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April 28, 2021

Ms. Tanowa Troupe, Secretary
Ohio Power Siting Board
Docketing Division
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3797

Re: **Case No. 20-1605-EL-BGN -** In the Matter of the Application of Birch Solar 1, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Allen and Auglaize Counties, Ohio.

Response to Fifth Data Request from Staff of the Ohio Power Siting Board

Dear Ms. Troupe:

Attached please find Birch Solar 1, LLC's ("Applicant") Response to the Fifth Data Request from the staff of the Ohio Power Siting Board ("OPSB Staff"). The Applicant provided this response to OPSB Staff on April 28, 2021.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

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CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 28th day of April, 2021.

/s/ Christine M.T. Pirik
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Administrative Law Judge:

michael.williams@puco.ohio.gov

4825-7751-3191 v1 [92234-1]

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Birch Solar 1, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Allen and Auglaize Counties, Ohio.	)))))	Case No: 20-1605-EL-BGN

BIRCH SOLAR 1, LLC 'S
RESPONSE TO THE FIFTH DATA REQUEST
FROM THE STAFF OF THE OHIO POWER SITING BOARD

On February 12, 2021, as supplemented on March 25 and 31, 2021, and April 5, 2021, Birch Solar 1, LLC ("Applicant") filed an application ("Application") with the Ohio Power Siting Board ("OPSB") proposing to construct a solar-powered electric generation facility in Allen and Auglaize Counties, Ohio.

On April 13, 2021, the Staff of the OPSB ("OPSB Staff") provided the Applicant with OPSB Staff's Fifth Data Request. Now comes the Applicant providing the following response to the Fifth Data Request from the OPSB Staff.

1. Page 49 of the application identifies three public source water (ground water) protection areas within one mile of the project area. The application indicates all three public water systems have a source water protection plan per Ohio EPA. OAC Rule 4906-4-08 (A)(4)(d) asks that the application describe how construction and operation of the proposed facility will comply with drinking water source protection plans near the project area. Please confirm that the Applicant is familiar with the contents of these protection plans and expand on how it will comply with these plans. In addition, identify all surface water areas delineated as source water protection area watersheds/corridor management zones.

Response: The Applicant has reviewed the Winona Lake Swim and Tennis Club document (see Attachment 1 to this response) and the City of Lima Source Water Protection Plan (see Attachment 2 to this response)[1] to determine potential contaminant sources, if any, and suggest protective strategies. The Winona Lake Swim and Tennis Club is the only source

[1] The Ohio Environmental Protection Agency ("Ohio EPA") manages the source water protection program. For large areas, the plans are available online and, for small area, entities must request the information from the Ohio EPA. The Applicant obtained the City of Lima Source Water Protection Plan through the Ohio EPA online service. For the Winona Lake Swim and Tennis Club document, the Applicant received this document from the Ohio EPA on April 20, 2021.

water protection area that overlaps with the Project Area, while the City of Lima Corridor Management Zones overlap with portions of the Project Area.

The Application currently includes measures designed to prevent impacts to source water from construction or operation of the Project – specifically, a Stormwater Pollution Prevention Plan ("SWPPP") and a Spill Prevention, Control and Countermeasures ("SPCC") plan. Due to the nature of the Project as well as the implementation of the SWPPP and the SPCC plan, it is unlikely that the Project will affect the source water. Nevertheless, the Applicant has considered the following additional measures that could be employed beyond those described in the Application that could be employed to further ensure protection of source waters:

- Ensuring the engineering, procurement, and construction ("EPC") contractor has reviewed the source water protection plans and those associated with the corridor management zone surface water to be aware of notifications required so that local officials are prepared to respond to emergency situations and are ready to provide alternative sources of water. This would include coordination with the state and county level emergency management agencies prior to the start of construction.
- Storing the minimum amount of hazardous material onsite and at locations as far from the source water well and onsite streams as possible.
- Posting signs indicating the extent of the protection area.
- Ensuring compliance with materials handling procedures/requirements during construction and operations.
- Conducting hazardous materials training or waste and disposal training during construction and operations.

Attachment 3 to this response identifies the corridor management zone surface waters and source water protection area watersheds, in addition to the previously identified drinking water source protection areas, within 1-mile of the Project Area. The Project Area is within the Bowling Green City, Campbell Soup Supply Company, Napoleon City, and Lima City watershed areas. Corridor management zones associated with the City of Lima drinking water source protection area overlap with the Project Area.

2. Figure 8-3 documents the history of significant oil and gas exploration within and adjacent to the project area. Page 61 of the application discusses an electromagnetic survey conducted for the purpose of identifying buried well and well infrastructure features. Provide Staff with a copy of the electromagnetic survey report including a summary of the results, and discussion of any survey limitations. Historic oil and gas well infrastructure may be encountered during the proposed facility construction, provide any plans for mitigation of potential impacts.

Response: As described in the Application, historical oil and gas infrastructure may exist within the Project Area. The Project is implementing the following three-prong analysis to ensure historic wells are taken into consideration where necessary. The result of this analysis will be reflected in the final site design.

1. Extensive data collection: Three processes have been completed or are underway to accurately identify well locations and any possible infrastructure.

    a. Publicly Available Data: The Applicant used geographic information system ("GIS") well data from the Ohio Department of Natural Resources ("ODNR"), Division of Oil & Gas Resources, to identify possible historical well locations within the Project Area.

    b. Electromagnetic ("EM") Surveys: Kleinfelder conducted an on-site electromagnetic survey using well coordinates provided in the ODNR GIS database to locate and confirm the presence of possible wells. The EM technology employed is suited for identifying metallic subsurface features such as metal wellheads and piping. The EM survey was initiated at each potential GIS well location and expanded to an approximate 150-foot radius from that location. A second EM survey effort was undertaken to survey the full extent of subsurface anomalies identified during the initial EM survey effort that could have indicated well-related subsurface infrastructure (e.g., transfer piping).

    The EM survey data was collected with a survey-grade Global Positioning System ("GPS"). Locations of anomalies identified during the EM survey were then surveyed and staked by a Professional Land Surveyor ("PLS").

c. "Potholing" or hydrovac excavation: Numerous staked EM survey locations were excavated or "potholed" using a hydrovac excavation system typically used to excavate utilities without damage. Potholes are typically excavated to depths ranging from 8-10 feet. The excavation allows for any underground infrastructure to be physically seen and verified. Potholing is currently ongoing on the Project site and will be completed before construction.

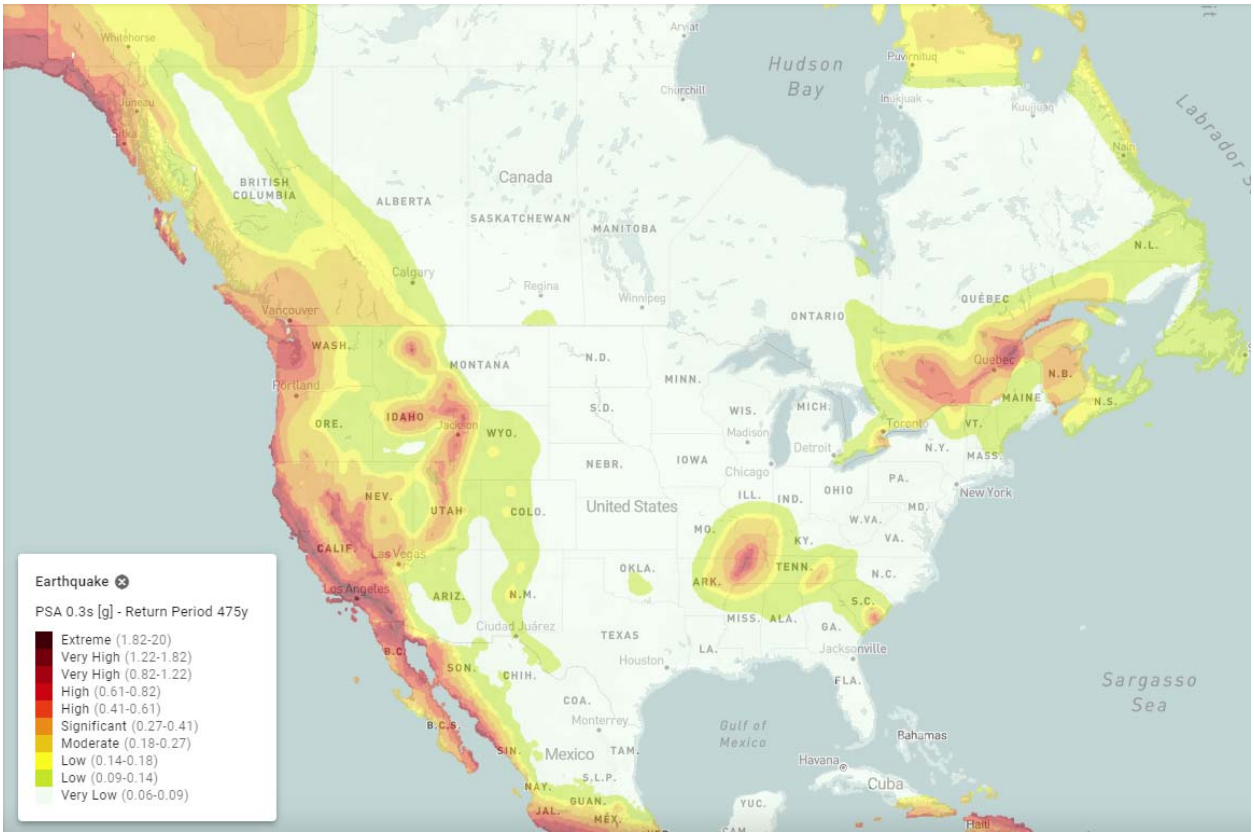
2. Setbacks from found infrastructure: The Project will set back panel and module placement from any verified well infrastructure by 50 feet. The results of the "completed electromagnetic surveys" referred to on Page 51 of the Application were included in the constraints mapping and reflected in Figure 8-3 of the Application. Additionally, setbacks are reflected in Figure 4-1 of the Application. Upon physical verification of found wells, updates to the constraints mapping and panel layout will be reflected. The Project will present the setbacks from any verified well infrastructure in the final design plans that will be provided to OPSB 30 days prior to construction.

3. Construction procedures: The Project will create an "Unanticipated Discovery Plan" to define how to address site-specific environmental contamination or the discovery of physical infrastructure during construction activities which was not previously identified. Such plans are common in historic oil and gas states. Attachment 4 to this response includes a draft of such plan. The final plan will include input from the selected EPC contractor and be made part of the Project EPC agreement. The final Plan will be provided to OPSB 30 days prior to construction.

3. Table 3-2 of Exhibit K (Geotechnical Investigation Report – Kleinfelder, Inc.) assesses the risks of geohazards within the project area. The relative risk of an earthquake with a magnitude that could cause minor damage is assigned a low-risk rating. This is supported with the statements that "There are no faults shown in the project area on the USGS Quaternary Faults and Folds Database." Seismic activity is documented in both Allen and Auglaize Counties. This includes seismic activity reported less than 5 miles northeast of the project area in 2021. To the south is the Anna Seismic Zone, which is centered in Shelby County. This zone is one of the more seismically active areas in Ohio. Faulting origins associated with these events aren't limited to the Quaternary Period. The seismic risk assessment should be revised to consider all known faulting and previous seismic events in the project counties and those counties immediately adjacent.

Response: A benefit of solar development as a generation source is the ability for the technology be able to safely handle weather and geological risk. California and other West Coast states, mostly early adopters to solar energy, are continuing development even in the highest earthquake hazard areas. The panels and modules used are low lying and, therefore, do not carry the same risk as vertically inclined infrastructure.

In addition to the data provided in the Application, the Project reviewed the Earth Quake model produced by SwissRe's data program, CatNet,[2] a globally recognized re-insurance company which specializes in risk data from natural disasters. Below is a national Earth Quake Risk Map.



The data sources cited in the Geotechnical Investigation Report, Application Exhibit K (Geotechnical Report), are the primary data sources used in assessing initial seismic

[2] https://www.swissre.com/reinsurance/property-and-casualty/solutions/property-specialty-solutions/catnet.html

risk. The data cited in the Geotechnical Report indicates the relative risk of occurrence of an earthquake with a magnitude great enough to cause minor damage is low. There is documented seismic activity in the area of the Project ranging in intensity from 1.5 to 4.8 on the Richter Scale. The relative damage to structures resulting from this seismic activity ranged from I (not felt) to VI (Strong, felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.) based on the Modified Mercalli Intensity Scale. To clarify, Kleinfelder does not state that risk of seismic activity is low. Kleinfelder's assessment of seismic risk is that the risk of damage to structures caused by seismic activity is low.

4. **Section 4.8 (Access Roads) of Exhibit K evaluates the use of gravel surface and aggregate pavement surface interchangeably. Kleinfelder provides a recommendation of 11 inches of aggregate pavement for a traffic load of six trucks per day for a year during construction, and six inches of aggregate pavement post-construction. These thicknesses assume no stabilization of the subgrade. Regular maintenance during construction would include grading and addition of gravel. Staff assumes grading and graveling to apply to gravel surface roads, not aggregate pavement. Is this accurate? Clarify your response.**

Response: For the purposes of the site development, gravel roads and aggregate pavement roads are equivalent. Maintenance grading and addition of gravel (also called aggregate or stone) may be required at gravel or aggregate pavement roads during construction.

5. **Page 49 of the application indicates there are seven water wells within the project area. Please specify minimum distances between these wells and the nearest proposed solar equipment locations.**

Response: The Project has used the Ohio Environmental Protection Agency ("EPA") Ohio State Water Wells data to locate any potential historic water wells. Of the 7 wells identified, it initially appeared that 3 of the identified wells could be impacted by infrastructure associated with the Project. However, after further surveys and evaluation of the areas around those 3 wells it is believed that these water wells are no longer active. Analysis of the locations provided show that the 3 locations have been farmed over with row crops. No physical well locations were identified by surveys in the field. Two of the three historic well locations were placed in service over 50 years ago which is important because of the possible data inaccuracy due of the digitization of paper record.

If, upon further investigation, an active water well is found, the Project will implement the Best Management Practice ("BMP") of a 50- foot setback from the well.

