



**DRINKING WATER SOURCE
PROTECTION PLAN
for the
CITY OF RAVENNA**

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Revised 2025 by Amy Wilson WS IV

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Executive Summary

The City of Ravenna operates a water treatment plant that draws raw water from Lake Hodgson and Sandy Lake. During summer months, this is supplemented by water from Congress Lake via Congress Lake Outlet (Figure 1). Water quality in Lake Hodgson and Sandy Lake is generally good and is well protected from most sources of contamination because it is surrounded by undeveloped and fully fenced parkland. Source water quality is impacted primarily by growth of algae during the warm months and by turnover of the lakes, which is a natural phenomenon that usually occurs in October. The main concerns related to human activities are septic systems serving the homes that surround the lakes; all septic systems need to be maintained and even well maintained systems need to be replaced after 30-50 years.

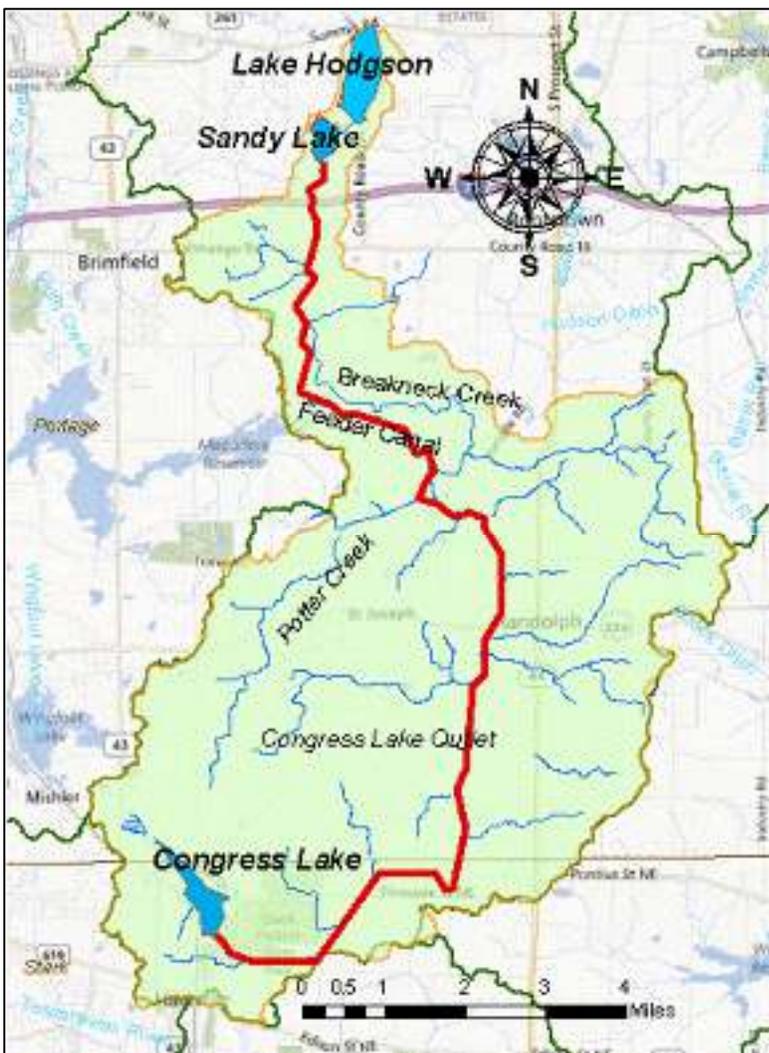


Figure 1. Watershed (green-shaded) for the City of Ravenna's sources of drinking water: Lake Hodgson, Sandy Lake, Congress Lake and drainage to Feeder Canal (shown in red).

Source water arriving at the lakes via Congress Lake Outlet is more susceptible to contamination because the water travels through 18 miles of largely agricultural land, crossing under numerous bridges and crossed by several pipelines. Most of the strategies described in this Source Water Protection Plan address the kinds of potential contaminant sources within the larger watershed. They include activities described in the Middle Cuyahoga Watershed Action Plan for the entire watershed, such as installing green infrastructure (rain gardens, green roofs, etc.) to regulate storm water, agricultural and golf course best management practices, roadside swale improvements, restoring stream channels and riparian areas, correcting failing septic systems, and preservation of wetland/ riparian corridors.

These activities are summarized in the Implementation Plan provided in the following page (for quick reference). They are discussed in greater detail on pages 11 to 16.

Implementation Plan

Activity	Responsible Party		Frequency	Details
	Organization	Title		
Restrict gasoline powered boats on Lake Hodgson	City of Ravenna Water Plant	-Maintenance Staff -Lake Cabin Workers	Summer months when the lake is open to public. Access to lake is closed off by gate and fence in offseason. (ongoing/seasonal)	Lake access is charged seasonally or daily and visitor/boat information taken by slip.
Septic System Investigations/ Remediation	Portage County Health Department	-Assigned Staff from Portage Co. Combined General Health District. - Health Department Coordinator	Annual investigations (ongoing)	Reports by concerned callers, known areas of concern, high risk businesses, visual observations of staff.
Investigate Failing Septic System Remediation Funding Options	City of Ravenna	-City Engineer -City Assistant Engineer	Ongoing effort to assigned sites	-Grant funding from state and county.
Maintain Contact w/ Portage EMA	City of Ravenna	-Service Director -City Engineer -Assistant Engineer -Water Superintendent -Wastewater Superintendent -Police -Fire Department	Ongoing effort, as needed.	Multiple departments within the city are in contact with the EMA due to meetings, training, and requested updates to reports and plans.
Guide Development within Watershed	Portage County Storm Water Task Force & Portage Regional Planning Commission	-Portage County Engineer - Storm Water Coordinator - Soil and Water Coordinator - City Assistant Engineer/Stormwater Coordinator	Stormwater group established in 2003, ongoing effort with quarterly meetings.	Responsible commercial development and use of watershed property for public use and enterprise.
Reduce Non-Point Source Pollution within Watershed	City of Ravenna NEFCO ERTAC Portage Soil and Water Cons. Dist.	-City Engineer -Assistant City Engineer (Ravenna attending) - Storm Water Coordinator - Soil and Water Coordinator	-Assigned inspections (ongoing). -Once a month meetings, ongoing. -Assigned site inspections (ongoing). Educational presentations (multiple times during the year. Schedule online)	Construction site inspection. Discussing projects and public outreach. Educating Public to best land management practices through workshops, articles, presentations, and visiting construction sites,

Activity	Responsible Party		Frequency	Details
	Organization	Title		
Reduce Non-Point Source Pollution within Watershed <i>continued...</i>	Portage County Health Department	- Health Department Coordinator	Coordinate with other agencies, assigned site inspections, and financial awards (ongoing).	implementing the best natural filter practices. Help property owners with funding to replace failing septic systems, Support best practices for land management, educate public on farming and run off hazards.
Promote and Utilize Ohio Utilities Protection Service (OUPS)/ Ohio811 by calling 811.	City of Ravenna	-City Engineer -Assistant City Engineer -Maintenance Supervisors - Utility Department Superintendents -Ohio 811 Administration and assigned Staff	Ongoing effort; performed before any digging project.	Manager or assigned staff call to 811 with location. Ohio 811 contacts Utility/phone/ electric co. Private contractors, USIC, or others, are sent to mark hazards by color to prevent accidental excavation.
Kent Cuyahoga Cleanup	City of Kent City of Ravenna	Parks District Water Plant Local Volunteers	Every August, yearly, ongoing	The water plant provides the long boats that will be used for river cleanup in Kent, as a goodwill effort in keeping the waterways clean with the City of Kent Parks department.

