as determined by the Department and perform regular maintenance.

333-061-0064 (1) (e) (D) (i) (ii):

- If the water system is not gravity, then provisions shall be made for an auxiliary power supply, and redundant equipment for critical components.
- Public water systems shall develop a plan for emergency water to include the rationing of drinking water, identifying and utilizing alternative drinking water sources and supplies, and alternative distribution of drinking water.

333-061-0064 (1) (e) (E) (i) (ii) (iii)

- Public water systems shall develop procedures for responding to emergencies most likely to strike the water system. Plans and procedures shall be implemented in the event of a terrorist or other intentional attack on the water system.
- The emergency response plan shall describe procedures to isolate all parts of the water system. Community water systems shall develop actions and procedures which can render harmless or significantly lessen the impact of terrorist attacks or other intentional actions on public health and safety and supply of public drinking water.

333-061-0064 (1) (f):

- Water system staff shall be instructed and trained in the use of the emergency response plan.

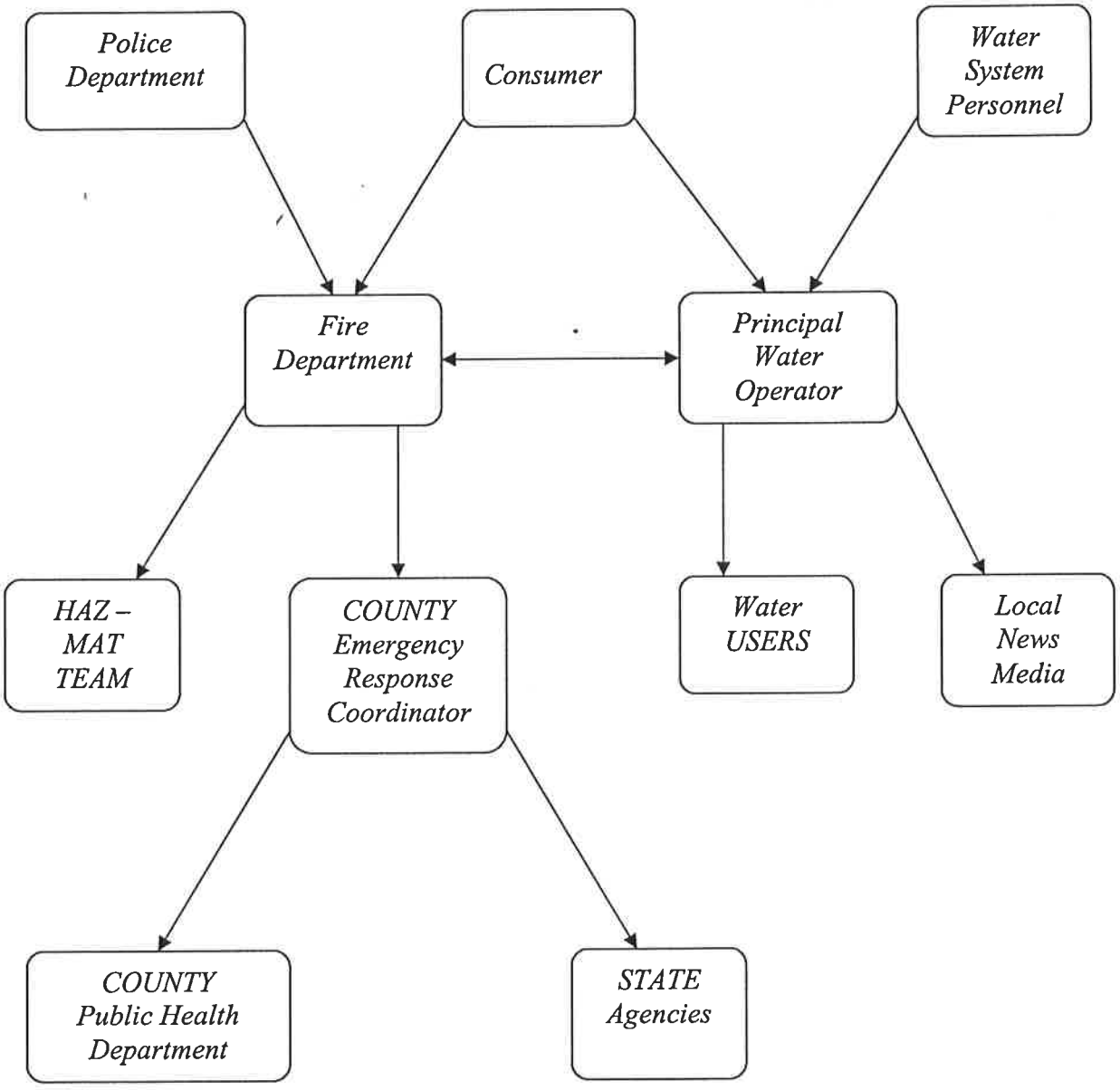
333-061-0064 (2) (a) (b) (c):

- The water system operations manual shall be completed according to the requirements of the capacity assessment or sanitary survey and shall be reviewed and updated at least every five (5) years.
- As evidence of completion, public water systems shall submit a statement to the Department of Environmental Quality certifying the water system operational manual has been completed according to the requirements in this rule, and that the staff has been instructed in the use of the water system operations manual.
- The public water systems operations manual shall include, if applicable:
  - Source operation and maintenance.
  - Water treatment operation and maintenance.

- Reservoir operation and maintenance.
- Distribution system operation and maintenance.
- Written protocols for on-site operators describing the operational decisions the operator is allowed to make under OAR 333-061-0225.