Respectfully submitted,

/s/ Christine M.T. Pirik

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Attorneys for Birch Solar 1, LLC

4826-4817-5589 v4 [92234-1]

Attachment 1

Winona Lake Swim and Tennis Club
Ohio Environmental Protection Agency
Drinking Water Source

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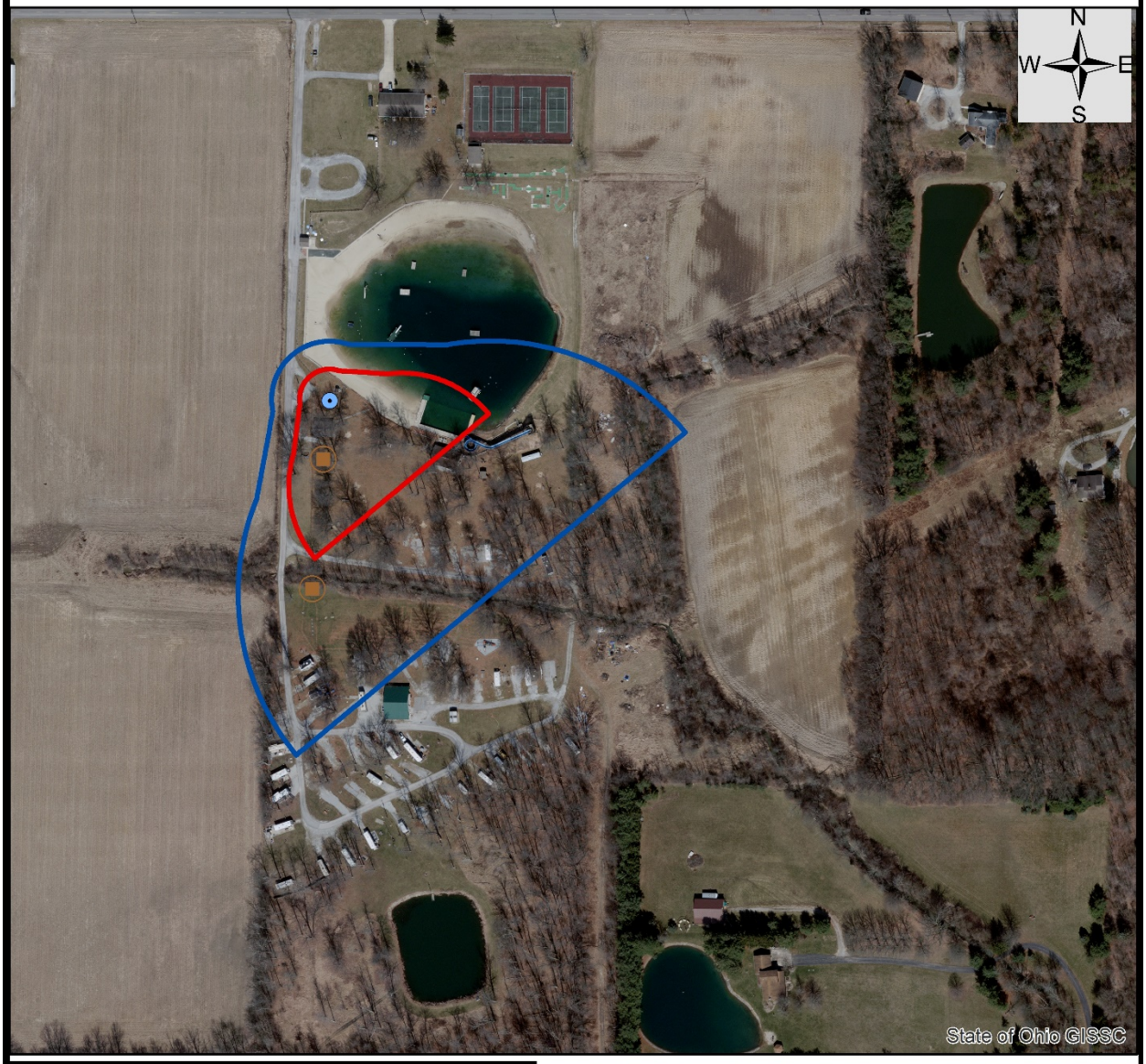
Winona Lake Swim and Tennis Club,
PWSID# 0243012
Allen County, ShawneeTownship



Legend

- Sanitary Sewer Line
- PWS Wells (active)
- Inner Management Zones
- Source Water Protection Areas

Protection Area Data

Number of Wells = 1
Total Well Pumping Rate = 2,685 GPD
Porosity = 3 %
Aquifer Thickness = 73 Feet
Hydrogeologic Setting = Carbonate Bedrock

LOW | MODERATE | HIGH

AQUIFER SUSCEPTIBILITY

0 65 130 260 390 520 Feet

Drinking Water Source Protection Area

Ohio Environmental Protection Agency

MAY 2019

Susceptibility of Your Drinking Water Source to Contamination

The aquifer that supplies drinking water to Winona Lake Swim & Tennis Club has a **low** susceptibility to contamination because:

< well logs indicate the presence of a greater than 25-foot thick protective layer of clay above the aquifer (providing protection from contamination);

< the aquifer is 52 feet below ground surface; and

< water quality results do not indicate that contaminants have impacted the aquifer.

This susceptibility means that under currently existing conditions, the likelihood of the aquifer becoming contaminated is low. This likelihood can be minimized by implementing appropriate protective measures.

How You Can Protect Your Drinking Water Source from Contamination

Each public water supplier can take a few simple steps to protect the drinking water source. The attached checklist identifies strategies for protecting your drinking water source from the potential contaminant sources located on your property. Please take a few minutes to review this checklist, then:

< Place a checkmark in the box next to the protective strategies that could be implemented at your facility, and indicate the date you plan to implement the strategy.

< If a protective strategy included in the checklist is not appropriate or applicable to the facility, please mark N/A next to the strategy.

< If a strategy is already in place, check the box and indicate, in the date column, approximately when the strategy was implemented.

Please note the protective strategies in this checklist are recommended best management practices for the potential contaminant sources identified during your inventory and are ***not*** a comprehensive list of the strategies that can be used to minimize the potential for contamination. Local ordinances and state and federal regulations may also apply to the potential contaminant sources that appear in this checklist. Ohio EPA recommends that you become familiar with the requirements of any ordinances and regulations that may apply. Ohio EPA can also provide assistance with education and training activities.

When complete, please fax or mail a **copy** of the checklist to:

Source Water Protection Staff
Ohio EPA, Northwest District Office
347 North Dunbridge Road
Bowling Green, OH 43402

Fax: (419) 373-3125
Phone: (419) 373-4101
Toll Free: (800) 686-6930

Ohio EPA staff will review this checklist with you during a future site visit or phone call.

Protective Strategies Checklist for Winona Lake Swim & Tennis Club

	PWS ID #0243012 **Address:** **City, Zip:**	**Contact Name:** **Phone:**

	<u>Suggested</u> Drinking Water Source Protective Strategies (Please check the box beside each suggestion you feel appropriate and plan to implement)	**Planned Implementation Date**
General Protective Strategies	**Well Construction** ☐ Install backflow prevention devices on equipment such as boilers and dishwashers. ☐ Replace loose, cracked, or missing well caps with new, insect and vermin proof, vented well caps. ☐ Ensure proper construction of new wells. **Education** ☐ Inform employees about the protection area and the potential contaminant sources identified in the report. ☐ Train employees on proper material handling and spill cleanup techniques. ☐ Take opportunities to inform neighbors about drinking water source protection. ☐ Inform local elected officials (trustees, council members, commissioners) about issues that may impact drinking water protection areas. **Contingency and Emergency Planning** ☐ Identify any short- and long-term alternative sources of drinking water that may be available. ☐ Prepare a list of important contacts for water supply related emergencies. ☐ Inform the local fire department and local emergency planning committee about the location of the drinking water source protection area. ☐ Other protection strategies: _____ _	

ON-SITE POTENTIAL CONTAMINANT SOURCES	Suggested Drinking Water Source Protective Strategies (Please check the box beside each suggestion you feel appropriate and plan to implement)	Planned Implementation Date
Aboveground Storage Tanks (ASTs)	☐ Place tanks on paved surfaces within secondary containment structures (berms, dikes, liners, or vaults that can hold 110% of the contents of the largest tank) or use double walled tanks. ☐ Remove and properly dispose any rainwater that accumulates in the secondary containment area. ☐ Perform preventive maintenance on the storage tanks and piping systems to detect potential leaks before they occur. ☐ Train employees on proper material handling and spill cleanup techniques. ☐ Install spill and overflow protection. ☐ Use dry clean-up methods rather than hosing fueling and loading areas down. ☐ Store absorbent cleaning materials in a readily accessible location. ☐ Cover fueling areas to reduce exposure to storm water. ☐ Inspect storage areas (fueling and loading areas) to detect problems before they occur. ☐ Keep storage areas secure against unauthorized entry. ☐ Locate ASTs as far as possible from wells, surface water bodies and storm drains. ☐ Other protection strategies: _____ _____ _	
Agricultural	☐ Avoid the use of drain tiles or drainage wells which could allow agricultural wastes to gain entry to ground water. ☐ Relocate animal waste storage areas to locations away from wells, drains, and surface water bodies. ☐ Keep animal waste storage areas covered with tarps or other waterproof materials. ☐ Store animal wastes on paved surfaces. ☐ Keep animal burial areas outside of the drinking water source protection area. ☐ Other protection strategies: _____ _	
Natural Gas Lines (Residential)	☐ Monitor for any potential leaks. ☐ Conduct proper routine maintenance of lines. ☐ Monitor for any drips of oil from joints or low points in the lines. If any are noted, contact your natural gas supplier. ☐ Other protection strategies: _____	

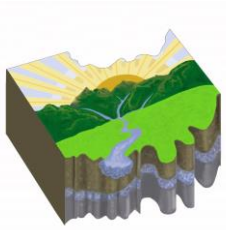
ON-SITE POTENTIAL CONTAMINANT SOURCES	Suggested Drinking Water Source Protective Strategies (Please check the box beside each suggestion you feel appropriate and plan to implement)	Planned Implementation Date
Parking Areas	☐ Use dry clean-up methods rather than hosing the parking areas. ☐ Control storm water flow on parking lots by grading or paving the area away from wells. ☐ Avoid using road salt for snow/ice removal; substitute with sand or gravel. ☐ Other protection strategies: _____	
Storm Drains	☐ Avoid washing grease, oil, or chemicals into storm drains. ☐ Clean up chemical spills (even small ones) immediately. ☐ Keep absorbent spill materials (cat litter or sawdust) readily available. ☐ Determine whether or not storm drains drain to surface water (river or retention pond) or to the ground (drainage well). If the storm drain drains to the ground and is located in a loading area or other areas that could receive leaks and spills, the drain should be plugged during loading or unloading operations. ☐ Other protection strategies: _____	
Surface Water Bodies (includes ponds receiving runoff)	☐ Leave a buffer strip of grass or other vegetation around surface water bodies. ☐ Properly maintain retention ponds. ☐ Do not use pesticides and fertilizers in buffer strips around surface water bodies. ☐ Do not store liquid or bulk materials near surface water bodies. ☐ Other protection strategies: _____	
Transportation/ Transportation Related Spills	☐ Post the telephone number of the local fire department near telephones. ☐ Contact the local fire department and local emergency planning committee about the location of the drinking water source protection area. ☐ Reduce the use of road salt. ☐ Other protection strategies: _____	

ON-SITE POTENTIAL CONTAMINANT SOURCES	Suggested Drinking Water Source Protective Strategies (Please check the box beside each suggestion you feel appropriate and plan to implement)	Planned Implementation Date
Utility Sheds	☐ Move chemical storage as far from wells as possible. ☐ Ensure that lids are shut and caps are closed on all containers. ☐ Employ measures to protect against spillage such as using drip pans during the transfer of liquids. ☐ Educate personnel for proper storage, use, cleanup, and disposal of materials. ☐ Other protection strategies: _____	
☐ **Septic Systems**	☐ Have your septic tank inspected annually to ensure that the internal structures are in good working order and to monitor the scum level. ☐ Have tank pumped out by a licensed professional. ☐ Do not dispose of grease, oil, or chemicals in the septic system. ☐ Garbage disposals should not be used with septic systems. ☐ Avoid septic system additives or cleaners that contain hazardous ingredients. ☐ Only use normal amounts of detergents, bleaches, drain cleaners, household cleaners and other products. ☐ Divert roof runoff, drains and other surface runoff away from the leachfield. ☐ Reduce the amount of water that flows through the system by practicing water conservation, such as using water-saving devices and repairing leaky plumbing. ☐ Look for signs of septic system failure. ☐ Consider replacing old or outdated systems and removing unused systems. ☐ Keep vehicles and other heavy objects off of the leach field and lines. ☐ Follow manufacturers guidelines for operation and maintenance of the system. This is particularly for systems with aeration tanks. ☐ Other protection strategies: _____	

Attachment 2

City of Lima
Ohio Environmental Protection Agency
Drinking Water Source Assessment

Drinking Water Source Assessment for the City of Lima
PWS ID #OH0200811



November 2003
Revised April 2019

INTRODUCTION

The 1996 Amendments to the Safe Drinking Water Act established a program for states to assess the drinking water source for all public water systems. The Source Water Assessment and Protection Program is designed to help Ohio's public water systems protect their sources of drinking water from contamination. The purpose of this assessment is to provide information the City of Lima can use to help protect its source of drinking water from contamination. This report:

- identifies the drinking water source protection area(s),
- describes the characteristics of the watershed(s),
- inventories the potential contaminant sources in the area,
- evaluates the susceptibility of the source water to contamination, and
- recommends protective strategies.

PUBLIC WATER SYSTEM DESCRIPTION

The City of Lima operates a community public water system (PWS) that serves a population of approximately 65,600 people. The PWS also sells bulk water to the Elida Village for distribution to 4000 people. The system's treatment capacity is approximately 30 million gallons per day (MGD), but current average production is approximately 12.7 MGD.

The PWS obtains its raw water from two separate watersheds with a combination of river intakes and upground reservoirs. The Auglaize River watershed has two instream intakes feeding the Williams and Bresler upground reservoirs. Williams Reservoir has a capacity of 5,180 million gallons (MG) and Bresler has a capacity of 4,916 MG. The Ottawa River watershed has two instream intakes feeding several nearby upground reservoirs including Lost Creek, Ferguson Lake and Metzger upground reservoirs. Lost Creek has a capacity of 810 MG, Ferguson Lake has a capacity of 2,188 MG and Metzger has a capacity of 1,216 MG. Twin Lakes is another upground reservoir in the system with a capacity of 139 MG.

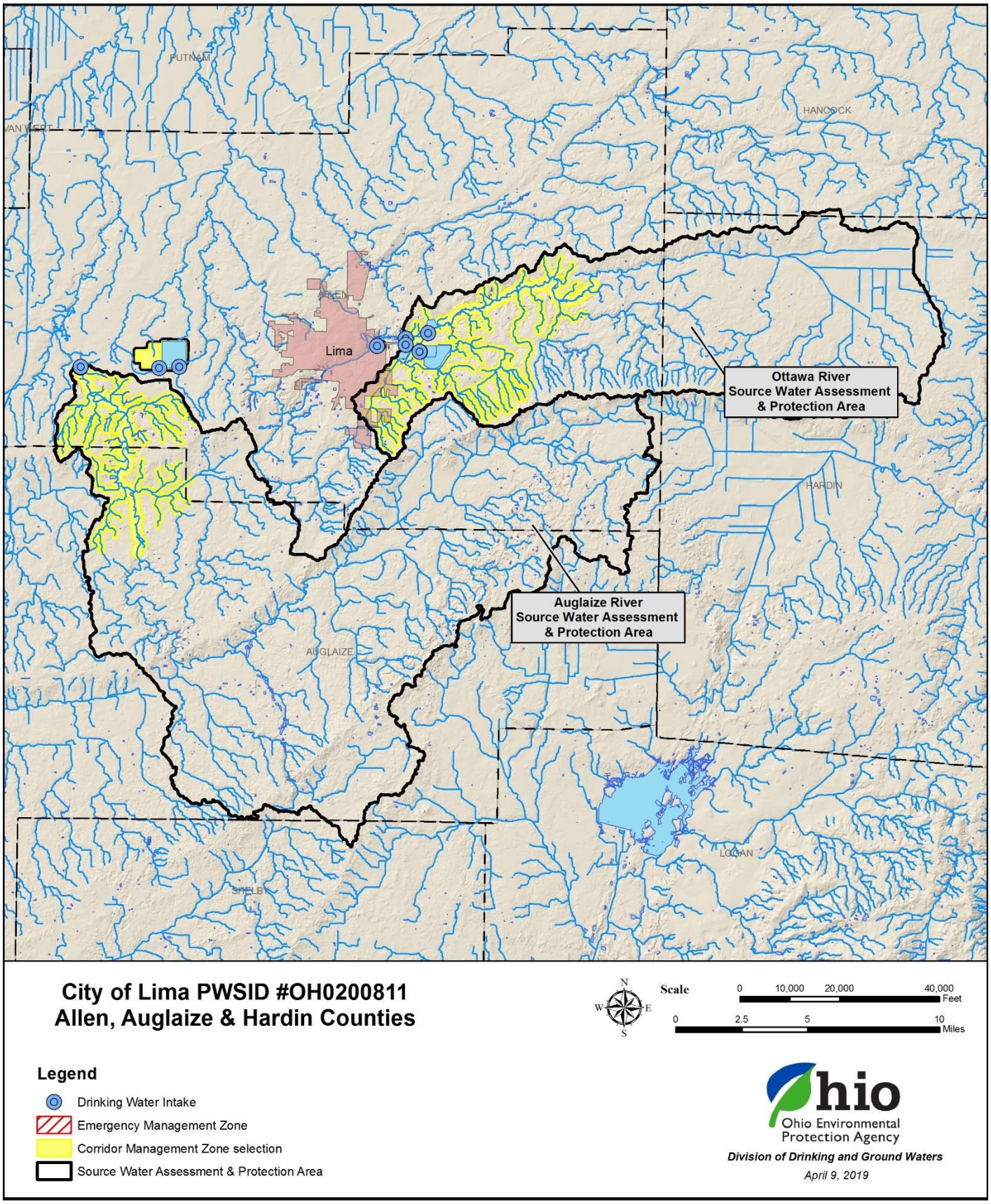


Figure 1. Source Water Assessment & Protection Area for the City of Lima

DELINEATION OF PROTECTION AREAS

The protection area for an inland stream source is divided into three areas: the Source Water Assessment and Protection Area (SWAP Area), the Corridor Management Zone (CMZ) and the Emergency Management Zone (EMZ). The SWAP Area is the drainage area upstream of a surface water intake. The CMZ is the area approximately 10 miles upstream of the intake. The CMZ also includes tributaries that drain to the stream. This area extends inland 1,000 feet from the mainstem and 500 feet from the tributaries. Potential contaminant sources in the CMZ have the potential to affect water quality at a public water system's intake and warrant inventory and management. The EMZ is the area in the immediate vicinity of the surface water intake in which the public water supply operator has little or no time to respond to a spill. Upground reservoirs also have a delineated SWAP Area and CMZ for protection planning and asset management purposes. The following sections describe the hydrologic setting and the protection areas for the City of Lima's intakes.