EDUCATION AND OUTREACH

Activity	Responsible Party		Frequency	Target Audience
	Department	Title		
Annual Consumer Confidence Report	City of Ravenna Water Plant	Water Superintendent	Completed before July 1 of every year. Ongoing.	The city water consumers and residents.
Conduct Plant Tours	City of Ravenna -Water Plant -Water Reclamation Plant	-Plant Superintendents -Plant Operators -Plant Staff	Done annually in the Spring for local schools, ongoing effort. By appointment with public and private residents. -Newly elected officials and hired staff within the city, as needed.	- Ravenna Students from grade school to college. -Public and Private Schools in the general area of Northeast Ohio. -Residents. -Ravenna Council and Public Officials such as Police and Fire Department staff.
Maintain Multi Community partnership organized by Portage SWCD to Provide Stormwater and Watershed Education in the surrounding area.	City of Ravenna, Kent, Shalerville, Brimfield, Suffield, Streetsboro, Aurora, Garrettsville, Hiram Portage Soil and Water Conservation District	-Ravenna City Engineer and City Assistant Engineer -Portage County Engineering Staff - Storm Water Coordinator - Soil and Water Coordinator	-SWCD meets monthly with local representatives from Portage County cities, to discuss district matters and conservation needs. Ongoing.	SWCD hosts various educational workshops and presentations to the public throughout the year for all ages.
Provide Educational Signage at Lake Hodgson Recreation Center	City of Ravenna Engineering Dept.		Completed in 2015.	
Provide Emergency Contact Signage along Sandy Lake Rd	City of Ravenna Engineering Dept.		Completed 2015.	
Working with Mount Union College of Engineering to help Seniors with a senior capstone plant design project aimed at improving water quality.	City of Ravenna Water Plant Mount Union Engineering staff and Engineering Seniors	-Plant Superintendents -Mount Union Department of Engineering	Fall of 2024 through spring of 2025 at the Water Plant. Fall of 2025 and continuing through the spring of 2026 at Water Reclamation Plant	Taking a water plant design project to the 30% submittal phase
Stormwater Training for City of Ravenna Staff	City of Ravenna	-Assistant City Engineer (Instructor) -Mike Reynolds Safety Administrator (organizer) -Staff from Utilities departments (Street, Water,	Annual-Fall; Last training October 16th 2025	In the class staff learn how to prevent, identify and eliminate possible illicit discharges to keep Ravenna's storm system and area waterways healthy.

Contingency Planning				
Activity	Responsible Party		Frequency	Details
	Department	Title		
Evaluate Plant Contingency Plant	Ravenna Water Plant	Superintendent	Annually in July.	-Update procedures, phone numbers, and other details as needed. -Send updates to key officials in City and Portage Co. EMA
Fencing Project	City of Ravenna	-Water Plant Superintendent -Water Plant Maintenance -local contractors for tree removal and fencing installation and repair.	Adding \$25,000 of fencing annually. This is an ongoing project, expected to be completed in Summer 2027.	Tree removal and fence repair around Lake Hodgson also included. Adding fencing along Lake Hodgson and private property to keep trespassers off lake.
Portage County Hazmat	Team made of surrounding area first responders and firemen, including the Ravenna Fire Department.	The entire Ravenna Fire Department and its Chief.	For training scenarios and in actual emergencies.	Hazmat spill respond as a team in its entirety. The team gets activated through EMA.
Maintain Spill Kits near Lake Hodgson	City of Ravenna	Small spills: -Cabin Staff -Maintenance -Operators on duty -Water Plant Superintendent -Safety Director Large Spills-Portage County EMA	Expiration dates of kits are recorded and maintained online and replaced as needed.	Plant has booms for small to medium spills and small portable spill kits located inside the raw water building at the edge of Lake Hodgson. -Portage County Hazmat resources for large spills

Source Water Monitoring				
Activity	Responsible Party		Frequency	Details
	Department	Title		
Daily raw water monitoring	Ravenna Water Plant	Chief Operator/ Chemist Operator on Shift	Once daily -Minimum 1X weekly	-pH, temp, alkalinity, hardness, turbidity -also test iron and manganese
Watershed Sampling	Ravenna Water Plant	-Superintendent -Plant Chief Operator/ Chemist -Operator/ Watershed Analyst	Commenced in July 2025. Twice monthly, First week and third week.	Samples are taken upstream of Lake Hodgson intake on canal on Forge Road, Hodgson Inlet, APCO lodge dock to examine Temp, pH, DO, PO ₄ TSS, NH ₃
Sonde Monitoring of Lake Hodgson	Ravenna Water Plant	-Superintendent -Plant Chief Operator/ Chemist -Operator/ Watershed Analyst	Real time Data	Data is displayed on main SCADA screen at the plant.

Source Water Protection Plan for the City of Ravenna

Purpose

This document summarizes drinking water source protection strategies that are occurring and will be pursued in the future to minimize the threats of contamination or water shortage to the City of Ravenna's source of drinking water—Lake Hodgson. Although the City of Ravenna treats the water to meet federal and state drinking water standards, conventional treatment does not remove all contaminants, and beyond-conventional treatment is often very expensive. By completing this plan, the City of Ravenna acknowledges that implementing measures to prevent spills and releases into Lake Hodgson can be a relatively economical way to help ensure the safety of the City's drinking water, while also improving water quality for other uses.

Why should a community have a source water protection plan? Water is a vital part of all facets of our communities. It is essential for agriculture, sanitation, industry and for drinking. In addition to being a necessity of life, clean, affordable water is an important economic driver. Some manufacturing plants use significant amounts of water and may decide plant locations based on the availability of high-quality water. Clean water, provided at a reasonable cost, can attract new businesses and residents which help fuel economic growth and prosperity.

Governments invest a significant amount of money and time in their water treatment and distribution systems; *keeping the water source clean keeps costs as low as possible*. When contamination occurs, it can have a huge financial impact on communities and financial reserves can be wiped out. Contamination disrupts lives and businesses, creating a negative economic effect for the local community. Most importantly, when drinking water is contaminated, the health of our families and fellow citizens is put at risk. After a significant contamination event public confidence in water quality may be irreparable.

It only takes one major event to drastically change the quality of your water source; planning ahead is crucial. Protection planning can help prevent an event entirely, minimize a potential threat, or simply prepare the community for when something does happen to the water supply. A source water protection plan can also be used when evaluating potential development opportunities that may affect drinking water supplies in the future.

- ✓ It helps the city provide the safest and highest quality drinking water to its customers at the lowest possible cost.
- ✓ It establishes activities to minimize the threats to the source of drinking water.
- ✓ It helps to plan for expansion, development, zoning, and emergency response issues.
- ✓ It can provide more opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the water system.

