

# WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



## SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:  
Deer Haven Lodge

Assessment Completed By:  
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## **SOURCE WATER ASSESSMENT SUMMARY FOR Deer Haven Lodge**

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

The Deer Haven Lodge facility is classified as a transient non-community groundwater system and is located approximately eight miles east of Ten Sleep along U.S. Highway 16. This facility serves a transient population of 50 with source water obtained from Deer Haven Spring.

The Deer Haven Lodge facility scores high for land use susceptibility because much of the land surrounding the water sources is forest. The lodge should be aware of a potential line source contaminant and a point source contaminant that are also located within the source water area.

### **Delineation Methods**

The Deer Haven Lodge is a transient non-community water system that obtains its water supply from a spring. Hydrogeologic mapping techniques were consequently used to identify the source water area.

Hydrogeologic mapping techniques use surface observations in combination with subsurface geologic and hydrogeologic data to identify aquifer boundaries and areas that contribute water to the aquifer. These techniques were used when a PWS's source was derived from a spring, fractured bedrock, or from a limestone or dolomite aquifer. Conduit flow aquifers have extremely variable flow patterns and rates, making the calculation of time of travel difficult. In some instances, only one contaminant inventory zone was identified beyond Zone 1 due to the inherent difficulty in attempting to assign a particular time of travel to a given area. Because of this issue, aquifer vulnerability mapping techniques were also used as part of the hydrogeologic mapping effort to identify and delineate vulnerable areas. These areas (faults, fractures, exposed bedrock, etc.) are anticipated to be more susceptible to the rapid infiltration of contaminants released at the ground surface.

### **Groundwater Sources**

The Lodge's spring originates from glacial deposits along Tensleep Creek near outcrops of the Bighorn Dolomite. Recharge for the spring comes from infiltrating precipitation in the area and possibly from a hydraulic connection with the Bighorn Dolomite. Groundwater flows to the spring through fracture or porous media flow conditions. Additional information on this spring is included on the enclosed Spring Information Sheet.

As shown on the attached source water area map, contaminant inventory zones for the spring were developed. Zone 2 includes outcrops of glacial deposits in the area and terminates on the northwest and southeast along perceived groundwater divides. Zone 3 primarily includes drainages to the northeast of Zone 2 that divert water southwest toward the spring. This zone terminates on the northeast along the ridgetop of the Bighorn Mountains.

## **Integrity Summary**

The Deer Haven Lodge facility obtains its source water from Deer Haven Spring. This spring was improved prior to 1983, when less stringent construction standards were required by the State of Wyoming. Records indicated that the conveyance to the water system is less than one mile and enclosed. As shown on the Integrity Summary Table, the spring received an integrity score of 10. This score primarily resulted from the fact that the spring was improved before 1983, the surface intake is not screened or sufficiently protected, and the intake is not inspected regularly.

## **Water Source Sensitivity Summary**

Deer Haven Lodge obtains its source water from Deer Haven Spring. As shown on the Source Sensitivity Summary Table, the Lodge's intake received a sensitivity score of 10.

The intake received the maximum sensitivity score for two reasons. The first reason is because it obtains water from a spring. The second reason is that laboratory analysis of water samples from the system within the last five years detected several contaminants that are listed on EPA's primary and secondary drinking water standards, nitrate and total coliform bacteria. Despite detection, these contaminants were generally detected at concentrations below 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 Deer Haven Lodge facility scores high for land use susceptibility because a majority of the land surrounding the water source is forest. The presence of wastewater discharge within Zone 2 resulted in high point source contaminant susceptibility. Because a state highway runs through Zone 2, the spring was assigned a high susceptibility for the transportation corridor contaminants. 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 Deer Haven Lodge  
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
Wastewater Discharge	N/A	N/A	1

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