Auglaize & Ottawa River Hydrologic Setting. The SWAP Areas for Auglaize and Ottawa Rivers are primarily within the Central Ohio Till Plain physiographic region. The region is characterized with a surface of clayey till and well-defined moraines with intervening flat-lying ground moraine and intermorainal lake basins. The lake basins are filled with silt, clay or till and range in area up to 200 square miles. Soils in the Ottawa watershed consist of nearly level to gently sloping, poorly to very poorly drained soil in the glacial till and nearly level to gently sloping, poorly drained soil in the glacial outwash and loamy material over the till. Soils in the Auglaize watershed consist primarily of nearly level to gently sloping somewhat poorly drained to moderately well drained soils in the glacial till and ground moraine.

Auglaize River Protection Areas. The SWAP Area for the Auglaize River intakes encompasses approximately 137**,**000 acres or 214 square miles (Figure 1). The CMZ for this source covers approximately 8,200 acres, or 6% of the total SWAP area (Figure 2). The following named streams are included as part of the Auglaize River CMZ: Buck Run, Sims Run and Twomile Creek. The EMZs for both Auglaize River intakes are a roughly semi-circular pattern with a 500' radius (Figure 3). Williams and Bresler reservoirs have a SWAP Area and a CMZ bounded by the crest of the dike holding the reservoir water and cover approximately 439 acres and 594 acres respectively. The EMZs for these reservoirs consist of semi-circles with a 500' radius bounded by the dike walls nearest the intakes (Figure 4).

Ottawa River Protection Areas. The SWAP Area for the Ottawa River intakes encompasses approximately 78**,**200 acres or 122 square miles (Figure 1). The CMZ for this source covers approximately 10,300 acres, or 13% of the total SWAP area (Figure 5). The following named streams are included as part of the Ottawa River CMZ: Lost Creek, Hog Creek and Little Hog Creek. The EMZs for both Ottawa River intakes are a roughly semi-circular pattern with a 500' radius (Figure 6). The protection areas for the Ottawa River upground reservoirs and Twin Lakes reservoir are delineated in an identical fashion to Williams and Bresler reservoirs (Figures 6 & 7). The CMZs for Lost Creek, Ferguson/Metzger and Twin Lakes cover approximately 135 acres, 478 acres and 26 acres respectively.

DRINKING WATER QUALITY MONITORING SUMMARY

Available chemical and biological water quality data collected from the streams in the protection area and sampling results from finished water reported to Ohio EPA by the public water

supplier were evaluated to characterize water quality within the SWAP Area. See the following sections for summary information.

Treated Water Quality

Table 1 includes a summary of the analytical results of samples collected from 2003 to 2018. These samples were collected from treated drinking water as reported by the City of Lima to the Ohio EPA. The table also includes the drinking water standards for contaminants of concern; note that not all contaminants tested have established Maximum Contaminant Levels (MCLs) or Secondary MCLs. The table lists only the contaminants where at least one result was above the level of detection.

Cyanobacteria/Harmful Algal Blooms

The raw water sources for Lima City PWS have experienced harmful algal blooms with cyanotoxins detected in 2010, 2012, 2015, 2017, and 2018. Microcystins were detected in raw water entering the water treatment plant (maximum concentration 7.5 μg/L), and higher concentrations detected in Bresler and Williams Reservoirs (maximum concentrations 39 and 1400 μg/L, respectively). Saxitoxins were detected in raw water entering the plant during 2017 (maximum concentration 0.042 μg/L) and in Bresler Reservoir in 2015 (maximum concentration 0.045 μg/L). All finished drinking water samples have been non-detect for microcystins and saxitoxins. Based on microcystins concentrations, the source watersheds including Sims-Run-Auglaize River, Lost Creek, Lima Reservoir-Ottawa River, and Honey Run were listed as impaired algae (drinking water beneficial use) in the 2018 integrated water quality monitoring and assessment report (epa.ohio.gov/dsw/tmdl/OhioIntegratedReport#1798510016-report).

Auglaize & Ottawa River Biological and Chemical Monitoring

TMDLs (Total Maximum Daily Loads) were established for the watersheds containing the Auglaize River and Ottawa River on August 2004 and November 2013 respectively. Ohio EPA also conducted biological and water quality studies of the Ottawa River watershed in 1992, 1996 and 2010 and the Auglaize River watershed in 1992.

Auglaize River. The 2004 TMDL for the Upper Auglaize River established targets for different tributaries based on local conditions. Targets were set for phosphorous on the Auglaize River mainstem, Auglaize River Tributary II at river mile (RM) 103.69, Huffman Creek and Twomile Creek. Targets were set for ammonia at the Auglaize River Tributary II at RM 103.69. Targets were set for bacteria at the Auglaize River Tributary II at RM 103.69, Huffman Creek, Dry Run, Owl Creek, Twomile Creek and Sims Run. Targets were set for sedimentation and habitat at Camp Creek, Huffman Creek, Twomile Creek and Buck Run. Sampling from 2000 showed elevated levels of nutrients. Sediment chemistry data from 2000 showed detections of aluminum, barium, chromium, and copper above sediment thresholds at sample sites along the Auglaize River mainstem. Aluminum was at least slightly elevated from RM 96.68 to RM 80.29 with RM 92.48, 84.10 and 80.29 being elevated and RM 85.33 being highly elevated. Barium was elevated at RM 85.33 and slightly elevated at RM 84.10 and 80.29. chromium was elevated at RM 85.33 and 80.29 and highly elevated at RM 84.10. Copper was slightly elevated at RM 85.33. Sediment samples were also tested for organic compounds and pesticides. Fluoranthene and Pyrene were detected at RM 85.33 and 84.10. RM 84.10 also had detections of Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Indeno[1,2,3-cd]pyrene and Phenanthrene.

Ottawa River. The 2013 TMDL for the Upper Ottawa River established targets for total phosphorous and sediment related to aquatic life use designation, and E. coli targets related to recreational use designations. Sampling during the 2010 survey revealed exceedances of Ohio Water Quality Standards criteria for Human Health for Nitrate-Nitrite (21.9) and Atrazine (3.38 µg/L) in the mainstem Ottawa River. No exceedances specific to Human Health criterion were found in the tributaries. Aquatic life related criterion exceedances were found for pH, Dissolved Oxygen, and Ammonia. Nutrients including the previously mentioned Nitrate and Total Phosphorous were also found. Sampling also revealed ambient Selenium concentrations. Sediment samples found Cadmium at 1.17 mg/kg which is above the threshold effect concentration (TEC) of 0.99 mg/kg. The TEC is the level below which harmful effects are unlikely. Sediment samples detected no PCBs, pesticides or VOCs. Sampling was also conducted on Metzger reservoir in Spring of 2010 and found very high levels of nitrate (36.8 ppm), atrazine slightly above the method detection limit (3.38 ppb) and copper was slightly above reference conditions. No organic compounds were detected.

POTENTIAL CONTAMINANT SOURCES

A field inventory of the CMZs indicates that several potential contaminant sources exist in the SWAP Areas (Figures 8 & 9 and Table 2). It is important to note that this inventory lists *potential* contaminant sources and includes identified sources that have the *potential* to release a contaminant to surface or ground waters in the protection area. It is beyond the scope of this assessment to determine whether any specific potential source is actually releasing (or has released) a contaminant or to what extent any potential source(s) may be contributing to the overall pollutant load. Also, the inventory is limited to what Ohio EPA staff were able to observe on the day of the site visit. Therefore, City of Lima staff should be alert to the possible presence of potential sources of contamination that are not on this list.

Figure 10 shows the combined land use for the SWAP areas. The predominant land use is agriculture (cultivated crops and pasture) which covers approximately 78.1% of the SWAP Areas. Other land uses include 10.9% developed or developed open space (parks, green spaces, barren and other open areas) and 8.7% forest (deciduous and evergreen). Wetlands and other natural areas other than forest cover 1.8% of the SWAP Areas. Approximately 0.6% of the SWAP areas are open water – lakes, ponds and reservoirs.

Agricultural runoff from row crop agriculture is a potential source of contaminants such as pesticides and nutrients, including phosphorous. Other potential sources of nutrients in the protection area include discharging or failing septic systems and point sources under NPDES permits.

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. A total of 976 oil and gas wells are located within the Ottawa River protection area and 1,470 oil and gas wells are located within the Auglaize River protection area, of which 276 (Ottawa River) and 132 (Auglaize River) are found within the corridor management zones. Within the Ottawa River protection area, approximately 1.8 miles of gas lines are within 100 feet of a stream and 25 of the gas line crossings occur within the corridor management zone. Approximately 1.8 (Ottawa) and 0.92 (Auglaize) miles of gas lines are within 100 feet of a stream. Within the Auglaize River protection area, approximately 0.92 miles of gas lines are within 100 feet of a steam and 17 of the gas line crossings occur within the corridor management zone. Figures 13 and 14 show the locations where gas lines cross the Ottawa

and Auglaize Rivers.

The transportation network is a potential source of contamination when accidents on roads and railways can release hazardous materials to the waterways. Approximately 35.4 miles of rail lines and eleven significant roads traverse the Auglaize River SWAP Area (Figure 11). A rail line crosses the southern most edge of the Auglaize River CMZ and another rail line crosses approximately one mile south of the Auglaize River intakes. State Route 197 crosses the southern edge of the CMZ at Sims Run. State Route 198 runs approximately parallel to the Auglaize mainstem before connecting with State Route 117. Both State Routes cross the Auglaize mainstem and multiple tributaries. Approximately 22 miles of rail lines and eight significant roads traverse the Ottawa River SWAP Area (Figure 12). A rail line crosses several tributaries while flanking the mainstem of the Ottawa River CMZ before passing within 500 feet of the downstream Ottawa River intake. State Route 81 runs close to parallel before crossing the Ottawa River Mainstem. State Routes 117 and 309 intersect several Lost Creek tributaries.

Urban development and changing land uses in the protection area may result in new potential sources of contaminants and an increase in the amount of impervious surfaces. Such changes are reflected in nonpoint source pollution pattern changes. Land cleared for construction can result in greatly accelerated rates of erosion and sedimentation of streams. Impervious surfaces can be a vector for contaminant transport.

SUSCEPTIBILITY ANALYSIS

For the purposes of source water assessments, all surface waters are considered to be highly susceptible to contamination. By their nature, surface waters are open systems with no confining layer to impede contaminant or pathogen movement and have relatively short travel times from a potential contaminant source to the intake. This source water assessment for the City of Lima indicates that the source water is susceptible to contamination from agricultural, mineral resource development, residential and commercial sources, and from accidental releases and spills.

It is important to note that this assessment is based on available data, and therefore may not reflect current conditions in all cases. Water quality, land uses and other activities that are potential sources of contamination may change with time. While the source water for City of Lima Public Water System is considered susceptible to contamination, historically, the Lima Public Water System has effectively treated this source water to meet drinking water quality standards.

PROTECTIVE STRATEGIES

Protective strategies are activities that help protect a drinking water source from becoming contaminated. Implementing these activities benefits the community by helping to:

1. Protect the community's investment in its water supply.

2. Protect the health of the community residents by preventing contamination of its drinking water source.

3. Support the continued economic growth of a community by meeting its water supply

needs.

4. Preserve the source of drinking water for future generations.

5. Reduce regulatory monitoring costs.

Ohio EPA encourages the City of Lima to develop and implement an effective Drinking Water Source Protection Plan. The plan can be developed from the information provided in this Drinking Water Source Assessment Report. Table 3 lists protective strategies that are appropriate for the kinds of facilities/activities listed in the inventory. Finally, a document titled "Developing Source Water Protection Plans for Public Drinking Water Systems Using Inland Surface Waters" is enclosed. This document offers comprehensive guidance for developing and implementing a municipal Drinking Water Source Protection Plan. Ongoing implementation of the plan will help protect their valuable drinking water resources for current and future generations.

For further technical assistance on drinking water source protection, please contact the Ohio EPA Northwest District Office at (1-800-686-6930) or visit the Ohio EPA Source Water Assessment and Protection Web page at: **http://epa.ohio.gov/ddagw/swap.aspx**.

This report was updated by Richard Kroeger, Ohio EPA, Division of Drinking and Ground Waters, Northwest District Office and Ryan Ellis, Ohio EPA, Division of Drinking and Ground Waters, Central Office from the original 2003 assessment report.

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Ohio EPA, 2013. *Total Maximum Daily Loads for the Ottawa River (Lima Area) Watershed, Final Report, Division of Surface Water, Ohio Environmental Protection Agency*.

United States Department of Agriculture, 1978. *Soil Survey Auglaize County Ohio.*

Table 1. City of Lima Water Plant Monitoring Results January 2003 – March 2019 (Finished/Treated Water)

Contaminant (units)	Levels Found	Primary MCL[1]	Exceeds Primary MCL	Secondary MCL	Exceeds SMCL[2]
Physical Parameters					
pH, $CaCO_3$ stability (SU)	-0.12 – 9.99	None	n/a	7.0–10.5	Yes
Turbidity (NTU)	2.04 – 27.1	None	n/a	None	n/a
Inorganic Contaminants					
Nitrate (mg/L)	0.0085 – 0.085	10	No	None	n/a
Barium (µg/L)	5.9 – 11.6	2000	No	None	n/a
Fluoride (mg/L)	0.75 – 1.3	4	No	2	No
Selenium (µg/L)	5.602	50	No	None	n/a
Cyanotoxins					
Microcystins (µg/L)[3]	0.454 – 7.461	0.3, 1.6	Yes	None	n/a
Organic Contaminants & Disinfection Byproducts					
HAA5 (µg/L)[4]	8.6 – 56.38	60	No	None	n/a
• Dibromoacetic acid (µg/L)	1 – 2.4				
• Dichloroacetic acid (µg/L)	7 – 49.5				
• Monobromoacetic acid (µg/L)	1.2 – 3.6				
• Monochloroacetic acid (µg/L)	2.8 – 4.5				
• Trichloroacetic acid (µg/L)	1.7 – 24.2				
TTHM (µg/L)[5]	0 – 129.9	80	Yes	None	n/a
• Bromodichloromethane (µg/L)	0 – 22.6				
• Bromoform (µg/L)	0 – 5.5				
• Chloroform (µg/L)	0 – 99.8				
• Dibromochloromethane (µg/L)	0 -- 9				

Contaminant (units)	Levels Found	Primary MCL[1]	Exceeds Primary MCL	Secondary MCL	Exceeds SMCL[2]
Dichloromethane (µg/L)	0.54	5	No	None	n/a
Atrazine (µg/L)	0.34 – 0.8	3	No	None	n/a

[1] MCL = Maximum Contaminant Level, set by U.S.EPA. The primary MCLs for Nitrate, Nitrite, and Total Nitrate and Nitrite as N apply to all public water systems. The primary MCLs for the remaining contaminants apply only to community and nontransient noncommunity public water systems (radioactive contaminants only apply to community systems). Note, a sampling result that exceeds the MCL value does not necessarily indicate a violation by the public water system and MCL violations for many contaminants are based on a running annual average instead of individual samples.