THE FOLLOWING CHART OUTLINES
THE PWS NOTIFICATION OF PERSONNEL:

SPILL INSIDE THE DRINKING WATER PROTECTION AREA: ***Found By:***



C-41

PUBLIC WATER SYSTEM Name: City of Cave Junction

Number Population Served: 1421

Effective Plan DATE: July 15, 2004

PRIORITY CONTACT LIST

PRINCIPAL WATER OPERATOR:

NAME: Paul W. Anderson PHONE: (541) 592-2156

ASSISTANT EMERGENCY RESPONSE CONTACT:

NAME: Gary D. Biggs PHONE: (541) 592-2156

MAYOR / BOARD OF DIRECTORS / PRESIDENT:

NAME: Ed Faircloth, Mayor PHONE: (541)592-2156

CITY COUNCIL / BOARD OF DIRECTORS / VICE PRESIDENT

NAME: Sandra K. Lund PHONE: (541)592-2156

FIRE DEPARTMENT:

STATION NUMBER: 1 PHONE: (541)592-2225

COUNTY EMERGENCY COORDINATOR:

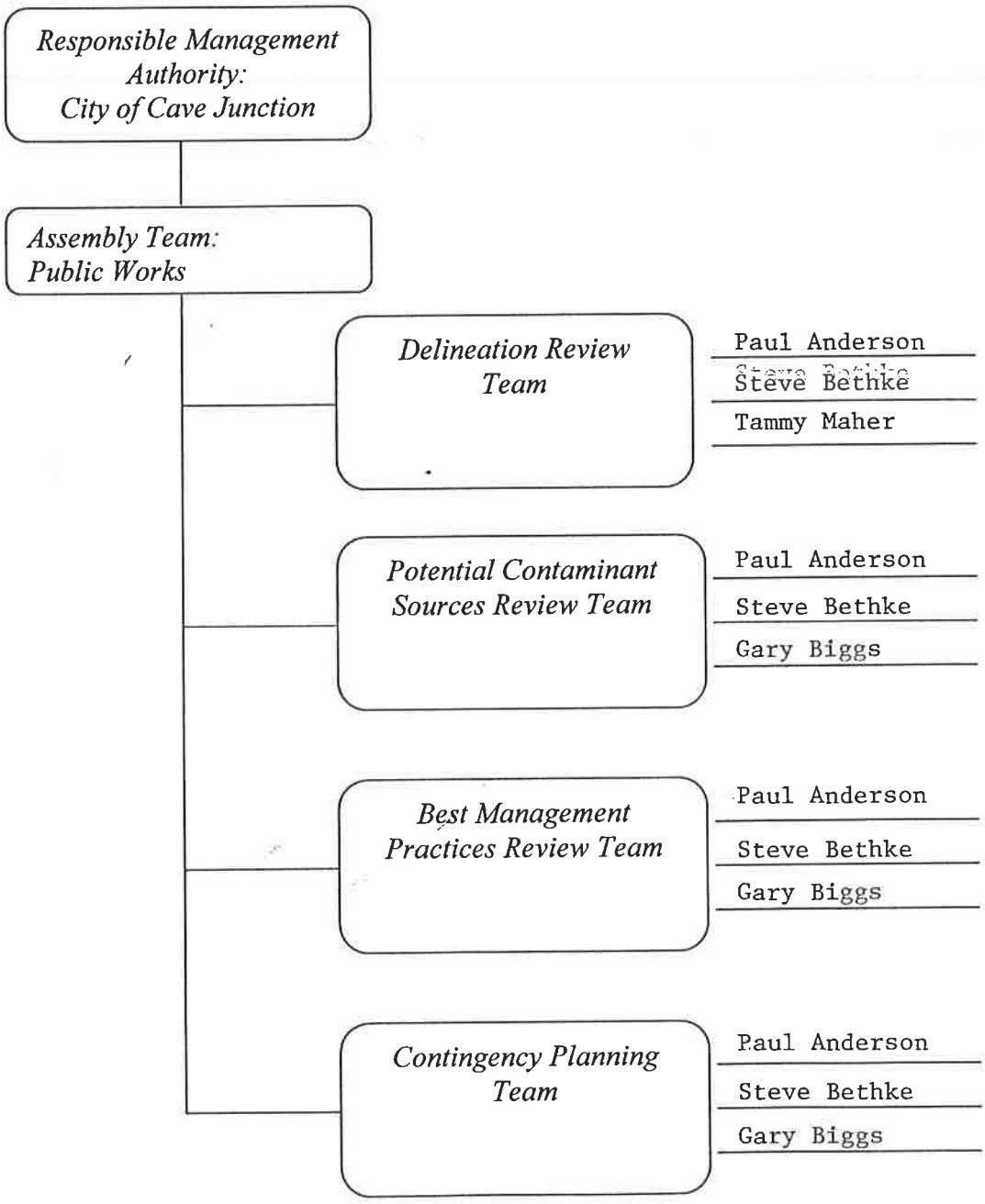
NAME: Sara Nicholson PHONE: (541) 474-5300

