

Ohio's Regulations: A Guide for Operators Drilling in the Marcellus and Utica Shales



March 2012



Environmental
Protection Agency



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Cover photo from Ohio Department of Public Safety

Introduction

With almost half of Ohio sitting over shale deposits rich in natural gas, it is expected the state will soon see a significant increase in oil and natural gas drilling activity in the Marcellus and Utica shale.

This guidebook has been developed to help drilling companies better understand Ohio's regulatory requirements and the permits needed from the Ohio Department of Natural Resources, Division of Oil and Gas Resources Management (ODNR-DOGRM) and Ohio Environmental Protection Agency. This guide is only a starting point. It should not be your only source of information on the regulations or replace seeking assistance from experienced consultants and/or legal counsel to help you fully understand and achieve compliance with Ohio's laws and regulations.

Understanding the regulations and working early in the process with ODNR and Ohio EPA will help minimize permitting delays for you and ensure drilling activities are done in a manner that protects the public and environment.



Construction, Location, Design and Operation of an Oil or Gas Well

ODNR-DOGRM regulates the location, spacing, construction, design and operation of oil and gas wells in Ohio under Chapter 1509 of the Ohio Revised Code (ORC) and Chapter 1501 of the Ohio Administrative Code (OAC). A permit from ODNR is required if you plan to drill, deepen, reopen, plug back, convert or plug a natural gas, oil, Class II injection, or enhanced recovery well. ODNR's permitting requirements also apply if approved well locations or drilling units are revised.

Certain requirements (set back distances, fees, water sampling and best management practices) vary depending on whether a well is located in an urban vs. non-urban area. For details, see www.ohiodnr.com/mineral/urban/tabid/10379/Default.aspx.

For all wells, there are notification and reporting requirements to ODNR-DOGRM during cementing, well completion, stimulation and production. You are required to report information on the type and volume of produced and injected fluids. In addition, you must have procedures in place to prevent spill/releases and comply with other safety measures, including pipeline identification, construction specifications and pipeline burial.

Site restoration is required under ODNR's regulations for both urban and non-urban area well sites. Site grading, seeding or other measures are required to prevent erosion and sedimentation.

After drilling is completed, you are responsible for properly closing any on-site pits. Once a producing well is plugged, you must remove all associated production equipment and restore the well site (grading, seeding, terracing, etc.) to prevent erosion and sedimentation.

The regulations also require a surety bond to ensure financial resources are available to restore a site if a well owner fails in their responsibility to act in accordance with Ohio's site restoration laws and insurance to provide for claims of property damage or bodily injury.

The ORC provides ODNR-DOGRM with authority to implement any additional regulations and permit conditions for wells and associated facilities based on site-specific conditions necessary to protect the environment and public health and safety

For more information, visit www.ohiodnr.com/mineral/shale/tabid/23415/Default.aspx.



Ohio EPA File Photo

Water Withdrawal Notification and Use of Water from a Public Water System

Between four and six million gallons of water are typically needed to hydraulically fracture a single Marcellus or Utica shale well. This water usually comes from nearby lakes, rivers and public water systems.

Water Withdrawal Registration

ORC Section 1521.16 requires registration with ODNR's Division of Soil and Water Resources (ODNR-DSWR) for any owner of a facility, or combination of facilities, with the capacity to withdraw water at a quantity greater than 100,000 gallons per day (about 70 gallons per minute).

The law requires registration if a facility has the capacity to withdraw 100,000 gallons per day even if a lower volume is actually withdrawn.



Photo courtesy of the Ohio Department of Public Safety



Lake Erie-Ohio River Basin Drainage Divide

Diversion of Water from the Lake Erie Drainage Basin

The Great Lakes–St. Lawrence River Basin Water Resources Compact (Great Lakes Compact), a binding agreement among the eight states that border the Great Lakes, which has been enacted into Ohio law and carries the force of Federal law, specifically prohibits any new or increased diversions of any amount of water out of the Lake Erie Basin. Therefore, no permits will be issued for the transfer of water out of the Lake Erie Basin for oil and gas operations, or other types of operations. The Lake Erie Basin includes all or part of 33 counties in Ohio located north of the Lake Erie–Ohio River Basin drainage divide.

Depending on the location and type of withdrawal, other requirements may apply. For more information, see the ODNR-DSWR website at www.dnr.state.oh.us/tabid/4262/Default.aspx.

Obtaining Water from a Public Water Supply

If you intend to connect your drill site to an existing public water system, you are required to have proper containment devices at the point of connection to protect the public water system in accordance with Ohio EPA's requirements (OAC 3745-95). At a minimum, this includes a reduced-pressure principle backflow assembly at the service connection. An approved air gap separation should be maintained at the drill sight. If air gap isolation is not maintained at the drill pad, an air gap separation will be required at the service connection. For more information, see Ohio EPA's *Backflow Prevention and Cross-Connection Control* fact sheet at www.epa.ohio.gov/portals/28/documents/engineering/Cross-connection%20flier.pdf. If construction activities associated with running a pipe will have an impact on streams, wetlands or other waters, this may also require 401/404 authorization (see page 5).