[2] SMCL = Secondary Maximum Contaminant Level, means the advisable maximum level of a contaminant in water to avoid aesthetic, cosmetic or technical issues.

[3] There is not an MCL for microcystins, but rather Action Levels beyond which increased monitoring and possibly other actions are required. Microcystins action levels apply to all public water systems; 0.3 µg/L applies to vulnerable individuals as defined in 3745-90-02, while 1.6 µg/L applies to all individuals.

[4] HAA5 = Haloacetic Acids (five), includes the sum of dibromoacetic acid, dichloroacetic acid, monobromoacetic acid, monochloracetic acid and trichloroacetic acid rounded to two significant figures after addition.

[5] TTHM = Total Trihalomethanes, includes the sum of trichloromethane (cholorform), dibromochloromethane, bromodichloromethane and tribromomethane (bromoform) rounded to two significant figures after addition.

Table 2A. Potential Sources of Contamination Around the City of Lima's Drinking Water Corridor Management Zone for the Auglaize River Intake

Potential Contaminant Source	Environmental Concerns	# within 100' of the CMZ (Corridor Management Zone)
AGRICULTURAL SOURCES		
Cropland	May be a source of nutrients, ammonia, pesticides and pathogens. See page 5 for additional information.	71.5% land use in Auglaize River SWAP Area
Pasture	May be a source of nutrients, ammonia, and animal pathogens. See page 5 for additional information.	8.4% land use in Auglaize River SWAP Area
Wastewater/Biosolid Application	May be a source of nutrients, ammonia, and other contaminants. If not treated/applied properly, may be a source for pathogens.	22
COMMERCIAL SOURCES		
Airport/Abandoned Airfield	Runoff from these facilities may be a source of deicers, metals, petroleum products such as motor oil, and VOCs in source water.	1
Cemeteries/Funeral Homes/Crematoriums	Cemeteries have been associated with arsenic and formaldehyde contamination in ground water.	8
Golf Courses	May be a source of nutrients, ammonia, pesticides and pathogens.	1
INDUSTRIAL SOURCES		
Military Base	May be associated with vehicular chemicals and fuel, various industrial chemicals, and heavy metals.	1
Oil & Gas Wells	Potential sources of petroleum and brine, which may leak or be spilled into surface water. Oil, brine, and other fluids may also leak from storage tanks.	13
WASTE DISPOSAL SOURCES		
Landfills	May be a potential source of leaks and spills for a variety of contaminants, depending on landfill type.	3
Underground Injection Wells (Class 1 or 5)	May be a potential source of leaks and spills for a variety of contaminants, depending on waste processed.	2
Wastewater Discharge	If poorly maintained/operated, municipal wastewater discharge sites can be sources for nutrients, ammonia, and	1

Potential Contaminant Source	Environmental Concerns	# within 100' of the CMZ (Corridor Management Zone)
	pathogens. Poorly maintained/operated industrial wastewater discharge sites could contribute various chemicals depending on operation.	
Septic Systems	If poorly maintained/operated, may be a source of household and business chemicals and pathogens.	3
INFRASTRUCTURE RELATED SOURCES		
Highway / Transportation Route	Accidents on transportation routes pose the threat of leaks and spills of fuels and chemicals. Weed killers used to control vegetation can elevate levels of pesticides in drinking water sources. Runoff may contain oil, metals, and deicers. See page 6 or more information.	State Routes 117 & 198 have several crossings, State Route 197 has 2 crossings
Pipelines	Spills and leaks from pipelines the potential to impact drinking water sources, even at small quantities. Condensate in natural gas pipelines may contain PCBs and other chemicals.	7 pipelines

Table 2B. Potential Sources of Contamination Around the City of Lima's Drinking Water Corridor Management Zone for the Ottawa River Intake

Potential Contaminant Source	Environmental Concerns	# within 100' of the CMZ (Corridor Management Zone)
AGRICULTURAL SOURCES		
Cropland	May be a source of nutrients, ammonia, pesticides and pathogens. See page 5 for additional information.	70.1% land use in Ottawa River SWAP Area
Pasture	May be a source of nutrients, ammonia, and animal pathogens. See page 5 for additional information.	4.7% land use in Ottawa River SWAP Area
Agricultural Chemical/Equipment Facilities.	Facilities associated with agricultural chemicals and/or equipment may be a source of leaks or spills.	1
Wastewater/Biosolid Application	May be a source of nutrients, ammonia, and other contaminants. If not treated/applied properly, may be a source for pathogens.	10
MUNICIPAL SOURCES		
Municipal Garages	May be a source for automotive chemicals and fuel.	1
Combined Sewer Overflow	May be a source of household and business chemicals, nutrients, ammonia and pathogens.	3
COMMERCIAL SOURCES		
Cemeteries/Funeral Homes/Crematoriums	Cemeteries have been associated with arsenic and formaldehyde contamination in ground water.	8
Fleet/Truck/Bus Terminals & Railroad Yard/Maintenance Facilities	May be associated with the potential for leaks and spills of oil, gasoline, other petroleum products, and automotive fluids. Potential for spilled cargo.	3
Hospitals/Medical/Veterinary Clinics	May be a source of pathogens, organic or medical waste, pharmaceutical chemicals.	1
Junk Yards: Scrap and Auto	May be locations for leaks and spills of oil and other petroleum products. Waste oil and auto parts may contain metals that could contaminate drinking water sources.	1
INDUSTRIAL SOURCES		
Gravel Pits & Quarries	These types of facilities may be associated with surface water contaminants and the potential for oil, gasoline, and automotive fluid leaks and spills.	3

Potential Contaminant Source	Environmental Concerns	# within 100' of the CMZ (Corridor Management Zone)
Machine and Metalworking Shops	May be associated with leaks and spills of oil and other chemicals. Waste streams may contain metals that could contaminate drinking water sources.	2
Oil & Gas Wells	Potential sources of petroleum and brine, which may leak or be spilled into surface water. Oil, brine, and other fluids may also leak from storage tanks.	45
Mines and Mine Waste	Potential source of acid mine drainage, heavy metals and total dissolved solids.	1
Petroleum Production and Storage Facilities	May be associated with the potential for leaks and spills of oil and other petroleum products.	1
WASTE DISPOSAL SOURCES		
Lagoon/Impoundment: Industrial & Non-Industrial Waste	If poorly maintained/operated, municipal wastewater discharge sites can be sources for nutrients, ammonia, and pathogens. Poorly maintained/operated industrial wastewater discharge sites could contribute various chemicals depending on operation.	7
Underground Injection Wells (Class 1 or 5)	May be a potential source of leaks and spills for a variety of contaminants, depending on waste processed.	3
Wastewater Discharge	If poorly maintained/operated, municipal wastewater discharge sites can be sources for nutrients, ammonia, and pathogens. Poorly maintained/operated industrial wastewater discharge sites could contribute various chemicals depending on operation.	7
Septic Systems	If poorly maintained/operated, may be a source of household and business chemicals and pathogens.	3
INFRASTRUCTURE RELATED SOURCES		
Highway / Transportation Route	Accidents on transportation routes pose the threat of leaks and spills of fuels and chemicals. Weed killers used to control vegetation can elevate levels of pesticides in drinking water sources. Runoff may contain oil, metals, and deicers. See page 6 for more information.	Interstate 76, and State Routes 81,117, and 65 have several crossings
Pipelines	Spills and leaks from pipelines the potential to impact drinking water sources, even at small quantities. Condensate in natural gas pipelines may contain PCBs and other chemicals.	14 pipelines
GENERAL POINT SOURCES		

Potential Contaminant Source	Environmental Concerns	# within 100' of the CMZ (Corridor Management Zone)
Aboveground Storage Tanks	May present a potential for leaks and spills that could impact surface or ground water.	2
Underground Storage Tanks	If poorly maintained, may be a potential source of leaks and spills for gasoline and other chemicals.	46

Table 3. Examples of Protective Strategies

Potential Contaminant Source	Protective Strategies To Consider
General	➢ Purchase additional property. ➢ Provide educational material to members of the community on topics regarding the drinking water source protection area. ➢ Include drinking water source protection into the local school curriculum. ➢ Provide education (material/meetings) local businesses and industries on topics relating to drinking water source protection. ➢ Encourage 'ground water friendly' development. ➢ Form partnerships with neighboring jurisdictions and potential contaminant source owners ➢ Develop/enact/enforce a local ordinance which may include any of the following: changing zoning; illegal waste disposal; requiring registration of existing facilities; banning certain new types of activities; dictating chemical handling procedures; maintaining/filing a chemical inventory; facility spill/contingency planning; engineering controls for existing/new facilities; paralleling existing federal or state requirements.
Agricultural Sources	➢ Assess the use of best management practices and recommend additional practices. ➢ Encourage road safety with agricultural chemicals. ➢ Provide education (material/meetings) to local farmers and agribusinesses on appropriate topics. ➢ Plan/design/implement methods to control impacts to surface water.
Residential Sources	➢ Inventory/remove underground home heating oil tanks in the protection area. ➢ Identify areas used for illegal dumping. ➢ Provide education (material/meetings) to home owners on: drinking water protection; use/maintenance of septic systems; illegal dumping; proper well abandonment (both the reason and the process). ➢ Develop a centralized wastewater collection/treatment system. ➢ Encourage/require (and provide incentives) for sealing unused wells. ➢ Ensure enforcement of existing requirements for closing unused wells. ➢ Ensure the proper construction of new wells.
Municipal Sources	➢ Monitor compliance with existing regulations through inspections and/or contact with regulatory agencies (such as the local fire department, State Fire Marshal, or the Ohio EPA). ➢ Encourage/arrange hazardous materials training or waste and disposal assessments for employees. ➢ Develop an early release notification system for spills and emergency planning; educate emergency responders to be aware of drinking water protection areas; or coordinate facility spill/contingency planning. ➢ Encourage compliance with materials handling procedures/requirements. ➢ Install of engineering controls at municipal facilities ➢ Implement pollution prevention strategies. ➢ Work with the street department and Ohio DOT to minimize use of road salt. ➢ Evaluate and close fire cisterns or other city owned wells. ➢ Conduct routine sewer inspections, maintenance & upgrades.

Commercial Sources	➢ Monitor compliance with existing regulations through inspections and/or contact with regulatory agencies. ➢ Use routine inspections as an educational opportunity. ➢ Encourage compliance with materials handling procedures/requirements. ➢ Encourage/arrange hazardous materials training or waste and disposal assessments for local businesses (and their employees). ➢ Request installation of engineering controls for existing facilities. ➢ Encourage facility spill/contingency planning in conjunction with the fire department. ➢ Encourage local businesses to implement pollution prevention strategies.
Industrial Sources	➢ Monitor compliance with existing regulations through inspections and/or contact with regulatory agencies. ➢ Use routine inspections as an educational opportunity. ➢ Encourage compliance with materials handling procedures/requirements. ➢ Encourage/arrange hazardous materials training or waste and disposal assessments for local industries (and their employees). ➢ Encourage facility spill/contingency planning in conjunction with the fire department. ➢ Request installation of engineering controls for existing facilities. ➢ Encourage local industries to implement pollution prevention strategies. ➢ Encourage compliance with materials handling procedures/requirements. ➢ Encourage/arrange waste and disposal assessments for local businesses.
Oil & gas wells	➢ Provide education (material/meetings) to owners on maintenance. ➢ Ensure/monitor proper operation and maintenance. ➢ Develop an early release notification system for spills.
Spills	➢ Develop an early release notification system for spills and an emergency response plan. ➢ Include drinking water protection in response planning and training. ➢ Post signs indicating the extent of the protection area.
Transportation	➢ Create hazardous materials routes around the protection area and require/encourage transporters to use them. ➢ Work with local transporters on protection area awareness. ➢ Encourage road safety with chemicals. ➢ Post signs indicating the extent of the protection area.

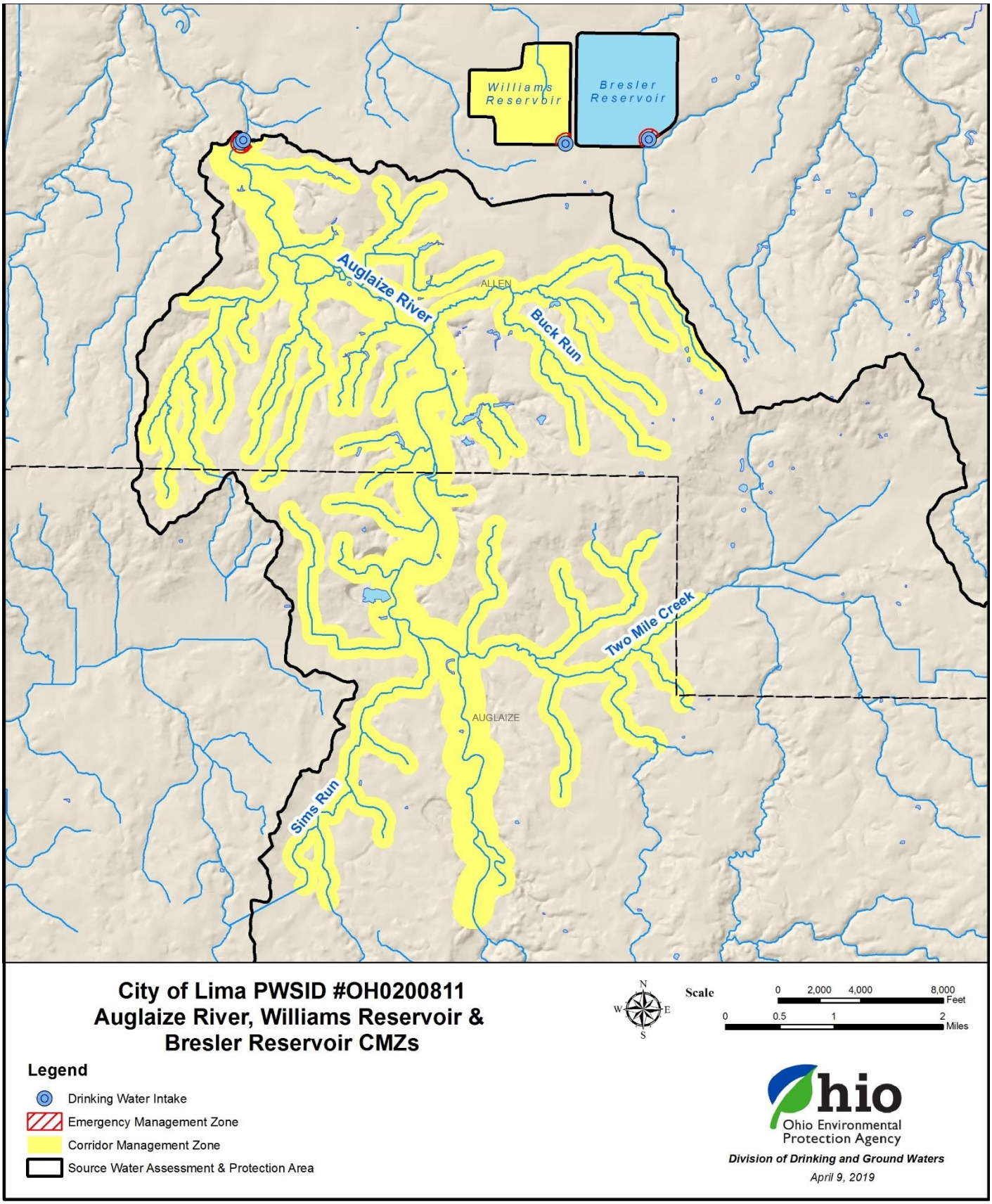


Figure 2. Corridor Management Zones for Auglaize River Intake, Williams Reservoir & Bresler Reservoir