APPENDIX A-1

WELLHEAD PROTECTION PROGRAM

TEAM ASSEMBLY CHART

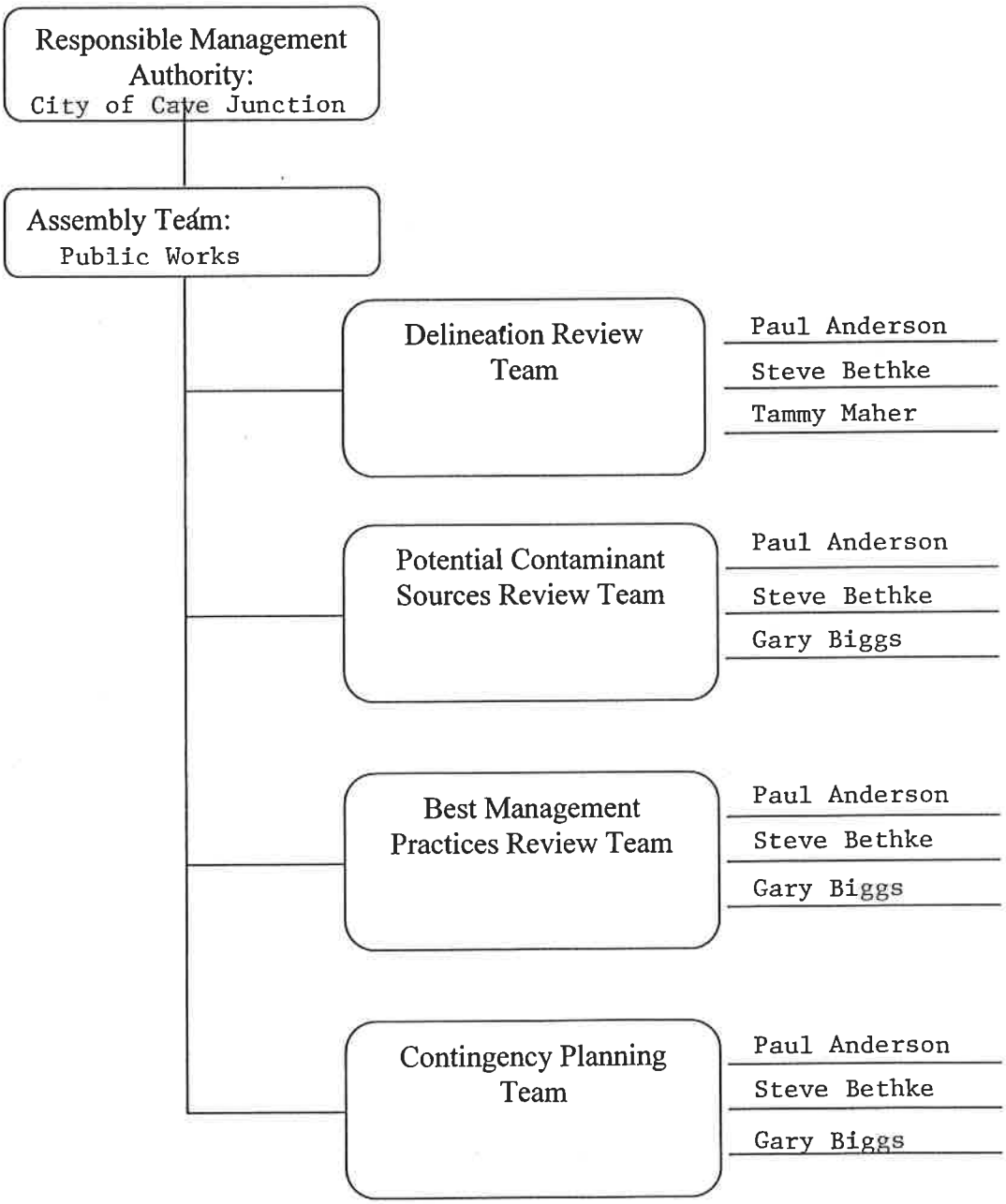
Identification of Responsible Parties



Appendix A-2

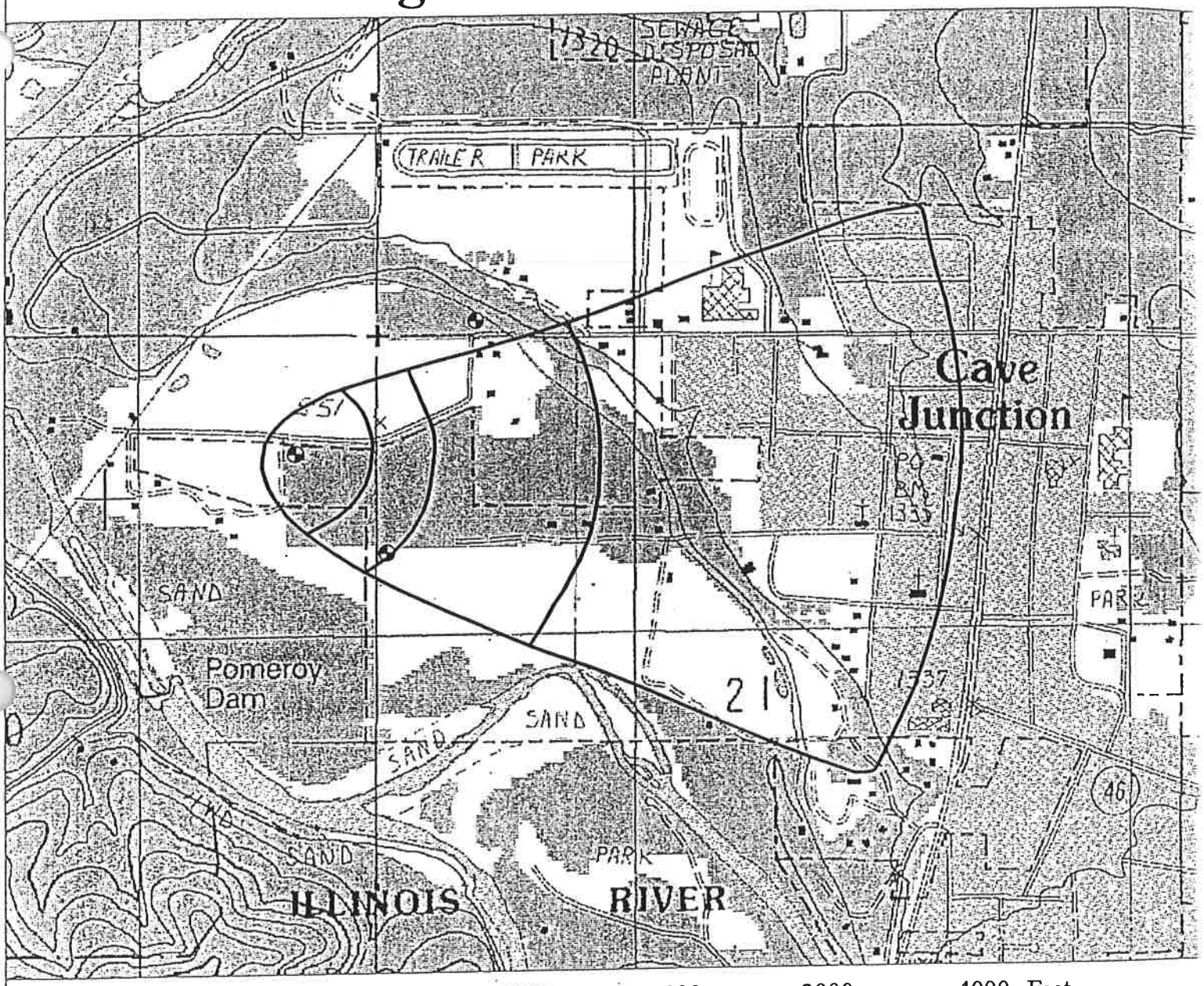
AREA OF RESPONSIBILITIES

In order for the drinking water protection plan, a.k.a. Wellhead protection program to be effective, the Responsible Management Authority has circulated an outline of specific sections of the Wellhead protection program to those who have shown interest by volunteering as members of the drinking water protection team. Review and revisions of the wellhead protection program will be accomplished in a timely manner. A quarterly or bi-annual review by the drinking water protection team and city council on the implementation of the plan will continue to sustain the awareness among the team and the consumers of the public water system. A chart below summarizes the members of the drinking water protection team who will keep current the wellhead protection program.



APPENDIX B
Delineation Map

Figure 1. City of Cave Junction Drinking Water Protection Area



Scale 1: 12,000

Drinking Water Protection Area (DWPA)
1, 2, 5, and 10 Year Time of Travel (TOT)
Analytic Element Method

Well Location (WGS84 Datum): Josephine County
T. 39 S., R. 8 W., Sec. 20
Lat. 42° 10' 01.9381"N,
Long. 123° 39' 47.4169"W

Model Parameters
Production Interval (ft): 125
Effective Porosity: 0.20
Usage (gal/day): 168,787

QUADRANGLE LOCATION

Prepared by: TP
Project Manager: TP RG# G-1874

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APPENDIX C
Inventories Potential Contaminant Sources
Tables 2 and 3
Potential Contaminant Source Map Figure 2

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

WS# 4100971 CAVE JUNCTION, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
1	Transportation - Freeways/State Highways/Other Heavy Use Roads	Highway 199	Next to intake (bridge)	Cave Junction	Field-Observation	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Higher	Vehicle use increases the risk for leaks or spills of fuel & other haz. materials. Road building, maintenance & use can increase erosion/slope failure causing turbidity. Over-application or improper handling of pesticides/fertilizers may impact water.	Highway 46 runs throughout DWPA but is not traveled as much as 199 and is usually only passenger cars.
2	Managed Forest Land - Clearcut Harvest (< 35 yrs.)	Clear Cuts	Throughout DWPA	Cave Junction	Field-Observation	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Higher	Cutting and yarding of trees may contribute to increased erosion, resulting in turbidity and chemical changes in drinking water supply. Over-application or improper handling of pesticides or fertilizers may impact drinking water source.	