Background

Source Water Protection

Source water assessment and protection (SWAP) is a non-regulatory state program administered by the Ohio Environmental Protection Agency. The program started as the Wellhead Protection Program, which was part of the 1986 amendments to the federal Safe Drinking Water Act. The wellhead protection program provided guidance and technical assistance to public water systems, who were encouraged to complete assessments and protection plans using their own resources. Ohio EPA staff reviewed the assessments and formally endorsed them, when complete. In 1996 the program was extended to include surface water systems and was renamed "Source Water Protection." It was the intent of Congress that public water systems use the information in their source water assessment to develop a drinking water source protection plan.

The background information presented here includes information from the City of Ravenna source water assessment report completed by Ohio EPA in 2002, but expands on it considerably, using data collected by the City of Ravenna public water system staff and the city engineering department.

This plan was drafted by Patrick Jeffers, PE, the City of Ravenna Assistant City Engineer, with assistance from Ohio EPA and in consultation with many state and local officials. He has since left the city of Ravenna and now works with the County Engineering department.

Meetings were held with Ohio EPA staff and other city and county officials on February 6th, February 28th, and April 4th, 2013, to discuss the development of this plan. A source water protection team was formed to assist with implementation of strategies, especially the outreach efforts.

The initial protection team in 2013:

Bob Finney, City Engineer
Patrick Jeffers, Assistant City Engineer
Tim Stephens, Water Treatment Plant Superintendent
Bill Bregant, Wastewater Treatment Plant Superintendent
Cindy Mullins, Wastewater Treatment Plant Chief Operator/Chemist
Todd Peetz, Portage County Regional Planning Commission
Eric Long, Portage Soil and Water Conservation District
Maia Peck, Middle Cuyahoga River Watershed Coordinator, Northeast Ohio Four County Regional Planning and Development Organization (NEFCO)

The current protection team in 2025 continuing the document described efforts:

Bob Finney, City Engineer
Dominic DiSalvo, Assistant City Engineer
Amy Wilson, Water Treatment Plant Superintendent
Bill Bregant, Wastewater Treatment Plant Superintendent

Cindy Mullins, Wastewater Treatment Plant Chief Operator/Chemist
Daniel Mounts, Water Treatment Plant Chief Operator/Chemist
Kevin Bevilacqua, Water Plant and Canal Maintenance Supervisor
Carter Bregant, Plant Operator/ Watershed Analyst
Todd Peetz, Portage County Regional Planning Commission
Eric Long, Portage Soil and Water Conservation District

Public Water System Description

The City of Ravenna in Portage County is a community of 11,235 (2023 census data) and has 5,540 water service connections. The primary water source for the City of Ravenna is Lake Hodgson. Lake Hodgson receives flow from Sandy Lake via a gate valve that is out of service (Figure 2).



This water can be supplemented by water from Congress Lake, which is located about 27 miles south of Sandy Lake via the Feeder Canal, a former stream that was channelized during the 1800s (see map on page 1). Seven miles from the canal upstream of Lake Hodgson, the city maintains. Diversions from the Feeder Canal are performed typically for a limited time during the summer months, to maintain the water level in Lake Hodgson; otherwise, the Feeder Canal flows to Breakneck Creek, which joins the Middle Cuyahoga River northwest of Ravenna.

The water treatment plant is a Class III plant with an EPA rated design capacity of 6.0 MGD but is limited to 4.7 million gallons per day (MGD) due to the size of the plant's clarifiers and clearwells. Currently, the plant is treating an average of 1.4 MGD. The water intake was constructed in the early 1900's to serve an industrial mill and was modified in the middle of the last century to its present condition. The water intake is located approximately 360 feet offshore and the lake at the point of intake is around 35 feet deep. One of three horizontal centrifugal pumps is used at a time to pump raw water to the water treatment plant, with a capacity of 3,000 gpm. The lake has a capacity of approximately 1.1 billion gallons.

Two aeration devices are in use at the reservoir to prevent the water from becoming anoxic (low in oxygen). One of the aerators reaches the metalimnion and the other is in the hypolimnion level around 40 ft below the surface of the water. These aerators diffuse oxygen into the lake water to reduce stratification and to help oxidize dissolved iron and manganese naturally occurring in the lake sediments.

Source water is treated by the chemical addition of potassium permanganate (KMnO_4) at the intake line and chlorine dioxide (ClO_2) as it comes into the raw water pump building. KMnO_4 is used for disinfection by-product control, oxidation and taste and odors from compounds Methyl-Isoborneol (MIB) and Geosmin. ClO_2 aids in oxidation of organic matter without the issues of creating disinfection by products that some other oxidants like sodium hypochlorite would create, as well as helping oxidize taste and odor compounds from the lake water.

The water treatment plant adds ferric chloride as a coagulant, and powdered activated carbon (PAC) for taste and odor control once it reaches the rapid mix box. Hydrate Lime is added for pH adjustment and better settling in the clarifiers. As the water moves into the filter channel it is given an intermediate disinfection by the addition of sodium hypochlorite. As needed the chlorine dioxide feed can be diverted to feed the channel as well to aid in oxidation, taste issues, and odor control. A final pH adjustment takes place in the filter channel as well with the addition of a 30% liquid lime slurry.

After filtration sodium hypochlorite is added to the filter effluent as it goes into the clearwell for final disinfection. Fluoride is added at the entrance to the clearwell as well to prepare the water for distribution. Two aerators in the clearwell add oxygen to reduce the formation of trihalomethanes (THMs) in the clearwell water to improve the water quality to distribution.

Description of Source Water Area

The watershed for Lake Hodgson, which is contiguous with the protection area, is approximately 29,600 acres in size with a drainage area of 15.15 square miles. Lake Hodgson is a kettle lake, created by continental glaciers during the Ice Age, with a surface area of approximately 190 acres. The lake empties into Breakneck Creek prior to flowing into the Cuyahoga River (Figure 4). The protection area contains over 55 miles of perennial streams. The average fall of Breakneck Creek and the Feeder Canal from headwaters to Lake Hodgson is 4 feet per mile.

Annual average precipitation in the protection area is approximately 38 inches, of which 15 inches become surface runoff; the remainder infiltrates the soil or evaporates. In general, soils in the protection area are moderately drained.

Source Water Quality

The primary water quality impacts in Lake Hodgson at the City of Ravenna intake are runoff from agricultural fields, failing home septic systems, oil and gas wells, construction sites, roadways and storm water runoff from urban areas.

The recent Middle Cuyahoga River Watershed Plan (2012) summarizes existing conditions in Breakneck and Potter Creeks, which are connected to the Feeder Canal (see Figure 1). Concerns in the Breakneck Creek sub watershed include addressing the impacts of the urbanized landscape, including the extensively altered Wahoo Ditch (upstream of Lake Hodgson). The watershed plan also discussed: addressing nutrient enrichment and resulting algal blooms in Lake Hodgson; addressing nutrient enrichment in Breakneck Creek; reducing agricultural sources of non-point source pollution; addressing failing septic systems; minimizing impacts from development; and improving hydrology, stream morphology and habitat along the channelized streams. Concerns in the Potter Creek sub watershed include reducing non-point source pollution from agricultural land, addressing failing HSTS, protecting large wetland complexes, and improving hydrology and riparian conditions along channelized streams.

Treated Water Quality

The Ravenna public water system has historically been successful in treating water to meet state and federal drinking water quality standards. Table 1 shows the water quality results for all constituents that are required to be monitored and that have been detected in the treated water at least once since 2014.

