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Black Sandy State Park
Source Water Delineation and Assessment Report

Public Water Supply: **Black Sandy State Park (PWSID #MT0003427)**
Report Date: **April 19, 2001**
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Introduction

This delineation and assessment report is intended to meet the technical requirements of the Montana Source Water Protection Program (DEQ, 1999) and the federal Safe Drinking Water Act (SDWA) Amendments of 1996 (P.L. 104-182). Jim Stimson, Hydrogeologist with the Montana Department of Environmental Quality (DEQ), prepared the final report with assistance from intern Briana Roach. Information on land use and potential contaminant sources comes from a variety of sources including a preliminary land cover data layer produced by the United States Geological Survey (USGS), DEQ Public water supply files (including sanitary surveys), and other public sources of information. A web-based GIS application was also used to query and generate maps to support writing this report. This application is called the Source Water Protection Program Query System and is available at the following web address or URL: http://nris.mt.gov/wis/swap/swapquery.asp. The application was developed by the DEQ Source Water Protection Program (SWPP) and provides access to data from the U.S. EPA, DEQ, Montana Bureau of mines and Geology (MBMG) and other sources.

Purpose

The purpose of this delineation and assessment report is to assess threats to the Black Sandy State Park water supply using information obtained from Fish, Wildlife and Parks (FWP) personnel managing the site, the most recent sanitary survey, which was completed in October 2000 by The Cadmus Group, Inc. (available from DEQ upon request), and from published reports. Delineation is a process whereby areas that contribute water to aquifers or surface waters used for drinking water, called source water protection areas, are identified on a map. Assessment involves identifying locations or regions in source water protection areas where contaminants may be generated, stored, or transported and then determining the potential for contamination of drinking water by these sources.

Public Water Supply Information

Black Sandy State Park is located on the shore of Hauser Lake near Helena, Montana (Figure 1) and consists of a campground and fishing access site. The FWP Department operates this facility. The Park is served by a well (PWS Source ID 002) located above the adjacent road to Hauser Dam. A second well located at the southern end of the campground but is no longer in use due to surface water influence from the Missouri River.

DEQ public water supply records indicate the system serves 100 non-residents and two residents per day through 36 active service connections. Because the water supply does not regularly serve the same 25 persons for at least six months a year, it is classified as a transient, non-community public water supply. During the Park's months of operation, water demand is approximately 2,550 gallons per day assuming 25 gallons per day per visitor and resident (EPA, 1991). Sewage for the facility is collected in a large-capacity septic system located approximately 300 feet north of the well.

According to a well log for the public water supply well (attached), water for the facility is drawn from a 300 foot deep well drilled in August 1994. The well is constructed of 6-inch diameter well casing that is perforated between the depths of 225 and 235 and 280 and 290 feet below land surface. Well yield is 90 gallons per minute (gpm). The well has a static water level of 59 feet and a pumping water level of 64 feet. The well is completed in fractured bedrock. Based on lithologic logs from the public water supply well and four nearby wells, the aquifer appears to be unconfined. As a result, the aquifer is considered to be a shallow fractured bedrock aquifer.

Water is drawn from the well by a submersible pump and is then delivered to two hydropneumatic pressure tanks located in the middle section of the service building. No treatment is applied to the system. The sanitary survey indicates that at the time of the survey, the old well needed to be properly abandoned and adjustments needed to be made in order to allow the pump to meet the recommended one minute run time. Based on information available in the DEQ PWS files, it is not clear whether or not these issues have yet been addressed.

FWP is required to monitor for nitrate and coliform bacteria at Black Sandy State Park. Levels of both contaminants detected in the public water supply well have been below the maximum allowable concentrations throughout the past five years. Nitrate and microbiological monitoring results are kept on file at DEQ.

Delineation

Two source water protection zones are delineated for the Park. They include a 100-foot radius control zone and a one-mile radius inventory region (Figure 1). The control zone is the most critical area from which direct introduction of contaminants into the well or immediate area can occur. The inventory region encompasses the area from which water or contaminants can flow into the Black Sandy well over a period of months to years.

Inventory

The Montana Source Water Protection Program (Montana DEQ, 1999) requires that land uses and all potential sources of nitrate and microbial pathogens within the control zone and inventory region be identified.

Analysis of the area surrounding the Black Sandy well reveals that inventory region consists primarily of grassland and shrub land (Figure 1). These land cover types

account for approximately 67% of the region and are not considered to create significant contamination potential. About 6% of the region consists of forested areas which are also not considered a threat to the water supply. However, the on-site large capacity septic system that serves the Park is considered a significant potential source of contamination. Also, the well is completed in a fractured bedrock aquifer that is likely in hydraulic connection with Hauser Lake. Therefore, any contaminants introduced to the section of the reservoir that falls within the inventory region could enter the aquifer and could potentially be drawn into the public water supply well.

Susceptibility Assessment

Susceptibility to potential contaminant sources is assessed both for the aquifer and the public water supply well. According to the Montana Source Water Protection Program criteria, an aquifer consisting of shallow fractured bedrock that is unconfined is rated as highly sensitive to potential sources of contamination (Montana DEQ, 2000, Table 2).

The on-site large capacity septic system represents a high level hazard for this water supply. With no other significant potential contamination sources or barriers identified, the overall susceptibility of Black Sandy State Park is very high for pathogens and low for nitrate.

References:

Montana DEQ, 1999. Montana Source Water Protection Program, Approved by EPA in November 1999.

Montana DEQ, 2000. Montana Source Water Protection Program, Template for Non-Community Transient Public Water Supplies.

U.S. EPA, Office of Water, 1991. Manual of Small Public Water Supply Systems, EPA 570/9-91-003, 211 p.

U.S. Geological Survey, 2000. National Landcover Dataset, Montana. 30-meter electronic digital landcover dataset interpreted from satellite imagery.