3	Chemical/Petroleum Processing/Storage	Day Oil Company	101 Caves Highway	Cave Junction	Database (2) Field-Observation	Outside sensitive areas. for ILLINOIS RIVER (EAST FORK)	Moderate	Spills, leaks, or improper handling of chemicals and other materials during transportation, use, storage and disposal may impact the drinking water supply.	Risk reduced to Moderate because company is small
	Above Ground Storage Tanks - Excluding Water						Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Risk reduced to Moderate because company is small
4	Other -future housing development	Future Development Site	Off Caves Hwy	Cave Junction	Field-Observation Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Moderate	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	Contact indicated area schedul for development. Home sites w be in close proximity to E.Fork Illinois River and to the intake.

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

WS# 4100971 CAVE JUNCTION, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
5	Homesteads - Rural - Septic Systems (< 1/acre)	Rural Homesteads	Throughout DWPA	Cave Junction	Field-Observation	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Lower	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Use of drain cleaners and dumping household hazardous wastes can result in groundwater contamination.	Located in areas identified as sensitive.
6	Automobiles - Body Shops	Lamb-Baaa-Dy Shop	Off Rocky Dell Road	Cave Junction	Field-Observation Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Moderate	Improper management of vehicle paints, thinners, and primer products may impact the drinking water supply.	
7	Wells/Abandoned Wells	Abandoned Wells	Off Rocky Dell Road	Cave Junction	Field-Observation Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Moderate	Improperly installed or maintained wells and abandoned wells may provide a direct conduit for contamination to groundwater and drinking water source.	
8	Mines/Gravel Pits	Barlow Rock	Off Rocky Dell Road	Cave Junction	Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Higher	Spills, leaks, or improper handling of chemicals and wastes generated in mining operations or from heavy equipment may impact the drinking water supply.	No visual observation of site - site location is based on interview.
9	Grazing Animals (> 5 large animals or equivalent/acre)	Grazing Animals	Throughout DWPA	Cave Junction	Field-Observation	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Higher	Improper storage and management of animal wastes may impact drinking water supply. Concentrated livestock may contribute to erosion and sedimentation of surface water bodies.	

