

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

Great Spring Waters of America, Inc. (GSWA), a subsidiary of The Perrier Group of America, Inc., is a leading producer of bottled spring water throughout the United States and Canada. GSWA has identified Sanctuary Springs in Morton Township, Mecosta County, Michigan as a potential source for their Midwest brand, Ice Mountain™. Sanctuary Springs was identified during a search that included more than 100 potential spring sites in west-central Michigan. GSWA is proposing to develop Sanctuary Springs as a source of spring water to supply a bottling plant that will be built at a separate location up to 15 miles away.

The Sanctuary Springs site is located about two miles south of Rodney, Michigan, and about 12 miles southeast of Big Rapids. Figure ES-1 shows the location of the Sanctuary Springs site. The site is a privately owned captive cervid operation (*i.e.*, deer hunting ranch) of approximately 850 acres. At the site, groundwater emerges as springs immediately adjacent to the Osprey Lake Impoundment, a man-made water body created in 1953. Adjoining properties to the north, east, and west are generally large, undeveloped tracts used for seasonal hunting. A few homes, a rod and gun club, and a farm occupy adjoining properties to the south. The Tri-Lakes (Lake Mecosta, Round Lake, and Blue Lake) are interconnected lakes located about one mile to the south. Their discharge forms part of the headwaters of the Little Muskegon River.

GSWA is currently requesting approval from the Michigan Department of Environmental Quality (MDEQ) to withdraw spring water from two wells at Sanctuary Springs. Approval is being requested for a combined withdrawal capacity of 200 gallons per minute (gpm) from the two wells (75 gpm from PW-101 and 125 gpm from PW-102). GSWA intends to install two additional wells and request approval for a combined withdrawal capacity of 400 gpm from the four wells prior to commencing production at the bottling plant. Although it is anticipated that up to 400 gpm will be needed at times to meet peak production demands, GSWA's annual average withdrawal rate is projected to be approximately 150 gpm for initial operations. Even so, a sustained withdrawal rate of 400 gpm was used in the analyses included in this report to evaluate the potential impacts if the four wells were pumped continuously at their maximum capacity. This study demonstrates that Sanctuary Springs will readily support sustained withdrawals of at least 400 gpm.

INVESTIGATION SUMMARY

GSWA commissioned Malcolm Pirnie, Inc. (Malcolm Pirnie), an environmental consulting firm with a strong hydrogeology practice, to evaluate the potential for developing Sanctuary Springs as a spring water source and to identify any potential impacts of the development. Extensive field investigations were conducted from June 2000 through April 2001 as part of this evaluation. The investigations consisted of the following activities:

- Site reconnaissance to identify important surface water features, such as wetlands, seeps, springs, ephemeral streams, and perennial streams.
- An extensive drilling program to collect soil samples to identify subsurface geological conditions.
- Installation of an extensive monitoring network to assess groundwater conditions, including: four large-diameter test wells to pump the aquifer so that its hydraulic properties could be identified; 29 monitoring wells to measure groundwater levels; ten drive points to measure groundwater levels in wetlands on the spring site and in places near the springs which occur along the north shore of the Osprey Lake Impoundment; one staff gage to measure Osprey Lake Impoundment water levels; and ten stations to measure flow in six surface water bodies, including six drive point/staff gage pairs to compare groundwater to stream water levels.
- Four single-well step-rate pumping tests, three 72-hour single-well constant-rate pumping tests, and two long-term multi-well constant-rate aquifer tests to determine aquifer characteristics and to assess the effects of pumping on the groundwater-surface water system.
- Collection and analysis of groundwater and spring water samples to evaluate water quality.
- An inventory of residential and public water supply wells in the vicinity of the spring site, and review of local and state databases for potential sources of contamination (*e.g.*, landfills, oil and gas wells, leaking underground storage tanks, hazardous waste sites, and hazardous material spills).
- Collection of environmental monitoring data (*e.g.*, precipitation, stream flow, surface-water levels, surface water quality, and groundwater levels) from June 2000 through April 2001 to measure surface water and groundwater interactions. The environmental monitoring is an ongoing activity.
- Computer modeling to simulate groundwater flow and predict long-term effects of the spring development.

FINDINGS

The Sanctuary Springs site is ideally suited for GSWA's proposed spring water project.

- The Sanctuary Springs aquifer is highly productive. Testing shows that the aquifer has a high transmissivity and will sustain high withdrawal rates.
- Laboratory analyses show that the water quality is excellent. The water naturally meets all state and federal drinking water standards.
- There are no potential sources of contamination in the proposed spring development area. The spring site and recharge area are large, undeveloped properties which have historically been used in a manner consistent with maintaining high groundwater quality.
- Recharge to the aquifer is exceptional. Low surface water runoff rates and highly permeable soils provide optimal conditions for rainwater and snowmelt to replenish the aquifer.
- The spring site is located within the Upper Headwaters Sub-basin of the Little Muskegon River. This sub-basin has an abundance of shallow groundwater, a resource that is not extensively developed in this area.
- The Osprey Lake Impoundment, a man-made water body created on the Sanctuary Springs site in 1953, provides a hydraulic buffer between the proposed spring site and water resources in the Tri-Lakes area.

Consistent with the above findings, the Sanctuary Springs site will meet all permitting requirements for development as a source of spring water. It meets all state and federal standards for public water supplies and U.S. FDA standards as a source of spring water for bottled water products.

There will be no adverse impacts as a result of GSWA's spring water withdrawal.

- The cone of depression (area of water level drawdown due to pumping) will remain within property boundaries, even at sustained long-term pumping capacity. This assures that surrounding groundwater users will not be impacted by the spring site development under normal or drought conditions.
- There will be no impact to the Tri-Lakes, the Canadian Lakes, or the Little Muskegon River under normal or drought conditions. Water levels in these bodies will not be affected by pumping at Sanctuary Springs.
- There will be no impact to local cold water streams, including Cole Creek, Gilbert Creek, or the West Tributary. GSWA's operations will not cause any change in flow, water level, or water quality in these streams under normal or drought conditions.
- There will be minimal effect to the man-made Osprey Lake Impoundment and its outlet channel. There may be a slight drop in the Osprey Lake Impoundment water level, but this change will be much less than the natural seasonal fluctuation. While there may be some reduction in flow within the outlet channel, the water level in the channel should be unchanged due to its hydraulic connection to Round Lake, which is in turn controlled by the Tri-Lakes Dam.

- There will be no impact to nearby wetlands under normal or drought conditions. The wetlands are perched above the spring aquifer, and are hydraulically separated by an unsaturated zone.
- The 400 gpm withdrawal represents a very small percentage of the total amount of water flowing through the sub-basin. This water withdrawal will have no impact on any of the downstream water bodies.
- The proposed spring development will be compatible with the present character of the property (open, natural, and undeveloped land).

Malcolm Pirnie's experience is that GSWA is committed to long-term environmental and operational monitoring. Most of the facilities required for monitoring are already in place. This long-term monitoring will allow verification of the anticipated conditions and provide early notification of any change in environmental conditions.

CLOSING

The project will also provide benefits. The work undertaken to date, along with planned future monitoring, will provide an extensive database of environmental conditions within the Upper Headwaters Sub-basin of the Little Muskegon River. These types of studies, which include data on precipitation, geology, soils, groundwater, surface water, water quality, computer modeling, water use, wetlands, well inventories, watershed management, and field testing will be valuable in expanding the understanding of regional water resources in this area of Michigan.