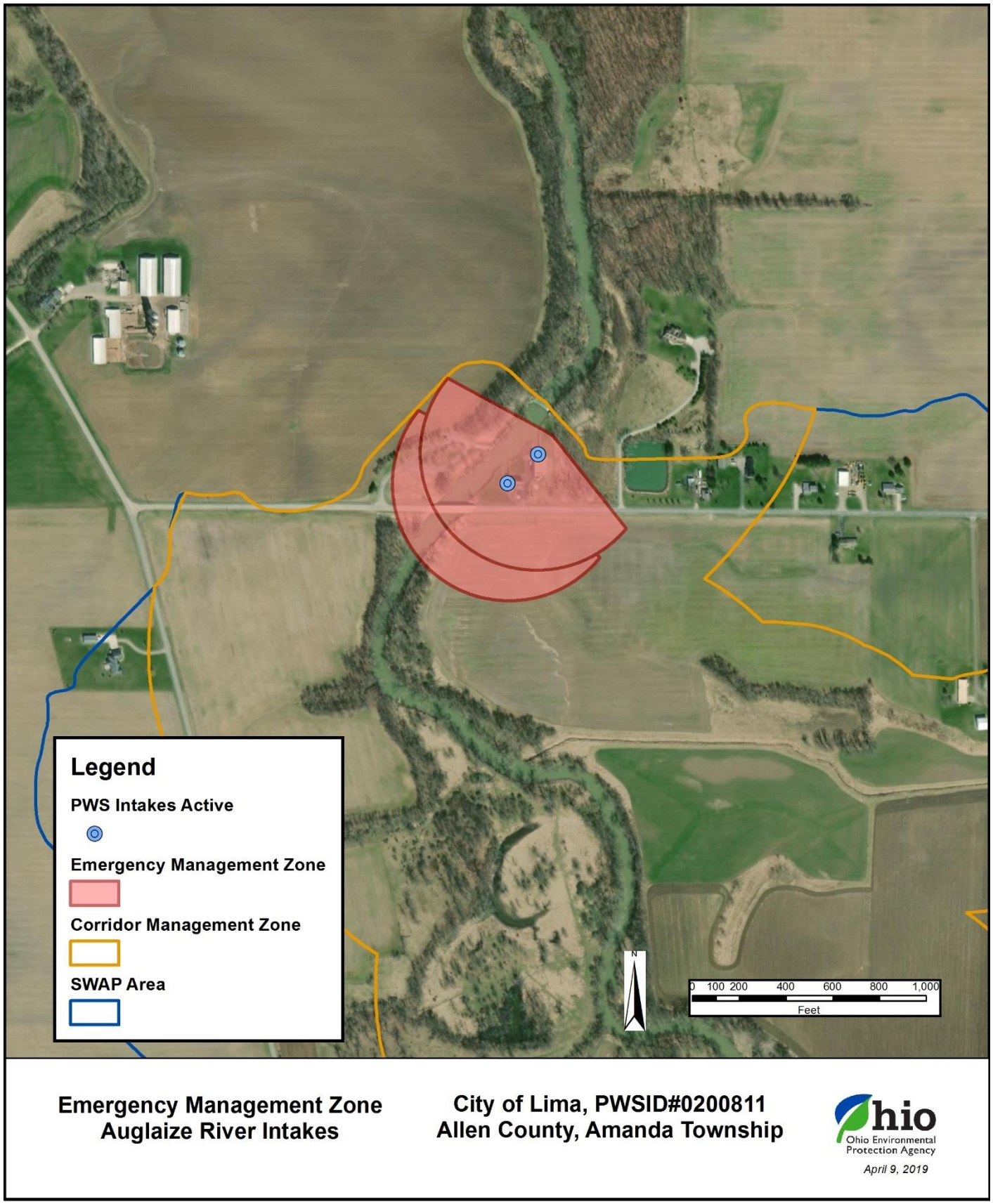


Figure 3. Emergency Management Zone Auglaize River Intakes

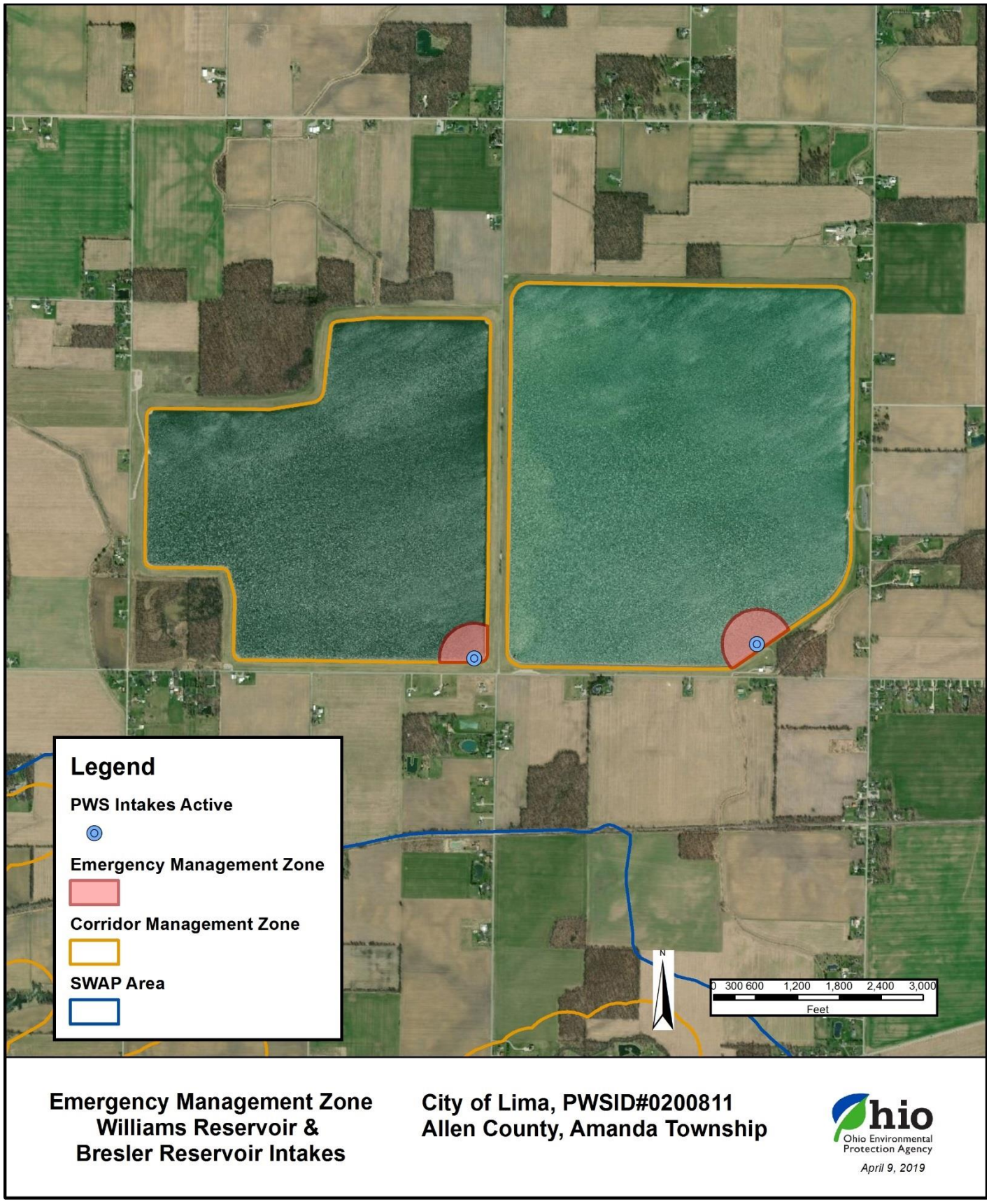


Figure 4. Emergency Management Zone Williams Reservoir & Bresler Reservoir

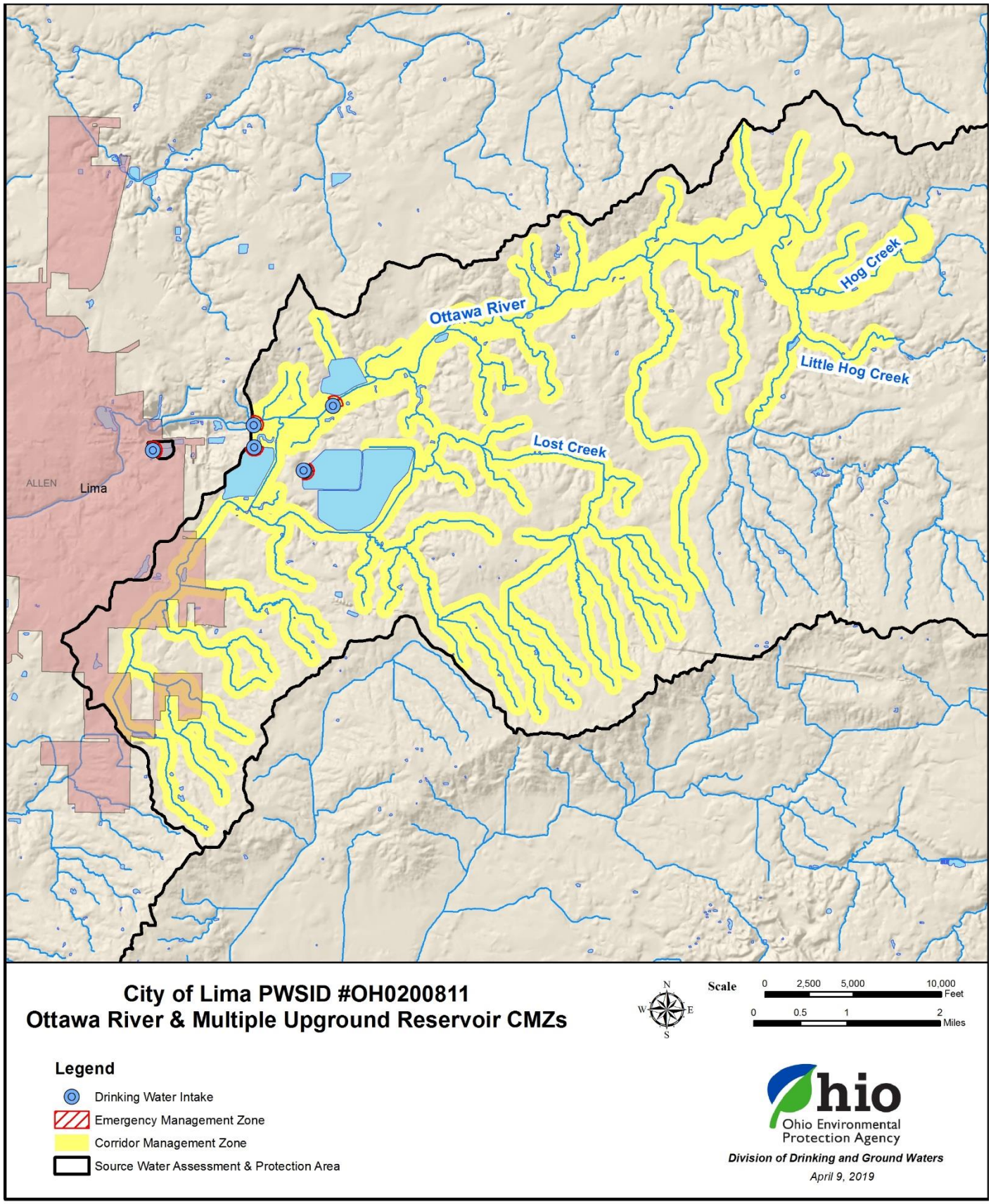


Figure 5. Corridor Management Zones for Ottawa River Intake & Multiple Upground Reservoirs

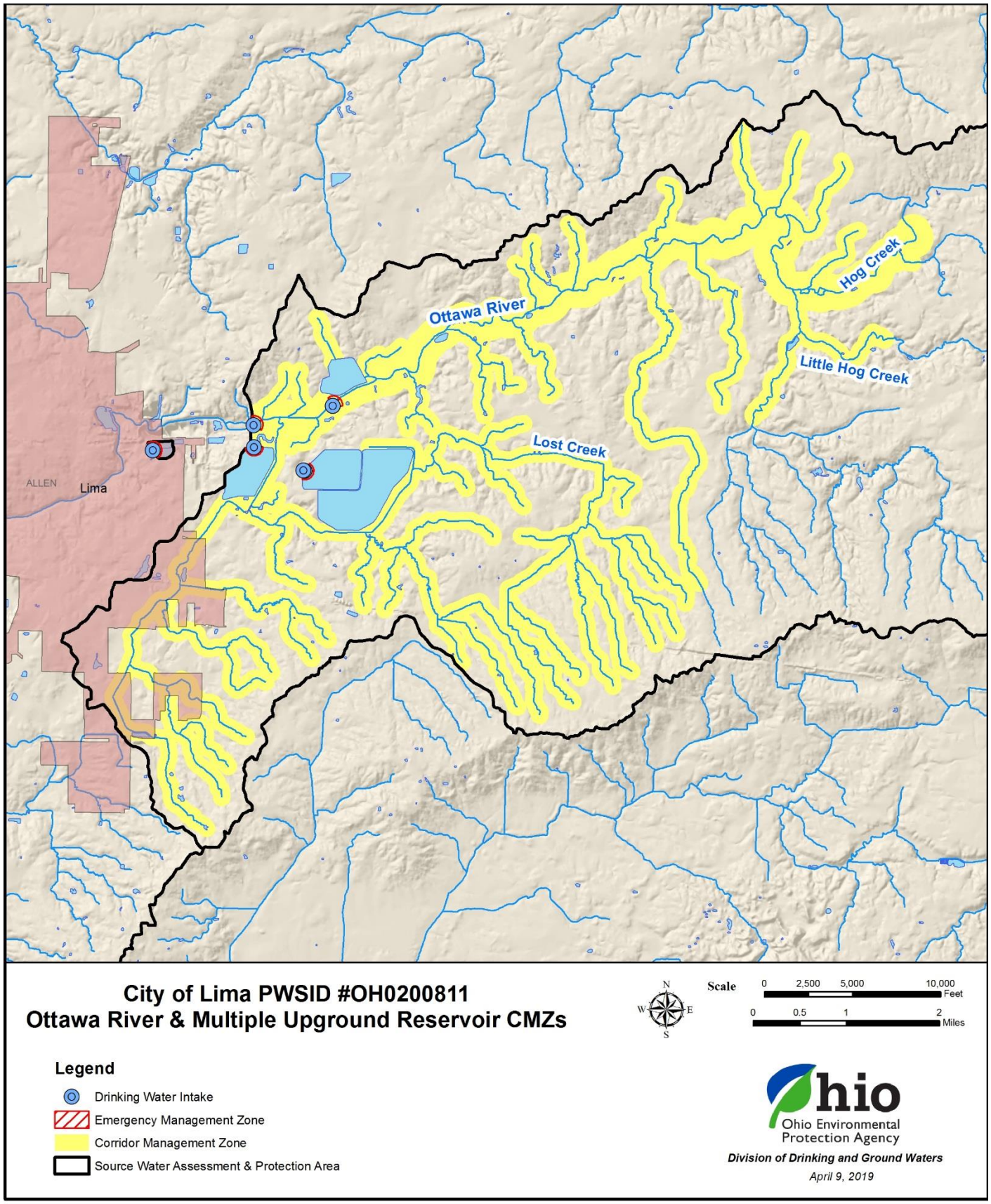


Figure 5. Corridor Management Zones for Ottawa River Intake & Multiple Upground Reservoirs