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

2) See Table 3 for database listings (if necessary).

ABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

S# 4100971 CAVE JUNCTION, CITY OF

ference . (See gure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
10	Crops - Nonirrigated (inc. Christmas trees, grains, grass seed, pasture)	Non-irrigated crops	Throughout DWPA	Cave Junction	Field-Observation	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Lower	Over-application or improper handling of pesticides/fertilizers may impact drinking water. Some agricultural practices may result in excess sediments discharging to surface waters, but non-irrigated crops are generally considered to be a low risk.	
11	Crops - Irrigated (inc. orchards, vineyards, nurseries, greenhouses)	Bridgeview Winery	Off Bridgeview Road	Cave Junction	Field-Observation	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Higher	Over-application or improper handling of pesticides/fertilizers may impact drinking water. Excessive irrigation may transport contaminants or sediments to groundwater/surface water through runoff. Drip-irrigated crops are considered to be a low risk.	There was also a small nursery near the intake.
12	Junk/Scrap/Salvage Yards	Junk/Scrap Yard	Off Martin Road	Cave Junction	Field-Observation Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Higher	Spills, leaks, or improper handling of automotive chemicals, batteries, and other waste materials during storage and disposal may impact the drinking water supply.	Located at a residence.
13	Homesteads - Rural - Septic Systems (< 1/acre)	Takilma	South of Intake	Cave Junction	Field-Observation Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK)	Lower	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Use of drain cleaners and dumping household hazardous wastes can result in groundwater contamination.	Potential concern regarding septic systems in this unincorporated town along the E. Fork Illinois.
	Septic Systems - High Density (> 1 system/acre)						Moderate	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Cumulative effects of multiple systems in an area may impact drinking water supply.	Potential concern regarding septic systems in this unincorporated town along the E. Fork Illinois.

e: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

See Table 3 for database listings (if necessary).

ABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

VS# 4100971 CAVE JUNCTION, CITY OF

eference o. (See igure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
14	Mines/Gravel Pits	Mining Claims	Throughout DWPA	Cave Junction	Field-Observation Interview	Within sensitive area. for ILLINOIS RIVER (EAST FORK).	Higher	Spills, leaks, or improper handling of chemicals and wastes generated in mining operations or from heavy equipment may impact the drinking water supply.	Queen of Bronze Mine present in DWPA. Also small mining claims located in DWPA - some may be in sensitive areas.
15	Recent Burn Areas (< 10 yrs.)	Burn Area	Surrounding Well	Cave Junction	Field-Observation Interview	Within the 2-yr TOT. for DAISY HILL WELL	Lower	Vegetation removal by fire may increase surface erosion and sediment delivery rates, resulting in high turbidity in drinking water source.	
16	Chemical/Petroleum Processing/Storage	City of Cave Junction	Well	Cave Junction	Database (2)	Within the 2-yr TOT. for DAISY HILL WELL	Higher	Spills, leaks, or improper handling of chemicals and other materials during transportation, use, storage and disposal may impact the drinking water supply.	PWS contact indicates there are capped wells in area, which will be abandoned properly, or re-used.
17	Other	Potential Development	Within 5 and 2 year TOT	Cave Junction	Interview	Within the 2-yr TOT. for DAISY HILL WELL	Moderate	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	PWS contact indicates that most of the proposed development will be sewered. However, there is a possibility that some of the homes will be on septic.
18	Above Ground Storage Tanks - Excluding Water	Rural Homes	Throughout DWPA	Cave Junction	Field-Observation	Between 2-yr and 5-yr TOT for DAISY HILL WELL	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Above ground storage tanks located a residences throughout the DWPA.
	Homesteads - Rural - Septic Systems (< 1/acre)						Lower	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Use of drain cleaners and dumping household hazardous wastes can result in groundwater contamination.	Above ground storage tanks located a residences throughout the DWPA.

IS-2

te: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

:) See Table 3 for database listings (if necessary).

ABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

S# 4100971 CAVE JUNCTION, CITY OF

ference . (See gure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
19	Other - Bus Maintenance Shop	Josephine County Bus Maintenance	River St.	Cave Junction	Database (2) Field-Observation Interview	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Moderate	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	
20	Other - DEQ Cleanup Program Site	Evergreen Elementary	River St.	Cave Junction	Database (2) Field-Observation	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Higher	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	Database has "Laidlaw Transit" at same address.
	Schools						Lower	Over-application or improper handling of cleaning products, pesticides or fertilizers used on the school grounds may impact drinking water. Vehicle maintenance wastes may contribute contaminants.	Database has "Laidlaw Transit" at same address.
	UST - Status Unknown						Higher	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Database has "Laidlaw Transit" at same address.
21	Housing - High Density (> 1 House/0.5 acres)	High Density Housing	Throughout 10 year TOT	Cave Junction	Field-Observation	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Moderate	Improper use, storage, and disposal of household chemicals may impact the drinking water supply. Stormwater run-off or infiltration may carry contaminants to drinking water supply.	
22	Food Processing	Taylor Sausage Processing Plant	W. Watkins	Cave Junction	Database (2) Field-Observation Interview	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Moderate	Spills, leaks, or improper handling of chemicals and other materials during transportation, use, storage and disposal may impact the drinking water supply.	

C-52

e: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

See Table 3 for database listings (if necessary).

ABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

VS# 4100971 CAVE JUNCTION, CITY OF

:eference lo. (See igure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
23	Crops - Nonirrigated (inc. Christmas trees, grains, grass seed, pasture)	Orchard	W. Watkins	Cave Junction	Field-Observation	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Lower	Over-application or improper handling of pesticides/fertilizers may impact drinking water. Some agricultural practices may result in excess sediments discharging to surface waters, but non-irrigated crops are generally considered to be a low risk.	
24	Automobiles - Repair Shops	Lube N Shine	Hussey	Cave Junction	Database (2) Field-Observation Interview	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Higher	Spills, leaks, or improper handling of automotive fluids, solvents, and repair materials during transportation, use, storage and disposal may impact the drinking water supply.	
25	Dry Cleaners	Brown Barn Laundrette	Hussey	Cave Junction	Database (2) Field-Observation	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Higher	Spills, leaks, or improper handling of dry cleaning solvents and other chemicals during transportation, use, storage and disposal may impact the drinking water supply.	
26	Apartments and Condominiums	Apartments	Kerby	Cave Junction	Field-Observation	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Lower	Improper use, storage, and disposal of household and facility maintenance chemicals may impact the drinking water supply. Stormwater run-off or infiltration may carry contaminants to water supply.	
27	Historic Waste Dumps/Landfills	Historic Landfill	W. Watkins	Cave Junction	Interview	Between 5-yr and 10-yr TOT for DAISY HILL WELL	Higher	Water percolating through old landfills or dump sites may transport contaminants to groundwater or surface water supply.	

C-53

ote: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

2) See Table 3 for database listings (if necessary).

TABLE 3. RESULTS OF REGULATORY DATABASE SEARCH

PWS# 4100971 CAVE JUNCTION, CITY OF

Reference No. (1)	Name	Database Listings (2)
3	Day Oil Company	SFM - Bar Oil stored in Steel Drum
		SFM - Diesel Fuel stored in Aboveground Tank
		SFM - Gasoline stored in Aboveground Tank
		SFM - Gear Oil stored in Plastic Or Non-metallic Drum
		SFM - Grease stored in Plastic Or Non-metallic Drum
		SFM - Kerosene stored in Aboveground Tank
		SFM - Motor Oil stored in Plastic Bottles Or Jugs
		SFM - Oil stored in Steel Drum
		SFM - Solvent Blend stored in Steel Drum
		SFM - Antifreeze stored in Steel Drum
16	City of Cave Junction	SFM - Chlorine 12.5% stored in Plastic Or Non-metallic Drum
19	Josephine County Bus Maintenance	SFM - Cyanuric Acid stored in Plastic Or Non-metallic Drum
		SFM - Caustic Soda Solution stored in Plastic Or Non-metallic Drum
		SFM - Soda Bicarbonate stored in Bag
		SFM - Calcium Chloride stored in Plastic Or Non-metallic Drum
20	Evergreen Elementary	ECSI site with suspected contamination.
		HWIMSY list as a conditionally exempt generator.
		SFM - Diesel #2 stored in Underground Tank
		SIS list with a GEN12Z NPDES for stormwater from industrial activities.
		UST list-PWS needs to verify tank permit status
22	Taylor Sausage Processing Plant	SFM - Heating Oil #1 stored in Aboveground Tank

Notes: (1) See Table 2 and Figure. (2) For State Fire Marshals (SFM) list, information on materials in a gaseous-form is not presented since gaseous compounds rarely pose a threat to groundwater or surface water.

TABLE 3. RESULTS OF REGULATORY DATABASE SEARCH

PWS# 4100971 CAVE JUNCTION, CITY OF

Reference No. (1)	Name	Database Listings (2)
22	Taylor Sausage Processing Plant	SFM - Vinegar stored in Plastic Or Non-metallic Drum
		SFM - Zep Fs Formula 10184 stored in Plastic Or Non-metallic Drum
		SFM - Zep Fs Formula 4665 stored in Steel Drum
24	Lube N Shine	SFM - Motor Oil stored in Tank Inside Building
25	Brown Barn Laundrette	Drycleaners list: facility that is currently using solvents.

Notes: (1) See Table 2 and Figure. (2) For State Fire Marshals (SFM) list, information on materials in a gaseous-form is not presented since gaseous compounds rarely pose a threat to groundwater or surface water.

APPENDIX D
Susceptibility Map

As of August 12, 2013

CITY OF CAVE JUNCTION
EMERGENCY CONTACT NUMBERS

NAME	WORK/CELL	HOME / CELL	E-MAIL	
Elected Officials				
Carl Jacobson Jr (Mayor)	592-4210 / 287-0044	592-2692 / 287-0438	cjmayor@cavenet.com	carbett@cavenet.com
Charles Jim Polk		287-0045	polks@cavenet.com	
Margaret Miller		660-0250	mcsmiller@cavenet.com	
Daniel Dalegowski		660-8763	daniel.dalegowski@gmail.com	
John Gardiner	415-2613	234-7704	john.l.gardiner@gmail.com	
City Adminstrative Staff				
Ryan Nolan (Recorder)	592-4529	592-2914	cityofcj@cavenet.com	ryedog@frontiernet.net
Helen Early (Planning Clerk)	592-2156	596-2826 / 287-0039	cjplanning@cavenet.com	hearly@frontiernet.net
Becky Patton (Utility Clerk)	592-2156	596-8555 / 415-0759	cjutility@cavenet.com	beckysplace@frontiernet.net
Public Works Staff				
Paul Anderson (Utility Op)	592-4590 / 415-0472	287-0600		
Mike Bollweg (Waste Water)	592-4590 / 415-0737	592-3900u	cityofcjwwtp@cavenet.com	
Travis Robbins (SDC)	592-3480 / 287-0043		cityofcjsdc@cavenet.com	
Mike Griess (Waste Water)	592-3480 / 415-0461	592-4349		
Steve Bethke (Water)	592-3254 / 287-0040	592-2705u / 660-7305	citywtp@cavenet.com	
Cameron Smith (Utility Dept)	592-3480 / 287-0041	592-2761		
Doug Garman (Utility Dept)	592-3480 / 415-0462	592-6170 / 287-0843		dcsgarman@frontier.com