Table 1. Water Quality Monitoring Summary of Treated Water
City of Ravenna Public Water System
Ohio EPA Public Water System Compliance Monitoring Database (January 2014 – December 2024)

NOTES: Primary Maximum Contaminant Limits (MCLs) are health-based standards. Some constituents only have Secondary MCLs, which refer to taste, odor or appearance (staining of fixtures or clothing), not related to health. Action Levels apply to lead, copper, and some radioactive contaminants, which typically originate in individual homes and must be tested in the homes. Non-detection (ND) is a result below the detection limit of the particular test.

Contaminant (units)	Levels Found	Primary MCL	MCLG	Action Level	MCL Violation	Typical Sources Related to Human Activities ^b
Arsenic (µg/l)	ND-1.07	10	0	*	NO	Erosion of natural deposits; runoff from orchard; runoff from glass and electronics wastes
Barium (mg/l)	ND – 0.029	2	2	*	NO	Runoff from mining and metal refineries wastes
Copper (mg/l)	0.12 – 0.270	1.3	1.3	1.3	NO	Corrosion of household plumbing systems.
Chlorite (mg/l)	0.62-0.76	1.0	0.80	*	NO	Byproduct of disinfection
Fluoride (mg/l)	0.89 – 1.04	4	4	*	NO	Additive promoting strong teeth. Discharge from fertilizer and aluminum factories
Lead (µg/l)	2.89-5.40	15	0	15	NO	Corrosion of household plumbing systems
Nitrate (mg/l)	0.11 – 1.10	10	10	*	NO	Runoff from fertilizer use, leaching from septic systems, sewage
Radioactive Constituents						
Gross Alpha (pCi/L) (2016 and 2022)	ND-5.5	15	0	50	NO	Discharge from production of luminous dials and smoke detectors, hospital wastes, nuclear power plants
Radium 228 (pCi/L) (2016 and 2022)	ND	5	0	*	NO	
Volatile Organic Contaminants						
Analyte	Level Found	MCL	MCLG	Action Level	MCL Violation	Typical Sources Related to Human Activities ^b
Carbon tetrachloride (µg/l)	1.86	5	0	*	NO	Discharge from chemical plants and other industrial activities
Ethelbenzene (µg/l) (2019 only)	1.42	700	700	*	NO	Discharge from petroleum factories
Xylene (Total) (µg/l)	1.86-8.93	10,000	10,000	*	NO	Discharge from petroleum factories; discharge from chemical factories
Disinfection By-Products (DBP's)						
Analyte	Level Found	MCL	MCLG	Action Level	MCL Violation	Typical Sources
Total Trihalomethanes (TTHMs) (µg/l)	39.7-69.5**	80	*	*	NO	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (µg/l)	16.4-57.2**	60	*	*	NO	Byproduct of drinking water chlorination

^aA sampling result that exceeds the MCL value does not necessarily indicate a violation by the public water system. MCL violations for many contaminants are based on a running annual average instead of a single exceedance.

^bAll inorganic and radioactive constituents listed here are also naturally-occurring in the environment at some level.

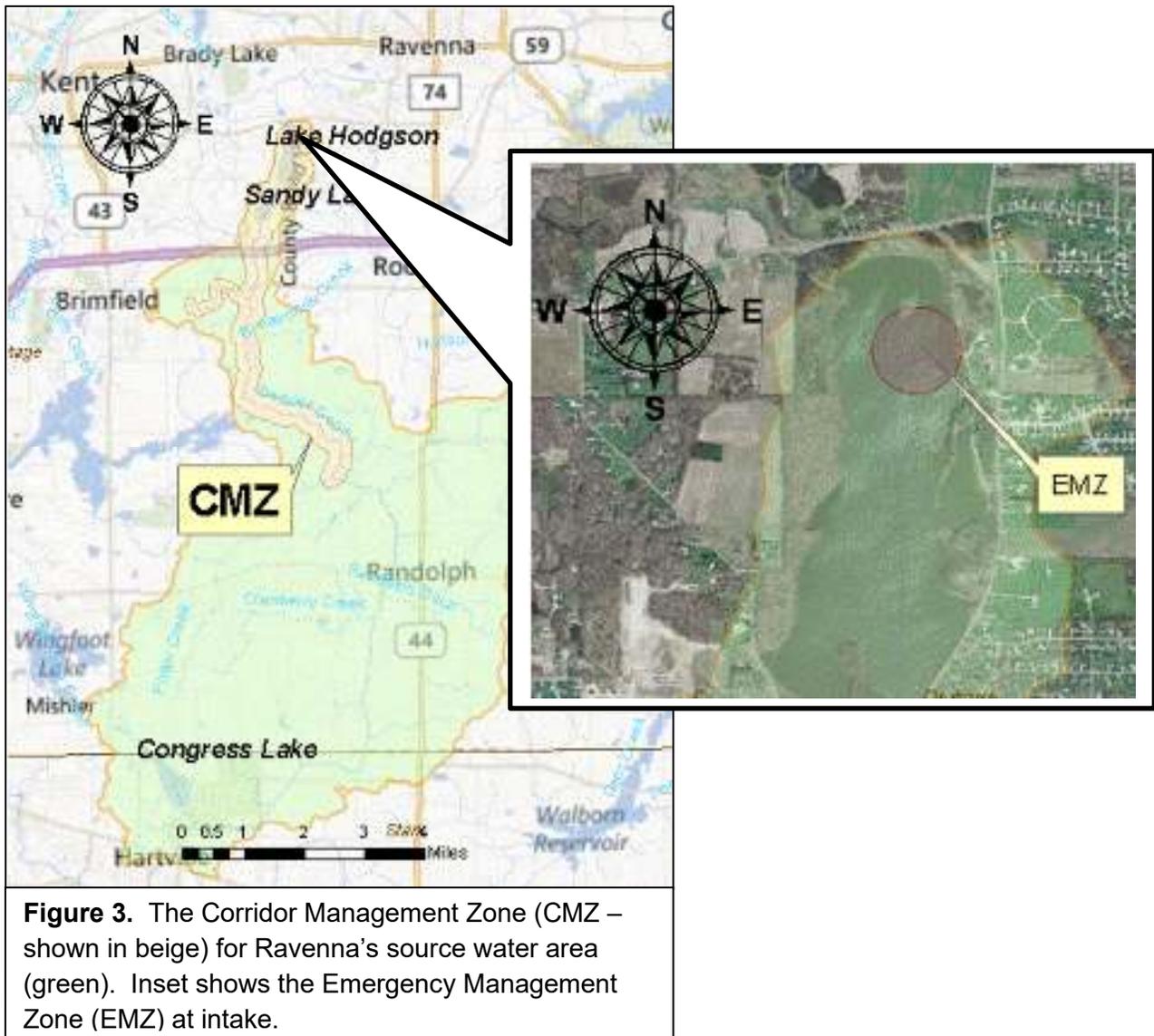
*MCLG, Action Level do not exist for analyte

** Range of levels found from 2014-2024

Identification of Local Source Water Concerns

Area of Focus

While the entire source water area contributes to Ravenna's water supply, it is impractical to focus equally on such a large area. Instead, Ohio EPA encourages a community to focus its efforts on the 'corridor management zone' (CMZ), which is defined as a zone that extends upstream ten miles from the intake and that is 1,000 feet wide on each side of the main stem and 500 feet wide on each side of the tributaries (Figure 3). This area includes the emergency management zone (EMZ), which is defined as a semi-circle that extends 500 feet upstream and 100 feet down stream of the intake. It is especially important that potential contaminant sources be minimized within the EMZ, as a spill at this location could easily result in contaminants entering the intake before the public water supplier even becomes aware of the accident.