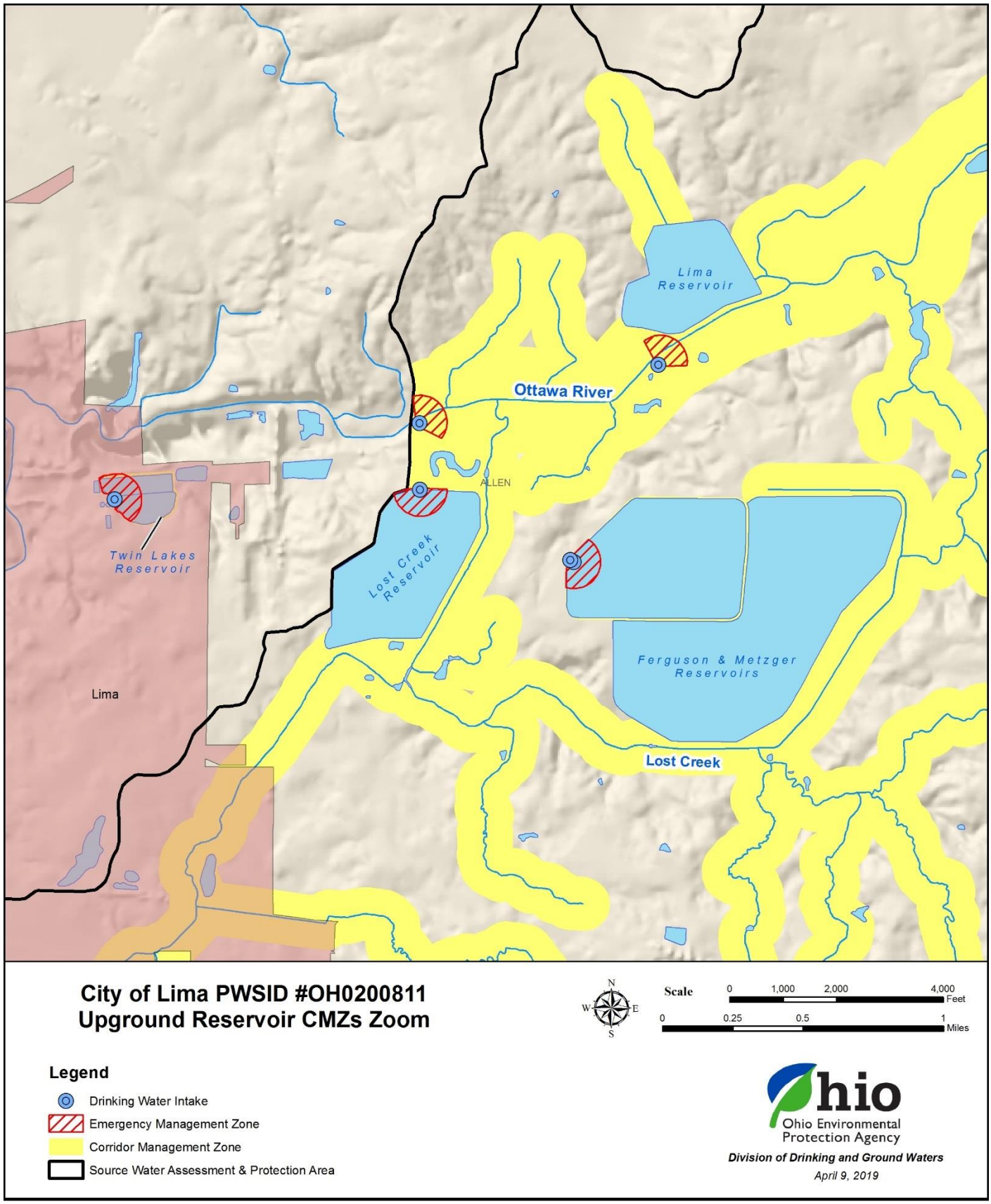


Figure 6. Corridor Management Zones Twin Lakes, Lost Creek, Ferguson and Metzger Reservoirs

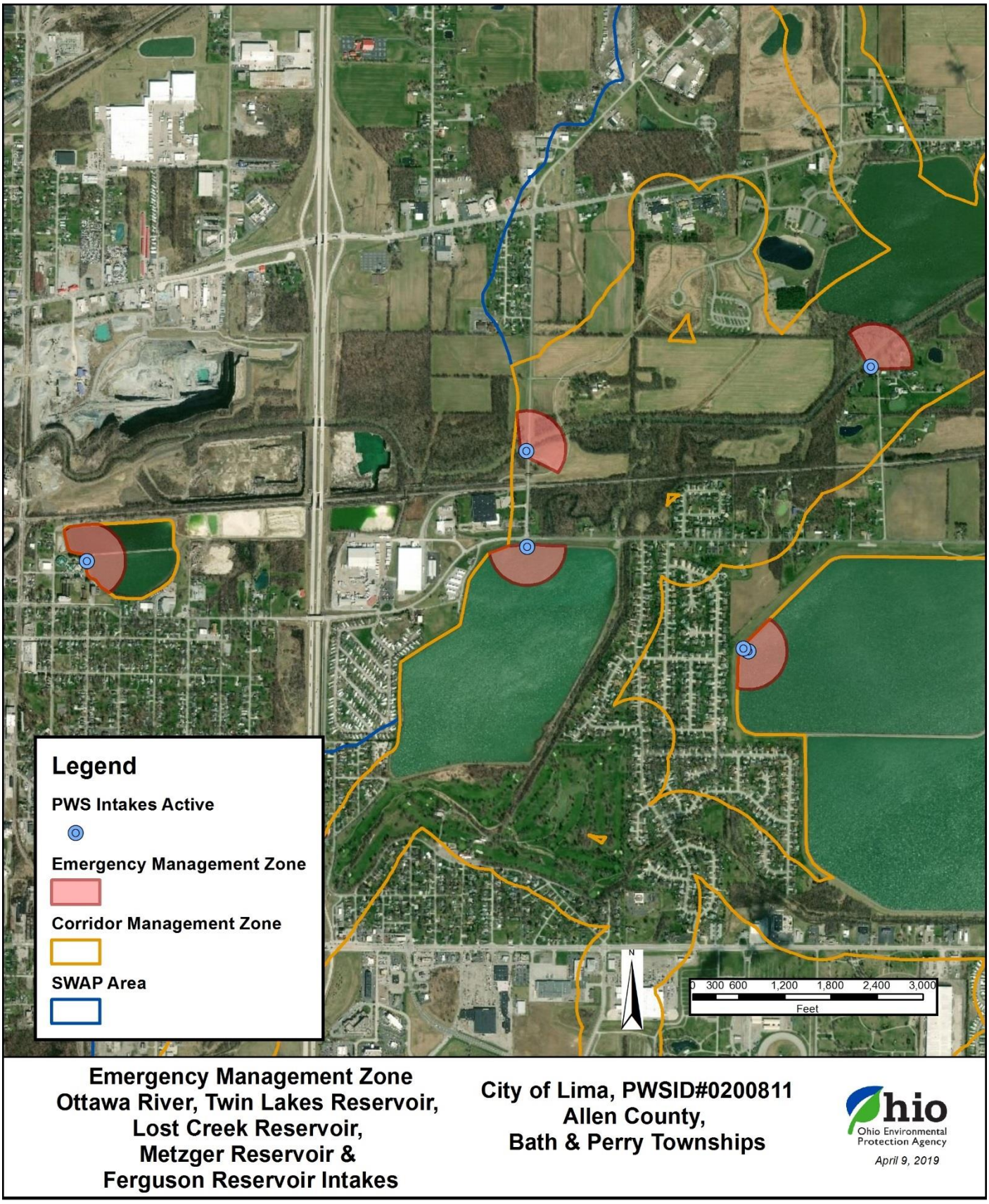


Figure 7. Emergency Management Zone Ottawa River and Nearby Reservoirs

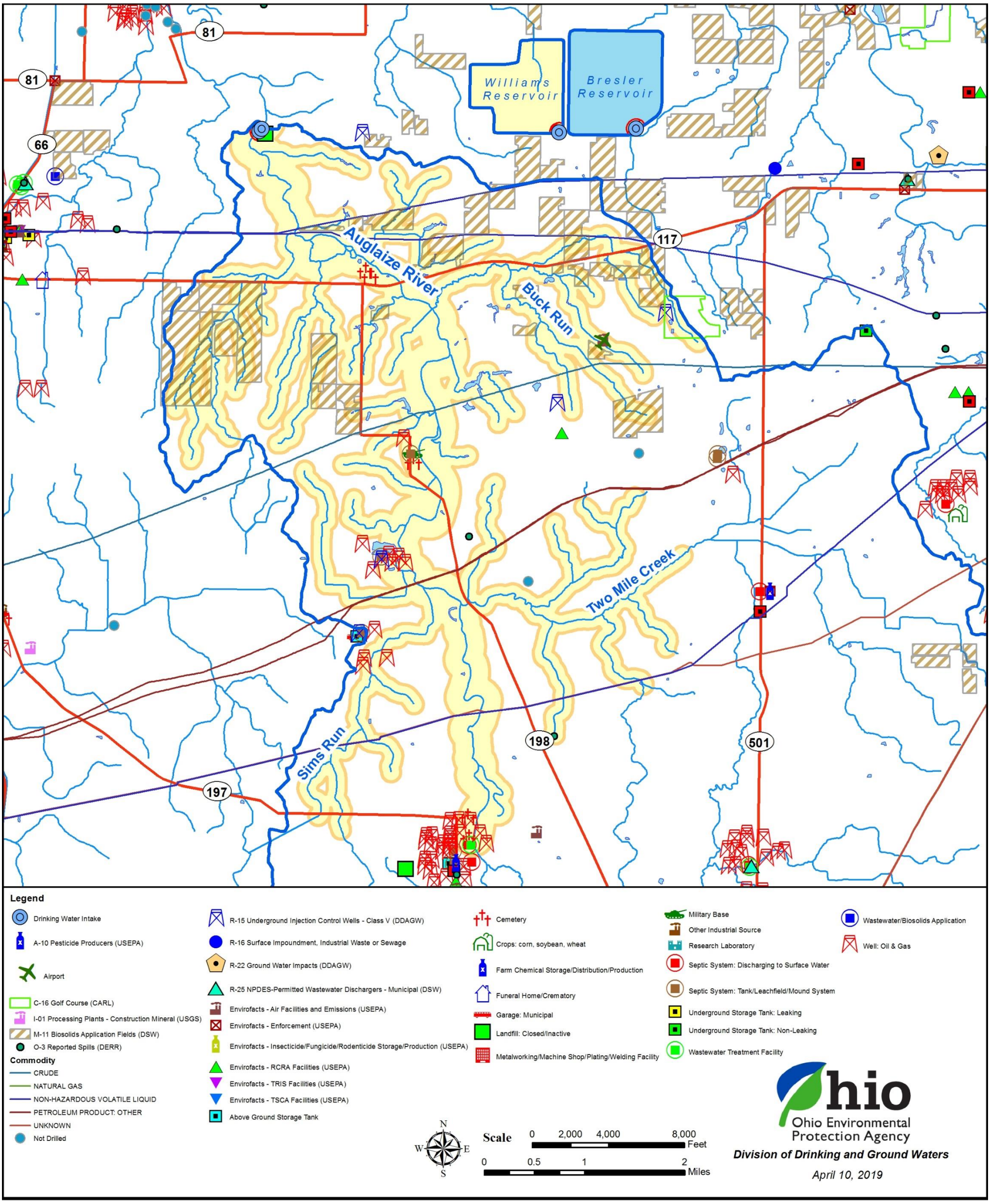
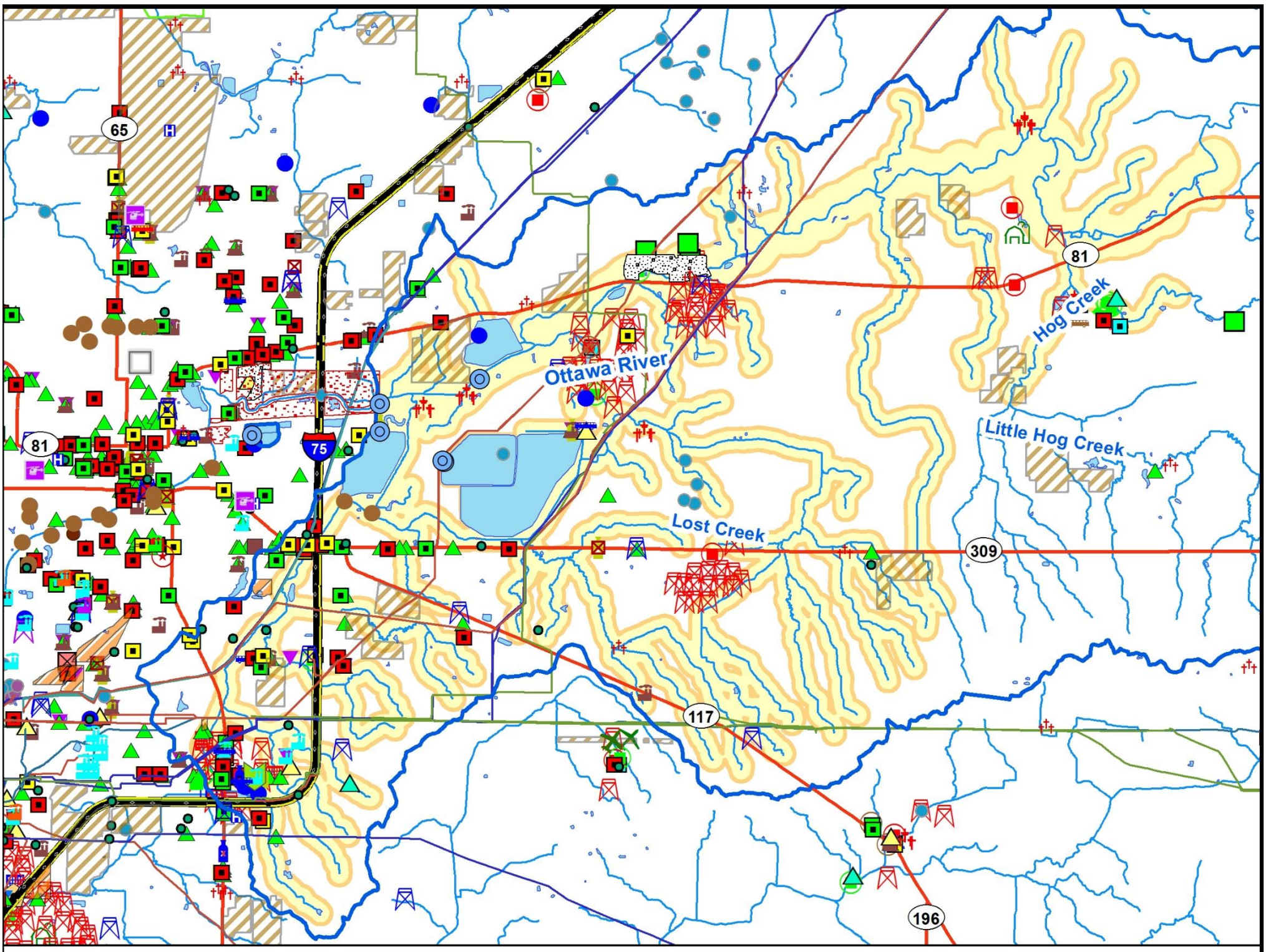