City Numbers		
Administration	592-2156	Fax 592-6694
Mayor	592-4210	
WTP	592-3254 / 287-0040	
WWTP	592-4590 / 415-0737	592-3708
SDC (Utility - Travis)	592-3480 / 287-0043	
SDC (Utility - Cameron)	592-3480 / 287-0041	
On Call Duty	592-3131 / 287-0042	

Sheriffs Department		
CJ Sub-Station	592-5151	Fax 592-5152
Dispatch	474-5116	
Non-Emergency	474-5123	

Illinois Valley Fire District		
Office	592-2225	

Pacific Power		
Rick	955-7900	660-1302

Josephine County, Oregon

Board of Commissioners: Simon Hare, Keith Heck, Cherryl Walker

PUBLIC WORKS
Robert Brandes, Director
201 River Heights Way, Grants Pass, OR 97527
(541) 474-5460 / FAX (541) 474-5475
TDD# (800) 735-2900

MEMO

To: Debbi Hamelin, Sheriff's Office. Dispatch Supervisor
Cory Krauss, SAR Emergency Manager
Jessica Schwarz, Josephine County Emergency Services Manager

From: Robert Brandes, Public Works Director Rob

Date: July 17, 2013

Re: **Emergency After Hours Contact List (Please destroy all previous lists.)**

REGULAR BUSINESS HOURS: The Grants Pass Headquarters shall be open Monday through Friday, 8 a.m. to 12 p.m. and 1 p.m. to 5 p.m.*

AFTER REGULAR BUSINESS HOURS: Use the following list of responders for after-hours *road hazards, including missing or down stop signs, trees down, slides, sink holes or standing water over/on the roadway.*

AFTER HOUR ROAD HAZARDS AND EMERGENCIES*: Listed below is the order of contact for emergency responders call-outs:

		Cell Phone
1st	Jeff Wheaton	659-9721
2nd	Dan Shipley	659-9724
3rd	David Rubrecht	659-9727

ALL ROAD HAZARDS
MUST BE REPORTED TO A PERSON,
REGARDLESS OF THE TIME OF DAY.
DO NOT LEAVE A VOICE MESSAGE.

AFTER HOURS CALL TO SHERIFF'S OFFICE: For emergencies after regular business hours, the Josephine County Sheriff's Office may also be called at 474-5115, and they can relay the call to a Public Works Emergency Responder.

Over for PC's

APPENDIX E-1

EMERGENCY CALL LIST

NAME:	TELEPHONE:
City Personnel:	
Gary D. Biggs	(541) 592-2574
Michael J. Bollweg	(541) 592-4886
Travis T. Robbins	(541) 592-4532
Charles J. Polk	(541) 287-0045
Water System Operator:	
Paul W. Anderson	(541) 592-2059
Operator Assistant:	
Steven R. Bethke	~~(541) 592-2274~~
Fire Department and Law Enforcement:	
District	(541) 592-2225
Fire Marshall	(541) 592-2225
Oregon State Police	(541) 474-3174
Josephine County Sheriff	(541) 592-2156 or (541) 474-5123
County Office of Emergency Services	(541) 474-5300
Emergency Medical Services (AMR Ambulance)	(541) 474-6303
Oregon Department of Transportation	(541) 474-3149
Utility Companies "Electric" (Pacific Power)	(800) 221-7070 or (541) 955-7900
"Telephone" (Frontier)	(541) 592-3145

Appendix E-2

CITY OF CAVE JUNCTION
EMERGENCY MANAGEMENT NOTIFICATION LIST

County Emergency Management (HAZMAT) Team: **(800) 452-0311**

Legend

City Hall: (City of Cave Junction): _W_ ___ (541)592-2156

Mayor: **Ed Faircloth** _W_ 592-2156 _H_ 592-6826

City Council Members:

Dan Fiske _W_ 592-3222 _H_ 592-6182

Tony Paulson _W_ 592-3327 _H_ 592-3502

Rita Dyer _W_ 592-4020 _H_ 592-2508

Sandi Lund ___ _H_ 592-6451

Public Works Supervisor:

Gary Biggs _W_ 592-3480 _C_ 287-0043 _H_ 592-2574

Fire Station: Station 1 592-2225 Chief Rich _C_ 281-0021

Asst. Chief: Ken Gavlik _C_ 281-0022

Police: **Josephine County Sheriff** Deputy Auborn _C_ 218-7164

DHS-DWP: (541) 776-6229 x 284

DEQ: (541) 776-6010 x 231

LEGEND:

W: Work
H: Home
C: Cellular telephone
P: paging system (pager)

Appendix G.

Dear Water Consumer:

The City of Cave Junction has been developing an awareness program as a proactive approach in protecting the drinking water supply. The protection plan, known as the wellhead protection plan (WHPP) identifies the area below the surface where our drinking water supplies are thought to originate.

The Responsible Management Authority, along with a volunteer group, is working to develop this plan with involvement from as many local citizens and property owners as possible. Through educational efforts, in the form of fliers sent to each water consumer via the billing statements, you will become more aware of the effects our activities above the ground impact the ground water. Types of information available to water consumers:

- Septic system maintenance;
- Hazardous chemicals management and disposal;
- Fertilizer and pesticide information;

Along with the residences of our water system, businesses and industries will receive information from the Responsible Management Authority on best management practices, water conservation and knowledge on protecting the groundwater.

It is the belief of the City of Cave Junction and it water system that through collaboration, communication and cooperation with all consumers in our neighborhoods, we can continue to expand a safe drinking water program that is beneficial to all of us.

