

# WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



## SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:  
Jeffrey City Waters System

Assessment Completed By:  
**Lidstone and Associates, Inc.**  
Engineering, Geology & Water Resource Consultants  
4025 Automation Way, Building E  
Fort Collins, CO 80525



**June 30, 2004**

## **SOURCE WATER ASSESSMENT SUMMARY FOR Jeffrey City Waters System**

### **PWS Source Water Assessment Summary**

The Jeffrey City water system is classified as a community groundwater supply, and is located along U.S. Highway 287 midway from Lander and Rawlins. The facility was designed originally in 1969 to provide water for a population of 3,000 with 600 service connections. Currently, the water system is providing water to a population of about 50 through 10 service connections plus a school. Source water for Jeffrey City is supplied from two wells that are completed in the Arikaree Formation. Disinfection is provided through gas chlorine injection into the transmission line between the wells and a 63,000 gallon storage tank.

In general, the Jeffrey City water sources rated low for land use susceptibility. The Town should also be aware of the state highway and pipeline that lie inside the source water area of the water supply wells.

### **Delineation Methods**

The Town of Jeffrey City obtains its community drinking water from two wells that draw groundwater from a porous sandstone aquifer. Lidstone used the U.S. EPA's Wellhead Analytic Element Model (WhAEM) to delineate the source water areas for the Town's wells based on well and hydrogeologic data obtained from the sanitary survey, the Wyoming SEO, and Wyoming Water Research Institute reports. The source water area delineation map for each of Jeffrey City's sources is attached to this report.

EPA's Wellhead Analytic Element Model or WhAEM method was used for community water systems that derive their sources from alluvial or shallow bedrock aquifers. The WhAEM model uses well and limited hydrogeologic data to estimate time-of-travel capture zones in relatively simple hydrogeologic settings for either confined or unconfined aquifers. For the source water assessment, the WhAEM model was used to develop two year and five year groundwater capture zones. Due to this methodology, the delineated source water areas may be larger than the true capture zones for each well. However, use of this method typically results in source water protection areas that can be used to more reliably protect the water supply.

### **Groundwater Sources**

Jeffrey City obtains its source water from two wells that are completed in the Arikaree Formation to depths ranging from 152 to 241 feet. Recharge to these formations occurs through the direct infiltration of precipitation on outcrops, and reaches the well through porous media flow. Additional information on these two wells is included on the attached Well Information Sheet.

As shown on the enclosed source water area map, contaminant inventory zones for the two wells are generally centered around the wellheads and overlap. Zones 2 and 3 encompass most of the western part of Town and a part of U.S. Highway 287.

## **Integrity Summary**

The Jeffrey City Water System uses two wells to supply water to the system. Both the Jeffrey City Townsite #1 and the Jeffrey City Townsite #3 wells were constructed prior to 1983, when less stringent construction standards were required by the State of Wyoming. Records indicate both these wells were properly sealed to protect against surface infiltration of potential contaminants and flooding. As shown on the Integrity Summary Table, both of the wells received an integrity score of 3.

## **Water Source Sensitivity Summary**

Jeffrey City obtains water from two wells, both completed in the Arikaree Formation. As shown on the Source Sensitivity Summary Table, both wells received a sensitivity score of 6.

These wells received a score of 6 for two reasons. Jeffrey City Townsite #1 and Jeffrey City Townsite #3 received a low aquifer sensitivity score because they are completed in a confined aquifer. However, laboratory analysis of the Jeffrey City wells tested within the last five years detected a few contaminants that are listed on the EPA's primary and secondary drinking water standards. These included nitrate, total coliform, barium, sodium, gross alfa, and sulfate among others. Gross alfa was the only concentrations above the EPA's maximum contaminant levels.

## **Water System Susceptibility Rating**

Susceptibility is defined as the potential for a public water supply to draw water contaminated at concentrations that would pose a threat or concern to human health. The Jeffrey City Water System scored low for land use susceptibility. While the point source contaminant susceptibility rating is low due to the lack of contamination sources in the area, the wells were assigned a low transportation corridor rating due to the state highway and pipeline in Zone 3. Susceptibility ratings for each type of potential contaminant source are summarized on the attached susceptibility tables.

A review of your PWS's routine water analysis results revealed that one or more chemicals that are considered contaminants in drinking water were detected at some time within the last five years. Chemical detections have a large impact on your PWS's sensitivity score because it may indicate that there is a pathway for contaminants to reach the water supply. However, it is likely that these chemicals are present only in small amounts and are not a danger to your health. Some of these chemicals may also occur naturally in water.

For more information about which chemicals were detected, please contact the PWS for a copy of the most recent Consumer Confidence Report or water analysis results. Chemical detections at levels that are a concern to human health are reported on the EPA's website: [http://www.epa.gov/enviro/html/sdwis/sdwis\\_query.html](http://www.epa.gov/enviro/html/sdwis/sdwis_query.html). To see if your PWS has exceeded the federal primary or secondary drinking water standards, just click on the State of Wyoming and then type in the name of your PWS. Consumer Confidence Reports are prepared by the PWS on a yearly basis. The reports should include information about any chemicals found in the water, even those found at very low levels. Please contact Kim Parker at DEQ, 307-777-7781, or WARWS for assistance. You may also contact EPA to find out what contaminants were

detected. You may have to fill out a Freedom of Information Act request to obtain the water test results for your PWS. Please call EPA's Safe Drinking Water Hotline at 1-800-426-4791.

**POINT SUSCEPTIBILITY SUMMARY TABLE  
FOR Jeffrey City Waters System  
Point Source Susceptibility Summary**

It may appear from the results of this point source susceptibility summary table that your system has too many PSOCs influencing the final ratings. In some cases, a specific PSOC falls within a specific contaminant inventory zone shared by multiple wells or intakes. When this is the case, that PSOC will be scored for each intake. For example, an underground storage tank may appear within a contaminant inventory zone shared by four different wells. This would cause that single storage tank to be entered into the table four times, or once for each well or intake.

Point Source Type	Low	Medium	High
None Identified	N/A	N/A	N/A

- \* Illustrates the number of PSOCs in a particular rating class for all water sources
- \* N/A - Not Applicable