Final - February 19, 2002

Placid Lake State Park
Source Water Delineation and Assessment Report

Public Water Supply: **Placid Lake State Park (PWSID #MT0042526)**
Report Date: **April 10, 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 Placid Lake 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 August 1998 by the Missoula City-County Health Department (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

Placid Lake State Park is located southwest of Seeley Lake, Montana four miles from Highway 83 on Placid Lake Road (Figure 1). The site consists of a picnic area and a campground with shower facilities. The facility is operated by the FWP Department and is served by a well (PWS Source ID 002) located in the campground portion of the Park behind the campground host area.

DEQ public water supply records indicate the water system serves 120 non-residents per day through five 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 3,000 gallons per day assuming 25 gallons per day per visitor (EPA, 1991). Sewage for the facility is collected in a large capacity septic system located southeast of the well.

According to the well log for the public water supply well (attached), water for the facility is drawn from a 350 foot deep well drilled in August 1979. The well is constructed of 6-inch diameter well casing that is perforated between the depths of 247 and 268 feet below land surface and between 329 and 350 feet. Well yield is eight gallons per minute (gpm). The well has a static water level of 13½ feet and a pumping water level of 300 feet. The well is completed in shallow fractured bedrock of the Belt Supergroup.

Water is drawn from the well by a submersible pump and is then delivered to two captive air pressure tanks located in the comfort station. Two cisterns located northwest of the comfort station provide additional storage in order to compensate for low well yield. No treatment is applied to the system. The sanitary survey indicates that at the time of the inspection, the water system appeared to be in excellent condition. Based on information available in the DEQ PWS files, it is not clear whether or not the system currently needs maintenance.

FWP is required to monitor for nitrate and coliform bacteria at Placid Lake 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

Three source water protection zones are delineated for the Park. They include a 100-foot radius control zone, a one-mile radius inventory region and a surface water buffer zone (Figure 1B). 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 Placid Lake State Park well over a period of months to years. The surface water buffer zone is delineated because the public water supply well is relatively shallow and completed in a fractured bedrock aquifer with little overlying sedimentation. If fractures in the bedrock extend from the aquifer into the vicinity of potential contaminant sources, dissolved contaminants, nitrate for example, and pathogens, like viruses and cryptosporidium, could enter the aquifer. The contaminated ground water could then be drawn into the Placid Lake well. The surface water buffer zone extends around the perimeter of the lake and one half mile from the lakeshore (Montana DEQ, 2000, Table 1).

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, inventory region and surface water buffer zone be identified.

Analysis of the area surrounding the Placid Lake well reveals that the buffered inventory region is comprised of forested areas, grassland, and shrub land (Figure 1C). These types of land cover account for 61%, 3%, and 6% of the region, respectively, and none is considered to create significant potential for contamination. However, the facility's septic system is considered to create significant contamination potential since it is a large capacity system that serves more than 20 people per day.

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 is consisting of shallow fractured bedrock 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 (Montana DEQ, 2000, Table 6). With no other contaminant sources or barriers identified, the overall susceptibility of Placid Lake 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.