

**SOURCE WATER ASSESSMENT
EXECUTIVE SUMMARY
FOR
Broken Wrench LLC**

June 30, 2004

PROJECT: 424-001

ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION

1252 Commerce Drive, Laramie, WY 82070



ENGINEERING SOLUTIONS. ADVANCING BUSINESS.

Home Office | 1252 Commerce Drive | Laramie, WY 82070 | phone 307/745.7474 | fax 307/745.7729 | www.trihydro.com

SOURCE WATER ASSESSMENT SUMMARY FOR Broken Wrench LLC

PWS Source Water Assessment Summary

Broken Wrench is community groundwater system located in Natrona County. The system serves 50 people through 14 service connections year-round. The system is supplied by one well that draws water from Cody Shale. The water source scored medium with respect to the combined integrity and source sensitivity ratings. Broken Wrench, LLC scored low with respect to land use susceptibility and point source susceptibility. The system also received high score for transportation corridor susceptibility.

Delineation Methods

This water system is a community system that draws water from porous shale units. The WhAEM method was implemented to estimate the 2-year and 5-year time of travel capture zones for the groundwater flow system. The WhAEM model was calculated using well information in the SEO database and aquifer parameters used in the calculation were similar to those reported by the Water Resources Research Institute Study of groundwater in the Powder River Basin.

U.S. 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

Broken Wrench LLC draws water from Cody Shale. Recharge to the aquifer comes from precipitation and surface water runoff, and reaches the well through porous media flow. Groundwater flow within the aquifer is generally from south to north. Additional information on this well is included on the attached Well Information Sheet. As shown on the enclosed source water area delineation map, contaminant inventory zones 2 and 3 were delineated using WhAEM methods. Zones 2 and 3 represent 2-year and 5-year groundwater travel times, respectively. The capture zones extend south from the wellhead.

Integrity Summary

Broken Wrench LLC uses one shallow groundwater well that is approximately 51 feet deep. The well was constructed prior to 1983, when less stringent construction standards were required by the State of Wyoming. However, records show that the well was properly sealed to protect against surface infiltration of potential contaminants and flooding around the wellhead. Records also indicate the potential lack of an annular seal. Therefore, as shown on the Integrity Summary Table, this well, Hillcrest Development #1, received an integrity score of 5.

Water Source Sensitivity Summary

As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 10. The well received a score of 5 for aquifer sensitivity due to having been constructed shallow. The well also received a score of 5 for chemical sensitivity due to documented chemical detections in the groundwater.

Water System Susceptibility Rating

Susceptibility is defined as the potential for a public water supply to draw contaminated water at concentrations that would pose a threat or concern to human health. In general, Broken Wrench LLC scored low for land use susceptibility. Due to the lack of contamination sources present within the delineated zones, the overall point source contaminant susceptibility rating is low. The well was assigned a high transportation corridor susceptibility score because its source water zones are in proximity to two pipelines.

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. 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 Broken Wrench LLC
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