The area of greatest concern is a narrow strip of land draining directly into Lake Hodgson and Sandy Lake. It is mostly wooded and surrounded by fencing. Aging

septic systems in the residential portions of this drainage area pose the greatest concern, due to their proximity and they drain into the two lakes year-round.

Recreational use of the lake during the summer months also provides a potential for spills or releases at the shoreline.

The transportation network is a potential source of contamination through vehicular accidents that release hazardous materials. **Interstate 76** crosses the CMZ about a half mile south of Sandy Lake. An additional 121 miles of roads and 2.3 miles of rail lines cross the source water protection area. Where Lakewood Road follows the southeastern bank of Lake Hodgson, a spill would be particularly concerning, as the bank is very narrow there and relatively steep.

Extensive **petroleum and natural gas production** within the protection area and the corridor management zone is also considered a potential source of contamination to surface and ground waters. Permits for a total of 402 oil/gas wells located in the Ravenna protection area can be found in ODNR's permit database; 25 of these are located within the corridor management zone. However, some of these permits may never have been acted upon and others may be for wells that are now inactive. Development of natural gas supplies through horizontal fracking in the Utica Shale has led to a recent influx of petroleum companies seeking permits to drill in Portage County, and this activity is projected to increase in the near future. Oil and gas activities typically involve increased truck traffic, and thus an increased potential for spills. Twenty-one spills in the Ravenna protection area were reported to Ohio EPA between 1989 and 1998, most of them petroleum related.

Seventeen miles of oil/gas **pipelines** transverse the protection area. A BP Oil pipeline carries liquid petroleum products east-west across the CMZ between Tallmadge and Old Forge Roads. As of 2024 BP activities in the state are more focused on the transition to an integrated energy company. As of 2024 Ohio BP is no longer directly engaged in new crude oil exploration or production, focusing more on gas and energy transition projects in the state. With any emergency with the BP pipeline the City of Ravenna would call the Customer Service Phone: 1-800-333-3991 and/or the Pipeline Emergencies (Midwest region): 1-800-548-6482 for broader issues. If BP workers recognize an environmental emergency with their pipeline, they would reach out to Summit County EMA. Portable booms are available with Summit County EMA that can be brought onsite to isolate areas upstream of the canal and Lake Hodgson. The Ravenna Water Treatment Plant at Lake Hodgson also has booms available at the lake.

Farther south, within the protection area but outside the CMZ, a Sunoco Pipeline also carries petroleum products east-west across the area. The main concern for these pipelines is accidental punctures by earth-moving equipment—which can be prevented by consulting with Ohio Utilities Protection Service (OUPS) before digging—or ruptures like the recent Enbridge pipeline rupture in Michigan (Figure 4) and the Exxon pipeline rupture in Mayflower, Arkansas (Figure 5). The potential for such accidents increases with the age of the pipeline.

There are two primary suppliers in our area for Sunoco. One is Centerra at (800) 362-9598 and they are local to this general area supplying Jefferson, Burton, Ashland, Medina, Elyria, Marshallville, and Garrettsville. The other supplier is Northeast Lubricants LLC at (877) 635-8237 and serve areas in Akron/Canton, Cleveland, and

areas in Columbus. If Centerra and Northeast Ohio Lubricant workers recognize an environmental emergency with their pipelines, they would reach out to Summit County EMA. Portable booms are available with Summit County EMA that can be brought onsite to isolate areas upstream of the canal and Lake Hodgson. If county EMA is contacted a determination to activate the HAZMAT team can be made, which includes the Ravenna Fire Department. The Ravenna Water Treatment Plant at Lake Hodgson also has booms available at the lake for an immediate response if the lake has an oil sheen on its surface.



Figure 5. The March 2013 Mayflower, Arkansas pipeline rupture released thousands of barrels of oil in a residential neighborhood.

Photo Source:

<http://www.nbcnews.com/business/arkansas-opens-investigation-exxon-oil-spill-1C9184290#>

Portage County Water Resources is authorized to discharge under the National Pollutant Discharge Elimination System (NPDES) system from the Randolph wastewater treatment works located at 2053 SR 44, Randolph, Ohio, to the Feeder Canal (a tributary of Breakneck Creek).

Prioritization of Potential Contaminant Source Inventory

Figure 4. The July 2010 Enbridge pipeline rupture in southwest Michigan spilled over 800,000 gallons of oil into a creek that carried it to the Kalamazoo River. As of 2013, tar-like residue reportedly remains in the streambed.

Photo Source:

http://www.huffingtonpost.com/2012/08/06/us-pipeline-spills_n_1747277.html#slide=1255349

Failing septic systems in the vicinity of Lake Hodgson and Sandy Lake are among the top concerns for source water protection in the City of Ravenna. These aging systems are among the potential contaminant sources closest to the intake and could be significant sources of nutrients to

the lakes.

Transportation corridors are also significant sources of contaminants to the Lake Hodgson watershed. Several local roads traverse in very close proximity to Lake Hodgson and Sandy Lake. Interstate 76 also crosses the watershed near Sandy Lake. These are potential sources of pollutants such as heavy metals, chloride, and oils.

They also pose a threat through the possibility of spills from trucks carrying various products.

To a lesser extent, contamination from oil/gas wells and pipelines pose a threat to the City's source water. These sites are located further upstream in the watershed and would provide longer response times should a spill occur. The likelihood and frequency of contamination are also less than the other priorities identified. These do, however, still provide a threat to the City's drinking water quality and should be considered and addressed. The City of Ravenna's immediate response to this type of source water emergency would be to contain the oil/gas spill in the water. If it is near the intake of the water plant, to activate the City's emergency water interconnect with the City of Kent for back up source water.

Protective Strategies

Protective strategies for source water protection areas are presented in four categories: strategies targeted to specific types of activities or facilities; contingency planning; public education, and source water monitoring.

Specific Contaminant Source Strategies

Recreational Spills on Lake Hodgson: Lake Hodgson is open to recreation (fishing and boating) during April through November. To prevent spills from occurring on the lake, the use of gasoline powered motors is not permitted on the lake and daily passes must be bought which includes the fishmen's information. Outside the summer season, the public is prevented from approaching the lake by a chain-link fence that encircles the lake, with access through a locked gate. The City of Ravenna has continued this fencing with the goal of circling the lake completely. This is expected to be completed by 2027. Security cameras have been added, facing the dock and two directions in the open water. This has been an effective policy for the City in preventing spills on Lake Hodgson but requires ongoing enforcement & monitoring though seasonal cabin staff, plant operators on shift, and plant maintenance workers.