If you have any questions regarding the drinking water protection plan, please feel free to contact Paul Anderson @ (541) 592-2156. Thank you for taking the time to read this and future information, and any participation you offer. This program will only enhance the protection of our drinking water supply.

Sincerely,

Appendix H.

Dear Business Owners:

As you may be aware, the City of Cave Junction is taking a proactive approach in protecting the drinking water supply by writing a wellhead protection program (WHPP). The program identifies the origination of our water source and thus trying to reduce the number of potential contaminants from the activities that occur on the ground level overlying the source of water.

Many types of land uses have a potential impact to our drinking water, from residential activities to farmers to industrial services. We recognize that businesses are heavily regulated in regard to regulations, so we would like to establish a groundwater friendly business agenda, asking for your input and assistance to enhance our efforts.

By learning pollution prevention, process substitution of chemicals, and best management practices, we feel this will reduce business liabilities and save money.

Your participation in our future activities is not mandatory, but it should be considered that through cooperation, collaboration and communication, it makes good business sense to reduce liability and being active in community affairs.

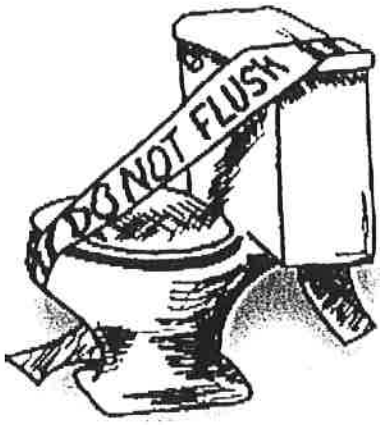
Thank you in advance for your participation. If you have questions regarding our activities, please feel free to contact our office @ (541) 592-2156.

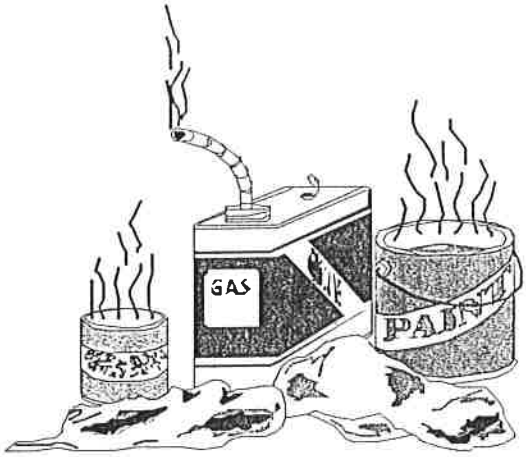
Sincerely,

HOUSEHOLD HAZARDOUS WASTE

OILS, PAINTS, SOLVENTS, DRAIN CLEANERS, PESTICIDES to name a few, are hazardous materials that end up where they should not be, IN OUR DRINKING WATER.
These materials interfere with the **PROPER** operation of a SEPTIC SYSTEM

- **Improper disposal** of household hazardous waste can reach groundwater or surface water.
- **Responsible Purchasing,** buying only those materials that are needed to complete the job.
- **Read the label,** providing information on use, storage, disposal and emergency management.

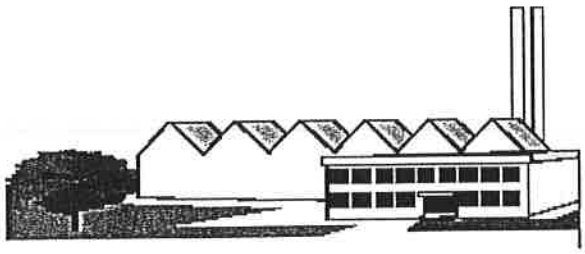




- **HOUSEHOLD HAZARDOUS WASTE** should never be poured down the drain or sewers.
- **Prepare Spill Control** kits by having absorbent to kitty litter available.
- **Chemical Disposal:** Contact the regional office down below:

Central Oregon: (Bend) 541-388-6146, Eastern Oregon: (Pendleton) 541-276-4063
Northwest: (Portland) 503-229-6385, Southwest: (Medford) 541-776-6010,
Willamette Valley (Salem) 503-378-8340

WHAT CAN BUSINESSES AND INDUSTRY DO TO HELP PROTECT DRINKING WATER?



Pollution Prevention: It is any activity that avoids, reduces and /or eliminates the creation of pollutants or waste at its source.

Waste Reduction: Develop formal plans to reduce or eliminate hazardous materials.

Best Management Practices: Standard Operating Procedures are written specifically for businesses to reduce hazardous materials usage or the risk of release.

"The way of doing business"

- **Floors Drains**; Closure of floor drains that lead to the outside, septic system, storm run-off or surface waters.
- **Dry Wells**: All dry wells should be eliminated, unless discharging clean water that meets Safe Drinking Water Act maximum contaminant levels.
- **Hazardous Materials**: Chemical handling should be performed in an enclosed or roofed area.
- **Employee Training**: Employee awareness of waste reduction and safety will benefit both the employer and facility with reduced cost from purchases of materials as well as reduce insurance rates.
- **System Assessment**: Conduct an assessment of current operations to identify ways to improve process equipment, substitution of raw materials, and pollution prevention.

Additional Information:

EPA Enviro-sense: ***http://es.epa.gov***
Small Business Environmental Assistance: ***http://www.smallbiz-enviroweb.org/***
EPA's Facility Pollution Prevention Guide:
http://www.epa.ohio.gov/opp/tanbook/fppgbgn.html
U.S. Environmental Protection Agency: **http://www.epa.gov**
Pacific Northwest Pollution Prevention (P2) Resource Center: ***http://www.pprc.org***.