

**SOURCE WATER ASSESSMENT  
EXECUTIVE SUMMARY  
FOR  
Exxon Hartzog Draw Unit**

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**June 30, 2004**

**PROJECT: 424-001**

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**ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION**

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## **SOURCE WATER ASSESSMENT SUMMARY FOR Exxon Hartzog Draw Unit**

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

The Exxon Mobile Hartzog Draw Unit is a non-community groundwater system located in Campbell County. The system serves 33 people through three service connections. Facilities include one well that draws water from the Fort Union Formation, and the interconnecting transmission system. Water is pumped to an office building where it is pressurized through a bladder tank for distribution into the system. The water source scored low with respect to the combined integrity and aquifer sensitivity ratings. The Exxon Mobile Hartzog Draw Unit scored low with respect to land use susceptibility and point source susceptibility.

### **Delineation Methods**

This water system is a non-community system that draws water from a porous sedimentary formation. Calculated fixed radius (CFR) methods were implemented to estimate the 2-year and 5-year time of travel radii for the groundwater flow system. The CFR was calculated using well information in the sanitary survey and aquifer parameters used in the calculation were assumed for those of similar type deposits.

Calculated fixed radius (CFR) is an appropriate method to use when groundwater flow to the well, spring or tunnel can be characterized as porous. This process was implemented for small communities that derive water from deeper, confined aquifers, or for non-community water systems. A factor of safety (FS) of 1.5 was applied to all systems where portions of the data were suspect. At the ground surface, the radius can be used to delineate an area around the well to be used for wellhead protection. The radius is the distance from the well to a point where groundwater (and contaminant) can reach the well over a specified time period. Input data requirements are limited, consisting of the pumping rate, open (screened interval) of the well, porosity of the aquifer, and the selected time of travel (2 years and 5 years).

### **Groundwater Sources**

The Exxon Hartzog Draw Unit draws water from the sedimentary units within the Fort Union Formation. Recharge to this well occurs in the outcrops of the formation and generally flows to the well under artesian conditions from southwest to northeast. 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 CFR methods. Zone 2 had a calculated radius of 348 feet. Zone 3 had a calculated radius of 549 feet.

## **Integrity Summary**

Exxon Hartzog Draw Unit uses one well, approximately 921 feet deep, to supply water. The well was constructed prior to 1983 when less stringent construction standards were required by the State of Wyoming. However, records indicate that the well was properly sealed to protect against surface infiltration of potential contaminants and flooding around the wellhead. As shown on the Integrity Summary Table, the Hartzog Draw Unit Potable Water Well #1 received a score of 3 due primarily to the well completion date.

## **Water Source Sensitivity Summary**

The Exxon Hartzog Draw Unit supplies water from one well that draws water from the sedimentary units within the Fort Union Formation. As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 1. The well received a score of 1 for aquifer sensitivity due to drawing water through porous media of a deep confined aquifer.

## **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, the Exxon Hartzog Unit scores low for land use susceptibility. The overall point source contaminant susceptibility rating is low due to an oil and gas well being located within Zone 3. Susceptibility ratings for each type of potential contaminant source are summarized on the attached susceptibility tables.

**POINT SUSCEPTIBILITY SUMMARY TABLE  
FOR Exxon Hartzog Draw Unit  
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
Oil & Gas Well	1	N/A	N/A

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