Home Sewage Treatment Systems (HSTS): Several HSTS's exist around the canal, Sandy Lake and Lake Hodgson. These pose a threat to the water quality of Lake Hodgson by providing opportunities for contaminants such as pathogens (viruses and bacteria), phosphorus, and nitrogen to enter the Lake. The Portage County Health Department permits and inspects new septic systems, certifies septic system cleaners, and responds to reports of septic nuisances, as well as performing routine inspections to identify failing systems before they become a nuisance. The Portage County Health Department provides an annual report summarizing their efforts on this front. In newer subdivisions, they encourage the connection to the county sanitary sewer system to help illuminate illicit discharges. Portage county in 2023 approved \$150,000 to correct failing HSTS's for lower income homeowners in the watershed through Water Pollution Control Loan (WPCLF) program. They have also mapped recent yearly HSTS repairs, replacements, and sewer connections. This should reduce the likelihood that significant amounts of untreated septage will enter Lake Hodgson.

Highways: Traffic incidents that would result in a potential discharge of pollutants to the watershed will be responded to by the Portage County Hazardous Materials Response Team (HAZAMAT) which includes the City of Ravenna Fire Department. Portage County Emergency Management Agency (EMA) is responsible for coordinating large-scale responses where additional resources are required. HAZMAT, EMA and Ravenna Fire Department are aware of drinking water supply areas for the City and would notify the City in the case of an event. The City will incorporate source water protection education to its employees through its annual stormwater training – attended by field staff from Service, Parks, Water, Wastewater, Engineering, Fire, and Police departments.

To encourage the public to report spills that could pollute the City's drinking water sources, spill response signage is provided on Sandy Lake Road where it crosses between Lake Hodgson and Sandy Lake. This signage informs motorists that they are in a drinking water source area and to call 911 to report any spills.

Watershed Development: Portions of the source water protection area for the City of Ravenna are undergoing commercial development, notably portions of Rootstown Township. To promote development practices that protect water resources, the City has partnered with the Portage County Storm Water Task Force. This Task Force works with representatives from county and local governments to cooperatively meet state stormwater management regulations, including regulations regarding implementation of best management practices to control runoff during and post-construction of commercial developments.

Another item intended to help guide environmentally protective development in the Lake Hodgson watershed is an update to the Portage County subdivision ordinance. The Portage County Regional Planning Commission developed a riparian setback requirement for subdivisions, which regulates stream alteration, and prohibiting fill and development in these areas reducing flooding, runoff, and erosion. Portage County mandates a 25-foot riparian setback from all water courses, regardless of drainage area. This means that no construction or activities disturbing the soil are permitted within this zone unless a variance is obtained.

Non-Point Source Pollution: Nonpoint source pollution from eroding streambanks, urban and agricultural runoff, and altered wetlands/channels/riparian areas results in excess pollutants such as sediment, nitrogen, and phosphorus being delivered to Lake Hodgson.

To combat these sources of pollutants, the City partnered with NEFCO (Northeast Ohio Four County Regional Planning and Development Organization) as well as a number of other interested parties to create the Middle Cuyahoga Watershed Action Plan. This plan is an inventory of identified problems and opportunities, goals, and actions the partners wish to take to protect and improve the Middle Cuyahoga River, its tributaries, and watershed. Action items listed in the state-endorsed plan are more eligible for some types of funding.

Action items endorsed by the Watershed Action Plan include green infrastructure, agricultural and golf course BMP's, roadside swale improvements, restoring stream

channels and riparian areas, correcting failing septic systems, and preservation of wetland/riparian corridors.

Pipelines: Oil and gas pipelines traversing the watershed are privately owned and operated. Maintenance, repair, and replacement are handled by the companies that own the pipelines. Should the City become aware of any maintenance issues regarding the pipelines through a company's representative or by observation of the public, the City will contact the respective owner to address the issue. These contacts are maintained in the City emergency management plan in City Hall.

Primary gas pipelines throughout the area are owned by Dominion/Enbridge. Jamie Nickle (216-210-9155) and/or Mike Hostetler (330-312-6099) are the communication points for that company and the City of Ravenna. If needed to be reached for emergency Centerra at (800) 362-9598, Northeast Lubricants LLC at (877) 635-8237, BP Customer Service Phone: 1-800-333-3991 and/or broader BP Pipeline Emergencies (Midwest region): 1-800-548-6482.

Furthermore, the City will continue to utilize the Ohio Utilities Protection Service (OUPS)/ Ohio 811 for any excavation project. Both the Distribution Supervisor and the Maintenance Supervisor will call 811 with the location of the project. Ohio 811 will notify UCIS, contractors, and local utility groups to come out mark affected underground utilities including oil and gas pipelines for City projects by color code. The four representatives from the City to call Ohio 811 on behalf of the City of Ravenna: Kyle Lawrence, Maintenance Supervisor WWTP at 330-296-5214, Tyler Drum, Assistant Superintendent Street Dept. and Wastewater collections at 330-296-3114, Tod Welch, Distribution Foreman 330-296-3114, and Kevin Bevilacqua, Maintenance Supervisor WTP 330-296-2741.

Harmful Algal Bloom General Plan (HAB GP): The Ravenna Water treatment plant has a HAB GP in review at the time of this revision. Dr. Christopher Miller and his team at Fontus Blue wrote the plant's initial HAB optimization plan which looks at treatment optimization for the plant during a bloom event. The Fontus Blue staff further explored this topic further by assembling the Cyanotoxin General Plan for our water plant. The plan includes educational information for operators such as an oxidation profile at the plant with KMnO₄ and Sodium Hypochlorite and how they affect Microcystin, versus how we would react treatment wise with cyanotoxins. The plan also explores options for treatment process optimization in the future by way of plant upgrades and chemical applications.

Drinking Water Shortage/Emergency Response

A well-formulated plan enables a utility to prepare for, respond to, and recover from crisis conditions without wasting time on futile or unnecessary efforts or spending funds unnecessarily. The plan defines duties, responsibilities, and functions of all water system personnel with respect to each specific emergency condition. The City of Ravenna has developed procedures to address specific situations that can be expected

to arise, and these are documented in the Plant Contingency Plan, which is updated annually. Copies are kept at the water treatment plant.

The following are issues that are specific to drinking water source protection. This information has been included in the water plant contingency plan.

Chemical Spill Threatening Water Supply: In the event of a chemical or oil spill the local fire chief is to be in responsible charge of coordinating all aspects relating to public health, traffic and crowd control, evacuation, spill containment, and spill cleanup. These functions are expected to be performed with the knowledge and assistance of the Ohio EPA and the Portage County Health Department.

In the first stages of a spill gathering pertinent information in a timely manner is essential in aiding the authorities in taking appropriate and expedient actions. The following procedures should be followed:

1. Collect Information. Staff should obtain information concerning:
 - The time the spill occurred, or was first observed.
 - The location of the spill.
 - The material that was released.
 - The source or probable source of the release.
 - The volume of the spill, or the size of the leak occurring.
 - Present and anticipated movement of the spill; expected amount of time before it could reach the intake
 - Weather conditions.
 - Personnel on the scene.
2. Determine If The Spill Is In The Watershed. Determine if the spill is within the Lake Hodgson watershed. Refer to the area topographic maps in the file behind the MCP panel; on these maps the watershed is outlined.
3. Contact Fire Department. Contact the Ravenna Fire Department with as much of the preceding list of information as possible. Notify the Ohio EPA, N.E Ohio District.
4. Place Containment Booms. Organize spill control efforts around assisting the fire chief who is to be the authority in responsible charge. Refer to the county contingency plan which has detailed instructions on dealing with spill situations. Notify fire chief of our intentions to install booms, and/or the locations where containment booms may be placed and where vacuum trucks and skimmers have access. Refer to the watershed topographic maps for information on locations where containment booms may be placed, where vacuum trucks can be used, and where flows may be dammed or diverted.

