

**SOURCE WATER ASSESSMENT  
EXECUTIVE SUMMARY  
FOR  
Bighorn Basin Boat Club**

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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 Bighorn Basin Boat Club**

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

The Bighorn Basin Boat Club water system is a transient non-community groundwater supply, located northwest of Cody, Wyoming. The club is open from April 15 to September 30. The system provides water through 52 service connections for a number of people ranging from eight during the week to 40 on weekends. Facilities include two wells, six 100-gallon hydro-pneumatic tanks, and the distribution system. The water sources scored high for the combined integrity and sensitivity ratings. The club scored high for land use susceptibility and low for point source susceptibility.

### **Delineation Methods**

This water system 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 from those of similar type deposits. Also, a nearby potential aquifer recharge source was delineated.

The calculated fixed radius (CFR) method is appropriately used when groundwater flow to the well 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 from which groundwater (and contaminants) can reach the well over a specified time period. Input data requirements are limited, consisting of the pumping rate, open area (screened interval) of the well, porosity of the aquifer, and the selected time of travel (2-years and 5-years).

### **Groundwater Sources**

The Bighorn Basin Boat Club draws water from the Powell Terrace. Recharge to the terrace aquifer comes from infiltrating precipitation and surface water from the surrounding drainage, and reaches the wells through porous media flow. Groundwater flow within the formation is generally from south to north. Additional information on these wells is included on the attached Well Information Sheets. As shown on the enclosed source water area delineation map, contaminant inventory zones 2 and 3 were delineated using CFR methods. Zone 2 has calculated radiuses of 495 and 947 feet. Zone 3 has calculated radiuses of 782 and 1,497 feet. Buffalo Bill Reservoir was included as an additional aquifer recharge buffer because of its proximity to the wells.

## **Integrity Summary**

The Big Horn Basin Boat Club uses two wells that are approximately 65 feet deep to supply its water. The wells were constructed between 1983 and 1993 when moderately stringent construction standards were required by the State of Wyoming. Records indicate that neither well was properly sealed to protect against surface infiltration of potential contaminants and flooding around the wellhead. Neither well has adequate protection of the vicinity immediately around the wellhead from contaminant sources and both lack surrounding flood protection. Therefore, as shown on the Integrity Summary Table, Boat Club #2 received a score of 9 and the B.C. #1 well received a score of 10.

## **Water Source Sensitivity Summary**

As shown on the Source Sensitivity Summary Table, the wells each received a sensitivity score of 10. The wells received the maximum sensitivity score for two reasons. First, the wells draw water through porous media flow from an unconfined alluvial aquifer that is known to be vulnerable to contamination. The second reason is that there are 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, the Bighorn Basin Boat Club scored high for land use susceptibility because much of the land surrounding the well is irrigated cropland. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources present within the delineated zones.

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 Bighorn Basin Boat Club  
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