Figure 8. PCSI Inventory for Auglaize River Intake and Nearby Upground Reservoirs



Legend

- Drinking Water Intake
- A-10 Pesticide Producers (USEPA)
- C-16 Golf Course (CARL)
- C-19 Hospitals (GNIS)
- I-01 Processing Plants - Agricultural Minerals (USGS)
- I-01 Processing Plants - Crushed Stone (USGS)
- I-05 Industrial Minerals - Quarry - Active (ODNR)
- I-05 Industrial Minerals - Quarry - Inactive (ODNR)
- I-14 Petroleum Refineries (EIA)
- I-14 Ethanol Plants (EIA)
- I-14 Petroleum Terminals (EIA)
- I-14 Petroleum Break Out Tanks (NPMS)
- I-14 Petroleum Producers (USEPA)
- I-14 Oil Storage (large quantity) (USEPA)

M-02 Compost Facilities (Class I & II) (DMWM)

Facility Class

- Class II
- M-07 Material Recovery Facilities (Recyclers) (DMWM)
- M-11 Biosolids Application Fields (DSW)
- O-3 Reported Spills (DERR)
- O-05 Combined Sewer Outfalls (DSW)
- R-11 DERR Sites (DERR)

Commodity

- CRUDE
- HYDROGEN/NITROGEN
- NATURAL GAS
- NON-HAZARDOUS VOLATILE LIQUID
- UNKNOWN
- Not Drilled
- Storage Well
- R-14 Underground Injection Control Wells - Class I (DDAGW)
- R-15 Underground Injection Control Wells - Class V (DDAGW)
- R-17 Town Gas Sites (DERR)
- R-25 NPDES-Permitted Wastewater Dischargers - Municipal (DSW)
- R-26 NPDES-Permitted Wastewater Dischargers - Industrial (DSW)
- W-99 Landfill - Solid Waste Transfer Facility (DMWM)
- Envirofacts - Brownfields (USEPA)
- Envirofacts - Air Facilities and Emissions (USEPA)
- Envirofacts - CERCLIS Sites (includes NPL) (USEPA)
- Envirofacts - Enforcement (USEPA)
- Envirofacts - Insecticide/Fungicide/Rodenticide (USEPA)
- Envirofacts - RCRA Facilities (USEPA)
- Envirofacts - TRIS Facilities (USEPA)
- Envirofacts - TSCA Facilities (USEPA)

- Hazardous Material Routes (NTAD)
- Above Ground Storage Tank (3)
- Airport/Abandoned Airfield (1)
- Auto/Boat/Camper Dealer (2)
- Cemetery (9)
- Combined Sewer Overflow (3)
- Crops: corn, soybean, wheat (2)
- Farm Chemical Storage/Distribution/Production (1)
- Fleet/Truck/Bus Terminal (2)
- Garage: Municipal (1)
- Garage: School Bus (1)
- Groundwater Impact (1)
- Hardware/Home Improvement/Lumber Store (1)
- Hospital (1)
- Junk Yard (Auto Salvage/Scrap) (1)
- Lagoon/Impoundment: Industrial Waste (3)
- Landfill: Closed/Inactive (2)
- Metalworking/Machine Shop/Plating/Welding Facility (2)
- Mine: Surface/Strip Mine (1)
- Pipeline: Natural Gas (1)
- Septic System: Discharging to Surface Water (6)
- Septic System: Tank/Leachfield/Mound System (5)
- Underground Storage Tank: Leaking (20)
- Underground Storage Tank: Non-Leaking (17)
- Wastewater Treatment Facility (10)
- Well: Oil & Gas (107)

N W E S

Scale 0 2,500 5,000 10,000 Feet

0 0.5 1 2 Miles

Ohio Environmental Protection Agency

Division of Drinking and Ground Waters

April 10, 2019

Figure 9. PCSI Inventory for Ottawa River and Nearby Upground Reservoirs

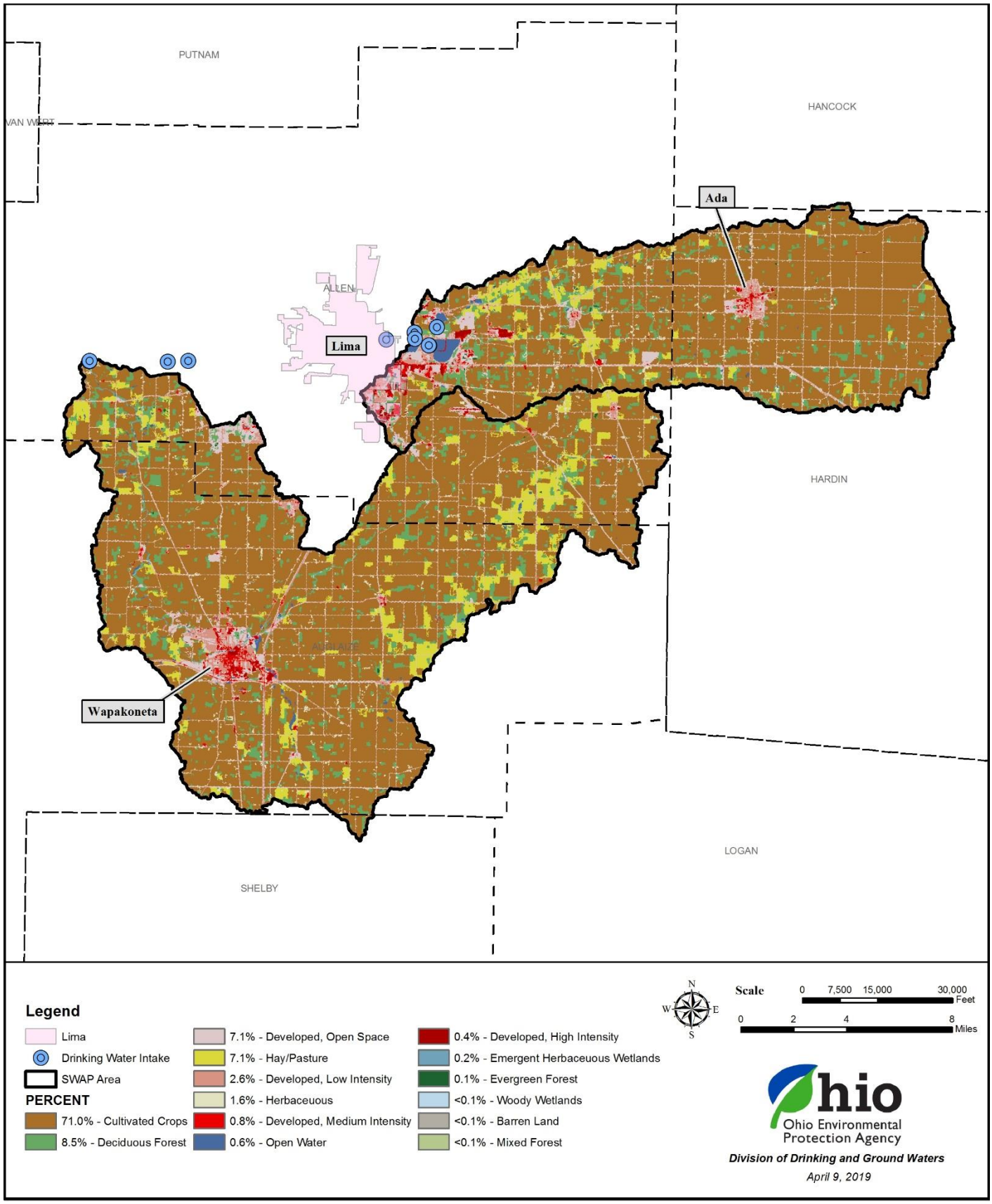


Figure 10. City of Lima Land Use (NLCD 2011)