Drinking Water Shortage – Short-Term Loss of Source: In the event of a contamination event that requires water curtailment, the following procedures are in place:

1. The supply should be maintained for firefighting and the many varied uses other than consumption.

2. Notification priority will be given to schools and hospitals/nursing homes to prepare for water curtailment. UH Portage Medical Center has their own well supply and pumping capability, but they need advanced notice to bring it online.

3. Consumers will be provided with information on preparing for water curtailment, including:

- A water boil may be recommended to kill bacteria contamination, however describe clearly what boil means in news releases.
- Water sterilization may also be accomplished with iodine, or chlorine in tablets, or chlorine bleach, but many people have trouble understanding such instructions.
- Water is available in most homes in the rear tank of the toilets and in the water heater tanks; this however should not be considered pure, and sterilization should be recommended.

4. The Portage County Sanitary Engineer can provide potable water for tank trucks and for water buffaloes for hauling to distribution points placed at strategic areas throughout the city.

5. Civil Defense should be prepared to put a water supply plan in motion as soon as news of a contaminant is received.

6. Contact area water haulers to be ready to haul water, or to begin hauling as needed. Red Cross should work with the local civil defense authorities.

7. Mutual Aid is available from a connection with the City of Kent. If there is no contamination of the distribution system, this connection can be utilized to serve the Ravenna service area. The City of Kent's water treatment plant can treat 6 MGD and currently operates at approximately 2 MGD. Therefore, Kent should be able to provide for the approximately 2.25 MGD demand required by the City of Ravenna.

Drinking Water Shortage – Long-Term Loss of Source: Should an emergency event cause Lake Hodgson to no longer be a safe source of water, the City of Ravenna could utilize Crystal Lake as a potential source of water. Crystal Lake, located just southeast of the city limits between S Prospect St and State Route 44/5, was the original source of supply for the City.

A well field adjacent to the lake was installed in the 1960's to replace the surface water withdrawals from Crystal Lake. The wells are currently capped and abandoned. The lake itself, or a new well field at the lake, could be used as a future source of water should Lake Hodgson become unusable. This would require time and design approvals to get the wells in a usable condition as they are currently capped. Water from these sources would need to be treated for iron and could either be pumped to the existing Water Treatment Plant, or a new plant could be constructed adjacent to Crystal Lake.

The possibility of utilizing this water source has been investigated in a 2002 report to the City by CT Consultants. The report outlines the possible issues, options, and costs of

developing this source. Depending on the options selected, this undertaking could cost between 2 and 5.5 million dollars.

Public Education & Outreach

Consumer Confidence Report: The City of Ravenna public water system publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act and Ohio Administrative Code 3745-96. The CCR link is sent to all water customers. A PDF of the document is available on two locations on the city website in Water Billing and Water Treatment. The water treatment CCR link can be found on the website: <https://www.ravennaoh.gov/departments/utilities/water-treatment/> at the bottom of the page. The CCR does contain information regarding the Ohio EPA Source Water Assessment for the City of Ravenna as well as a link below the CCR documents online to the actual document.

Plant Tours: The Ravenna Water Treatment Plant staff conduct plant tours upon request. We have provided tours for people of all ages including home school groups, high school environmental science classes, and careers classes. These tours in the past have targeted the following groups:

1. Meeting the educational need of council members and elected officials (financial to specific projects, introduction to the plant and source water, specifics to committee projects).
2. Water professionals (from the Ohio EPA, NEFCO, Ohio AWWA) to meet the needs of contact hour requirements, training new staff, and education for professional members.
3. General public as introduction to the water plant and it's source water Lake Hodgson.
4. Home school groups and public-school students (typically grades 4-12). The plant superintendent or lead operator connect teachers with age appropriate educational materials to introduce the groups to water and wastewater treatment prior to the initial tour. Educational materials include sources from the Ohio EPA and the Federal EPA along with You Tube treatment summary videos, plant sampling maps, and water treatment plant vocabulary lists to aid in learning while visiting the plant.
5. We also work with college students from Kent State, University of Akron, Mount Union, Youngstown State University and Ohio State on graduate research projects and undergraduate student research based on water quality and the development of new water monitoring technology and water treatment techniques. The City of Ravenna leadership and Water Plant Superintendent provide permission and access not limited to the water plant laboratory, waterways of Lake Hodgson, Crystal Lake and Muzzy Lake for sampling or sonde monitoring.

City of Ravenna Engineering Department: The Engineering Department host small groups of Ravenna high school seniors in the spring, to come into the Engineering office to shadow the City's engineering duties, which includes a discussion of stormwater issues in the community. These students are interested in careers in engineering and

public service. During the summer of 2024, the city Engineering Department hosted a BioMed high school intern from summer 2024 and this internship continued through the Spring of 2025.

The Engineering Department also works directly with customers in our community that deal with a drainage concerns on private property within the city limits. The Engineering department provides technical assistance, pamphlets, to educate them on the drainage issue, and recommend mitigation tactics like rain gardens, swales, berms, and rain barrels.

Regarding the outreach/education, the City of Ravenna mainly relies on the MOA the Engineering Department has with Portage County Soil and Water Conservation District (SWC). Ravenna pays and assists with planning and instructing educational events like Rain Barrel workshops or for billboard educational messages within the County. These are done periodically throughout the 5-year NPDES MS4 permit term. The City of Ravenna posts these events on the City website for the public.

Portage County SWCD: The Portage County Soil and Water Conservation District is located in Ravenna. The SWCD produces educational materials and events pertaining to source water protection for the county. These range from newsletters, to classroom demonstrations, to field activities, etc. The SWCD incorporates a “Wonders of Watersheds” program that educates area teachers about watershed protection and provides them with materials to use in their classrooms. Also available through the SWCD is an EnviroScape Drinking Water Treatment Model. This model was acquired as part of a Source Water Environmental Education Team grant and can be used as a demonstration for educational opportunities in the City.

The SWCD also heads a Portage Storm Water Task Force in which the City of Ravenna participates. One agenda item for this Task Force is educating residents of the county on the importance of stormwater management to protect the quality of our rivers and streams. Through this task force, the City distributes watershed and drinking water information (posters, brochures, newsletters, etc.) to the public through public events such as the annual Balloon-A-Fair celebration in Ravenna.

Educational Signage: The City of Ravenna has had discussions regarding opportunities to provide educational signage at strategic areas within the watershed. One opportunity would be to provide source water protection posters at the recreation center and lodge at Lake Hodgson. This would educate people coming to boat and fish on Lake Hodgson of the importance of protecting the watershed.

Another opportunity would be to provide spill response signage on Sandy Lake Road where it crosses between Lake Hodgson and Sandy Lake. This signage would inform motorists that they are in a drinking water source area and to call 911 to report any spills.

Ravenna water customers could receive educational flyers distributed with their water bills. This option would only reach a small portion of the public living within the Lake Hodgson watershed, however, as most of Ravenna water customers are upstream of the lake. To solve this issue the Water plant posted the pdfs of the 2002 Ohio EPA

Source Water Assessment and the Ohio EPA Source water summary for anyone to access at <https://www.ravennaoh.gov/departments/utilities/water-treatment/> .

Water Quality Monitoring

Source water quality and reservoir safety monitoring is conducted by the City of Ravenna and includes the following:

The City of Ravenna will begin monitoring the water upstream and at the source of Lake Hodgson starting in July of 2025. Sample testing will include nitrate, pH, DO, temperature, ammonia, and phosphorus.

Daily raw water quality monitoring is conducted at the Water Treatment Plant including assessments on hardness, alkalinity, pH, manganese, and iron.

Lake water visibility and temperature will be taken out on the lake and will be conducted periodically during the summer months and to when weather will allow. Visual assessments are made along the shoreline looking for algae growth in shallow water from April until November.

A data sonde in the source water of Lake Hodgson allows for the real time monitoring of temperature, dissolved oxygen, pH, and algal indicators. The sonde and sensors were upgraded in summer of 2025, though had to be sent back for some repair work by the manufacturer. At that the point of repair, we continued to rely on the older plant sonde. Now that the new sonde is repaired and in use, this will allow for more accurate readings of the water.

The Middle Cuyahoga Watershed Action Plan outlines a number of chemical water quality results throughout the 2000's from within the Breakneck Creek and Potter's Creek watersheds (including sites within the City's source water protection area).

The lake level at the control structure #1, are monitored and recorded in real time at the Ravenna Water Plant SCADA. Precipitation and ice conditions are recorded daily at the plant.

The spillway and embankments are monitored on a weekly basis. They are checked for excessive brush and litter, movement, erosion and safety hazards. Condition of the spillway is noted and logs and debris are removed from the trash rack.

The Dam Safety Engineering program at the Ohio Department of Natural Resources inspects the dam every five years.

The Feeder Canal is monitored for flow conditions weekly, and dredging is performed at small sections yearly. The material from the dredging is used to re-establish the canal embankment. Tree and limb fall is monitored along the canal way and removed as needed. This maintenance ensures adequate flow in the canal and thus improves dissolved oxygen levels and water quality.

In addition, the City of Ravenna conducts compliance monitoring required by Ohio EPA, which measures the post-treatment quality of the water that enters the distribution system for public consumption. These data are made available to Ravenna's customers and the public in the annual Consumer Confidence Report, which is posted on Ravenna's website: <https://www.ravennaoh.gov/departments/utilities/water-treatment/> .

Updating the Plan

A protection plan is not a static document. Over time many issues related to protection planning will change- existing potential contaminant sources will close, new education and outreach opportunities will become available, new partners in protecting the drinking water source will be identified. The protection plan needs to plan for these and other events.

The City of Ravenna commits to reviewing the Drinking Water Source Protection Plan every two years, beginning in February of 2025.

Updating the SWAP Assessment

Each review of this plan will include consideration of the following questions:

Water Treatment Plant Updates

- Has the water usage increased or decreased since the last review?
- Have any new treatment protocols been added?
- Has a reservoir or intake been added or removed, or will wells be installed?
- Have there been any significant changes in any of the source water lakes?

Changes to the intake or the addition of wells will be reported to Ohio EPA's source water protection program so that the source water assessment can be adjusted (if necessary) to reflect new sources of drinking water.

Potential Contaminant Source Inventory

- Has the extent of the protection area changed?
- Has the community developed rapidly?
- Have land uses in and around the protection area changed?
- Has management of businesses in the protection area changed?

If the answer to any of the above questions is yes, Ravenna will update the inventory or conduct a new inventory. Ravenna may contact Ohio EPA's Source Water Protection staff in the district office for guidance or assistance in conducting the inventory.

Evaluating the Effectiveness of the Protective Strategies

In order to evaluate if the protective strategies in this Source Water Protection Plan are achieving the desired outcomes, Ravenna will consider the following types of questions and write any changes into the Protection Plan.

- Do we have reason to be concerned about how the drinking water source protection area may be used in the future?

- Should we consider trying to better protect it through a county resolution or township ordinances?

Pollution Source Control Strategies

- Have we followed our own schedule of implementation/timeline for each of the pollution source control strategies?
- Are there new potential contaminant sources that need to be addressed with new best management practices?
- Have we implemented any new protective strategies that are not documented here?
- Did any of our strategies result in removal or elimination of a potential source?
- Did any of our strategies result in individuals modifying practices to decrease the risk of contaminating the drinking water source?
- Did our coordination with other groups (SWCDs, county EMAs, local health dept., local watershed group, etc.) contribute to the implementation of protective strategies?
- Have the partnerships developed during plan implementation been productive?

Education and Outreach

- Have we followed our own schedule of implementation/timeline for each of the educational strategies?
- Are there any new groups in the population that we need to target with education and outreach strategies?
- Have we implemented any new educational strategies that are not already documented here?
- Has education and outreach targeting any specific group resulted in actions that reduced or could potentially reduce the risk of contaminating the drinking water source (e.g., septic system owners conducting regular maintenance, farmers adopting best management practices)?
- Have we received additional funding to continue any particular education and outreach strategy?
- Have we received any accolades, awards or recognition from outside entities or organizations for our educational efforts?
- Have we had any unsolicited requests for SWAP-related education (such as requests for plant tours, requests for presenters/speakers at events, etc.)?
- Did our coordination with other groups (SWCDs, SWEET Team, local health dept., local watershed group, etc.) contribute to the successful development and dissemination of SWAP-related information?
- Did we have sufficient staff and resources to complete all the planned educational efforts?
- Have educational efforts been cost effective? Efficient? (Consider level of attendance, attentiveness and participation by audience, comments received, etc., vs. the cost to facilitate the event) Should the frequency of the outreach be increased, decreased, or remain the same?
- Have the partnerships developed during plan implementation been productive?
- Have any of the target groups contacted the public water system for additional information about something they saw or heard about through these activities?
-

Drinking Water Shortage/Emergency Response

- Are there any updates to the Drinking Water Shortage/Emergency Response Plan?
- Did our coordination with emergency responders at the local and county level result in better communication and handling of spill incidents that could impact our drinking water?

Raw Water Monitoring

- Have we followed our raw water monitoring plan (i.e., sampled at specific frequency, analyzed for the appropriate parameters, etc.)?
- Have there been any significant changes to our water quality?
- Do we have sufficient water quality data or other reasons (e.g., the source was removed) to conclude that ground water monitoring can be cut back or is no longer needed?
- Are there new water quality, potential contaminant sources, or land use issues that would influence the need to expand our water quality monitoring network?
- Does our raw water monitoring plan need to be updated for any reason?

Revising the Plan

Upon review, if any revisions of the SWAP Assessment Report are needed, Ravenna will contact Ohio EPA's Northeast District office for guidance. Also, if the local planning team makes any substantial changes to Ravenna's Protection Plan, a copy will be forwarded to Ohio EPA for concurrence. The revision will be documented on the front cover by adding "Revised [date]" beneath the date at the bottom of the page.

Primary References

OEPA, 2002, Drinking Water Source Assessment for the City of Ravenna

OEPA, 2000, Total Maximum Daily Loads for the Middle Cuyahoga River

NEFCO, 2012, Middle Cuyahoga River Watershed Action Plan

Portage County Health District, 2023 Illicit Discharge and Elimination Annual Report