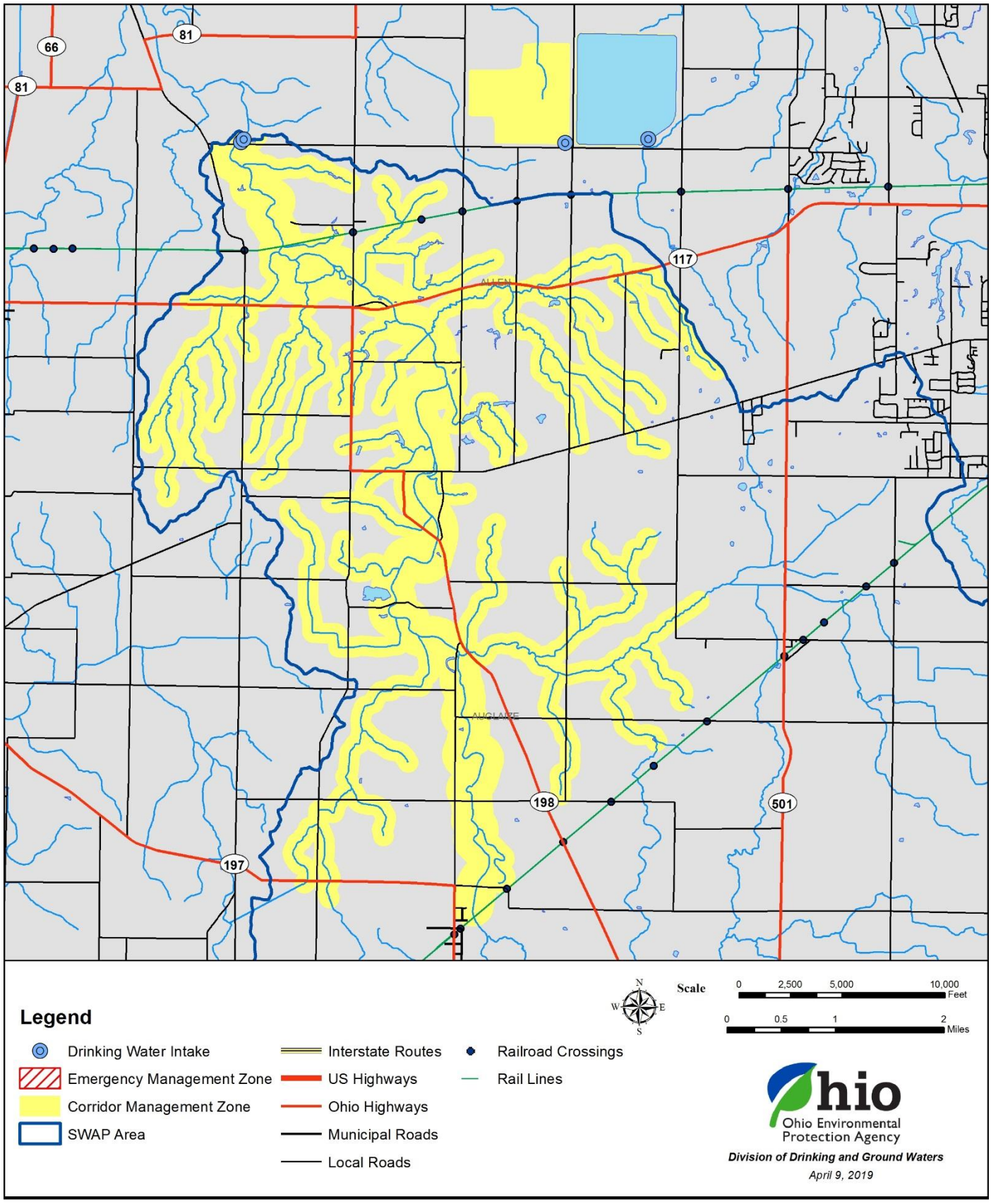


Figure 11. Roads and Highways Near Auglaize River Intake

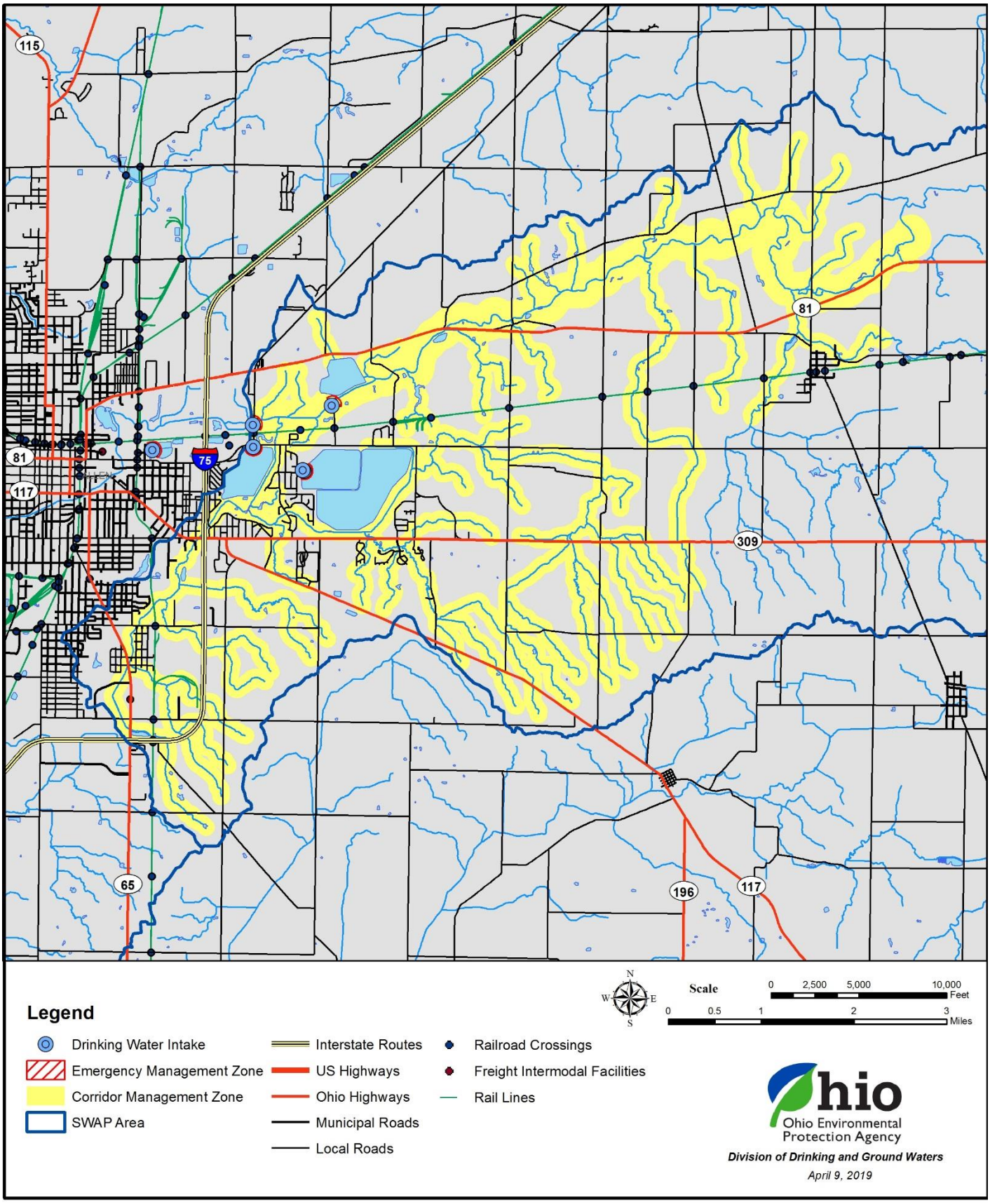


Figure 12. Roads and Highways Near Ottawa River Intake

Attachment 3

Source Water Protection Areas and
Corridor Management Zones Map
Stantec

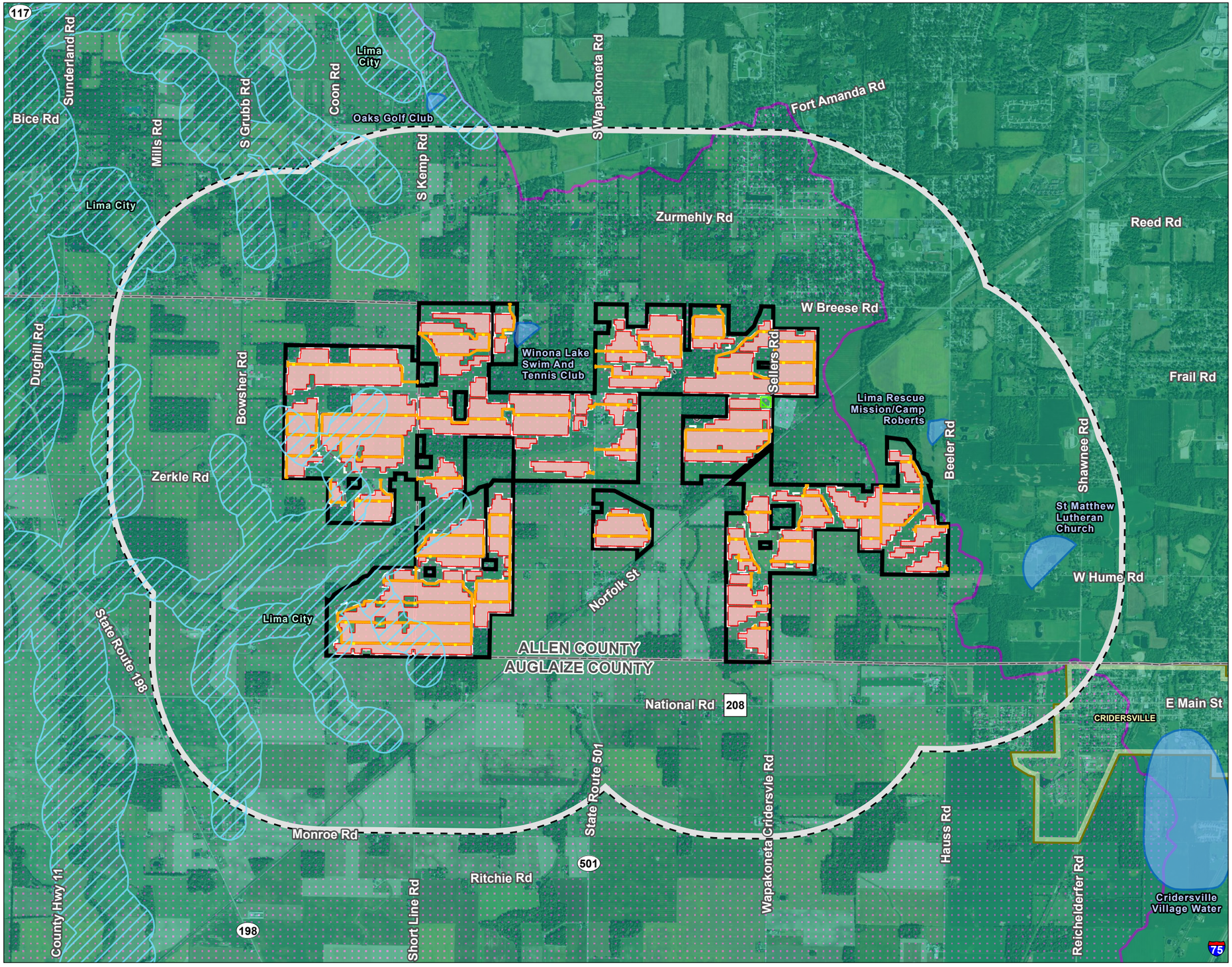


Figure No.

1

Title

Source Water Protection Areas and Corridor Management Zones Map

Client/Project 2028113238

Birch Solar 1, LLC
Birch Solar Project

Project Location
Allen and Auglaize Counties, Ohio

Prepared by JLH on 2021-04-14
TR by JD on 2021-04-14
IR by CMD on 2021-04-21

N

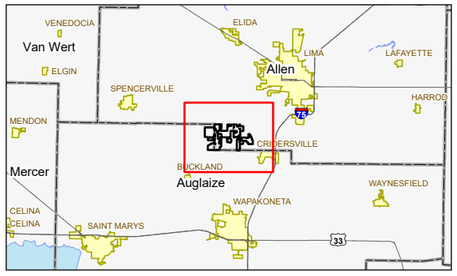
0 1,500 3,000 Feet
(At original document size of 11x17)
1:36,000

Legend

- Project Area
- 1 Mile Buffer
- Solar Array
- Inverter
- Substation
- Fence
- Access Road
- Corridor Management Zone
- Source Water Protection Area

Source Water Area Watershed

- Lima City
- Bowling Green City/Napoleon City/ Campbell Soup Supply Co.



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources: Stantec, Lightsource, USGS, ODNR, OEPA, NADS
3. Orthophotography: 2019 NAIP

Preliminary Design - Not for Construction

Stantec

Attachment 4

Unanticipated Discovery Plan Draft

DICKINSON WRIGHT PLLC

UNANTICIPATED CONTAMINATION DISCOVERY PLAN

XX PROJECT

DATE

LOGO

OVERVIEW

The following plan is a draft Unanticipated Contamination Discovery Plan (Plan) that covers the processes that would be followed by the Project entity in the event undocumented or unanticipated contaminated material were encountered during construction. The final Plan will address the specific mitigation measures committed to by the Project entity in the event contamination were discovered during construction. The contact information would be updated prior to construction when contractors and Project entity staff have been identified.

TABLE OF CONTENTS

1.0 INTRODUCTION

This Draft Unanticipated Contamination Discovery Plan (Plan) is intended to provide guidance to ensure worker and public safety as well as prevent the spread of further contamination in the event that waste and/or contaminated soils (as defined in applicable federal, state, and local regulations and guidelines) are encountered during construction of the Project. Whereas preconstruction planning has avoided known hazardous and non-hazardous material sites, other undocumented sources of contamination could be encountered during construction.

1.1 PURPOSE AND SCOPE

1.2 OBJECTIVES

The objective of this Plan is to prescribe measures for safely addressing unanticipated, potentially hazardous[1] wastes found during construction of the Project. If such materials are encountered during construction, the actions contained in this Plan provide measures that the Project entity and its contractors would undertake.

1.2.1 Project Responsibilities

The Project entity would be responsible for identifying and delineating known documented hazardous waste and/or contaminated sites ahead of construction and taking appropriate action to avoid these sites or mitigate them. In the event of an unanticipated discovery, the Project entity would be responsible for:

- Notifying the appropriate agencies/authorities.
- Providing guidance to the Construction Contractor (Contractor).
- Ensuring that the site is secure.
- Engaging specialized waste contractor(s) to characterize discovered wastes and to implement subsequent response actions as negotiated with the landowner and the [State Environmental Agency] and/or the U.S. Environmental ProtectionAgency (EPA).

1.2.2 Contractor Responsibilities

The Contractor shall be responsible for implementation of the initial response procedures contained in Section 2.1 of this Plan.

1.3 SCOPE

This Plan shall be effective during all construction phases of the Project and at all Project construction locations.

2.0 DISCOVERY

Identifying and recognizing existing hazardous materials or contaminants is the first step to initiate the proper response action. During excavation, indicators of possible contamination include, but are not limited to:

- Rusted barrels and containers.
- Stained or discolored earth, as contrasted to adjoining soil.
- Fill material containing debris unearthed during trenching or grading.
- Household trash covered by earth or other material that appears to be interspersed withindustrial debris.
- Gasoline smells or other hydrocarbon odors that emanate when the earth is disturbed.
- Oily residue intermixed with earth.
- Sheen on groundwater.
- Hydrocarbon sheen on surface water.
- Cinders and other combustion products like ash.

Structures such as abandoned oil and gas lines, asbestos pipe, old transformers, andunderground storage tanks also require special handling if disturbed.

2.1 INITIAL RESPONSE PROCEDURES

Immediately following discovery of potential hazardous waste or contaminants, the Contractorwould:

- Cease work in the vicinity of suspected contamination.
- Cordon off or otherwise restrict access to the suspected area to protect workers and thepublic.
- Notify the Project entity's Lead Environmental Inspector and Resident ConstructionSupervisor.
- Notify the landowner of the affected parcel, if applicable.
- Await further instructions.

2.2 SITE CHARACTERIZATION AND HAZARD ASSESSMENT

The following procedures would be used to determine the extent, nature, and disposition of suspected contamination encountered by construction. These actions would be undertaken by a waste consultant (retained by the Project entity) using trained Occupational Safety and Health Administration (OSHA), Hazardous Waste Operations and Emergency Response (HAZWOPER) technicians that implement specialized personal protective equipment (PPE), sampling, and decontamination protocols approved by the Project entity.

The actions following discovery and site security would include:

- Notifying the proper authorities, as required.
- Identifying the extent of unanticipated site contamination, as required.
- Determining the worker safety and public exposure concerns.
- Characterizing the contaminant(s).
- Developing and implementing hazardous materials/waste management measures.
- Documenting the event from discovery and through the final disposition documentation.

2.2.1 State Agency Notifications

All agency notifications would be made by the appropriate Project entity. Phone numbers forregional [State Environmental Agency] offices are shown in the following Table.

Area Response Team Office	Phone	Fax
Region XX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Region XX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Region XX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Outside normal business hours	(xxx) xxx-xxxx	

2.2.1.1 State Lands

If contamination is found on state lands, notify the [State Land Management Agency]:

Regional Office	Phone	Fax
State Pipeline Coordinator[1]	(xxx) xxx-xxxx	(xxx) xxx-xxxx
STATE AGENCY 24-Hour Spill Report	(xxx) xxx-xxxx	(xxx) xxx-xxxx

Region XX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Region XX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Region XX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Notes: [1] Contact State Pipeline Coordinator for contamination discovered on State Park Lands. Review associated state land use permit notification requirements for additional contacts.		

2.2.1.2 Borough/County Lands

If contamination is found on borough/county (select one or both) or city lands, notify the appropriate office listed below:

Borough/County/City	Phone	Fax
Borough/County/City	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Borough/County/City – Land Management	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Borough/County/City – Planning Director	(xxx) xxx-xxxx	(xxx) xxx-xxxx
City of XXX	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Borough/County/City – Land Management	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Borough/County/City – Planning	(xxx) xxx-xxxx	(xxx) xxx-xxxx

2.2.1.3 Native Corporation Lands

If contamination is found on native or tribal lands, notify the appropriate office listed below:

Native or Tribal Lands	Phone	Fax
Native or Tribal 1	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Native or Tribal 2	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Native or Tribal 3	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Native or Tribal 4	(xxx) xxx-xxxx	(xxx) xxx-xxxx

2.2.2 Federal Agency Notifications

All federal agency notifications would be made by the appropriate Project entity. Phone numbers for the EPA and Bureau of Land Management (BLM) offices are shown in the following tables.

2.2.2.1 U.S. Environmental Protection Agency – Region XX

EPA Region 10	Phone	Fax
National Response Center	(xxx) xxx-xxxx	(xxx) xxx-xxxx
STATE Operations Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Region XX Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx
Indian Lands Coordinator – XXX Regional Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx

2.2.2.2 Bureau of Land Management

If contamination is found on BLM-administered lands notify the appropriate office listed below.

BLM Land Manager	Phone	Fax
XX Field Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx
XX Field Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx
XX Field Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx
XX Field Office	(xxx) xxx-xxxx	(xxx) xxx-xxxx

2.2.3 Hazard Assessment

The Project entity would engage a specialized waste consultant to identify and characterize the contamination through sampling and analytical testing. The objectives of the consultant's investigation, in consultation with the landowner, would include:

- Devising a plan for additional site-specific investigations, as necessary.
- Determining the characteristics of the soil, groundwater, and vapor (e.g., groundwaterrecovery rates; vertical and horizontal extent of contamination; chemicals of concern; etc.).
- Determining the handling and/or disposal requirements for any contaminated mediaunearthed as part of the construction process or if the site should be avoided with a reroute.
- Recommending a preventive action plan to ensure the problem is not aggravated and tominimize liability.
- Determining the requirements necessary for the construction contractor to resume work in thearea.

A waste consultant may also be employed to develop special construction specifications to complete portions of the Project within or around contaminated areas. The data obtained from the investigation would also enable the consultant to develop in consultation with the landowner special site closure specifications related to groundwater treatment or filtration systems; ventilation systems; ongoing site monitoring; contaminated material disposal or reuse options;and permitting.

2.2.4 Mitigation Measures

The final disposition of contaminated soils and/or water (groundwater, surface water) would be determined through discussions with the jurisdictional agencies and affected landowners. Depending on the extent and characteristics of contamination identified, the Project entity would first seek a realignment to avoid encountering further contamination. If such a move is infeasible, plans for excavation or reducing the contamination and disposing at an approved waste disposal site would be developed with the landowner and [State Environmental Agency], or with input from EPA if the site were characterized as hazardous.

3.0 RECORDKEEPING AND REPORTING

Documentation of the unanticipated contamination discovery would start with the details associated with initial discovery and end with the final disposition of the waste materials following the appropriate agency approvals. Records would also be kept in accordance with the Project Waste Management Plan.

3.1 PROJECT ENTITY RESPONSIBILITIES

The Project entity would document steps involved from initial discovery through final disposition, and written approval by agencies, including:

- Detailed description of initial discovery.
- Initial response actions.
- Establishment of site security.
- Agency contacts.
- Waste management consultant engagement.
- Site investigation by waste management consultant.
- Sampling, chain of custody, and laboratory results.
- Agreed-upon activities to resume Project construction or to avoid the site.
- Site assessment and/or removal of contaminated materials in the construction area by thewaste management contractor (e.g., burial or exhumation and offsite disposal).
- Secure copies of any transport manifests and delivery receipts.
- Site closure verification and concurrence (by regulatory agencies).

The level of associated documentation from initial discovery through final resolution would depend on the extent of discovered contamination, the potential toxicity of contaminants, and degree of further disturbance of the contaminated site by construction activities.

At a minimum, the Project entity would record the following information when unanticipatedcontamination is discovered:

- The time and place of discovery.
- Actions taken to secure the site from further disturbance or human exposure.
- The extent of disturbance of the site by construction.

- The description of discovered substances (visual and odors).
- Additional actions taken in response to the discovery.
- Notifications made in response to the discovery.
- Sampling performed and analytical testing results.
- Site closure plans.
- Actions taken to secure contamination in place or at the treatment, storage, or disposalfacility.
- Actions taken to redirect or complete construction.

3.2 CONTRACTOR RESPONSIBILITIES

The Contractor would cooperate with the Project entity by providing all pertinent and detailed information regarding the initial discovery.

If directed by the Project entity, the Contractor may be required to develop a Decontamination Plan that includes guidance on the procedures for decontaminating materials and equipment that directly come in contact with the contaminated materials.

4.0 ACRONYMS AND TERMS

Term	Definition
BLM	Bureau of Land Management
Contractor	Construction Contractor
EPA	United States Environmental Protection Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
OSHA	Occupational Safety and Health Administration
Plan	Unanticipated Contamination Discovery Plan
PPE	Personal protective equipment
Project	Name of Project
RCRA	Resource Conservation and Recovery Act

Summary: Response to Fifth Data Request from Staff of the Ohio Power Siting Board electronically filed by Christine M.T. Pirik on behalf of Birch Solar 1, LLC