Other Sources of Hydraulic Fracturing Fluids

If your company is exploring the use of other sources of fluids for hydraulic fracturing (e.g. wastewater treatment plant effluent), contact ODNR-DOGRM to discuss applicable requirements and authorizations.

Air Permits for Emission Sources

Ohio EPA's Division of Air Pollution Control (DAPC) requires a permit-to-install and operate (PTIO) for units or activities that emit air pollutants. A drill site may have several air emission sources, including:

- dehydration systems;
- natural gas-fired and diesel engines;
- unpaved roadways;
- petroleum liquids and recovered-water storage tanks;
- natural gas-fired turbine generator sets;
- combustion devices/flares; and
- equipment/pipeline leaks.



Ohio EPA File Photo

A PTIO is required for all emission sources, unless specifically exempt under the Ohio Administrative Code (OAC). Current exemptions include:

- 1) **"De minimis" exemption (OAC rule 3745-15-05):** This applies to sources that emit less than 10 pounds per day of any air contaminant and less than one ton per year of any hazardous air pollutant (or combination of hazardous air pollutants). If you are claiming a de minimis exemption for any air emission source, you are not required to notify Ohio EPA, however must keep records demonstrating that the source meets the exemption. You contact your local Ohio EPA district office or Local Air Agency (LAA) about the source. They can review your de minimis calculations and put information in the file about your exemption to assist future/new inspectors that may be reviewing your site information.
- 2) **Permanent rule exemption (OAC rule 3745-31-03(A)(1)):** This rule includes a list of over 45 emission sources that are exempt from permitting, including small boilers, detergent-based parts washers, small storage tanks and other sources that meet certain size criteria or have minimal air emissions. You are not required to provide notification to Ohio EPA for sources that fall under this exemption.
- 3) **Permit-by-rule (OAC rule 3745-31-03(A)(4)):** The permit-by-rule (PBR) covers several categories of small emission sources. You are not required to get a permit for a PBR source, but must comply with the emission limits, operational restrictions and recordkeeping specified in the rule. For sources covered under the PBR, you must file a one-page notification with Ohio EPA.

For sources that require an air permit, you must receive an approved permit before constructing these sources.

To improve its efficiency in processing permit applications, Ohio EPA has developed air general permits for a wide variety of business sectors, including a general permit for production operations at shale gas well sites. This general permit covers a variety of emission sources found at most well sites, including internal combustion engines, generators, dehydration systems, storage tanks and flares. It contains emissions limits, operating restrictions, monitoring and reporting requirements. Applicants meeting the qualifying criteria can apply for the general permit. Ohio EPA's review and approval process for the general permit is completed within weeks.

The first step to obtaining an air permit is to discuss the equipment you plan to install with the air permit writer located at the Ohio EPA district office or Local Air Agency (LAA) having jurisdiction over the area where your drill site will be located. Your local office can help you determine if you qualify for a general permit, or if you need an individual permit, and explain the procedures in applying for a permit.

For more information on Ohio EPA's air permitting process, exemptions and electronic copies of application forms, visit the DAPC website at www.epa.ohio.gov/dapc/permits/permits.aspx.

Construction Activities that Impact Waters of the State

If constructing a drill site will impact wetlands, streams or other waters of the state, you must obtain approval from the U.S. Corps of Engineers under Section 404 of the Federal Clean Water Act and Ohio EPA under Section 401 Water Quality Certification (WQC). Examples of activities that require a 404/401 approval, include:

- excavating or placing fill material in a wetland, stream or lake in order to construct your pad site, access road, water lines, or production lines;
- stream piping, rerouting or straightening to construct the pad;
- dredging a wetland to create a pond; or
- culverting streams or filling wetlands to construct roadways, water or wastewater piping.

Depending on the extent of the impacts, your project may be authorized under Nationwide Permit (a general permit) or an individual permit. In February 2012, the United States Army Corps of Engineers (USACE) reissued 48 existing nationwide 404 permits (NWPs). Included in this group is NWP 39 for "Commercial and Institutional Development" activities. The previous NWP 39 excluded coverage for the construction of oil and gas wells. The recently reissued NWP 39 now authorizes impacts to streams and wetlands associated oil and gas well construction up to 0.5 acres of Category 1 and 2 wetlands and 300 linear feet of streams.

If impacts exceed 0.5 acres of Category 1 or 2 wetlands, impact any Category 3 wetlands, or impact greater than 300 linear feet of stream, you will be required to apply for and receive authorization under an individual 401 certification and 404 permit. Obtaining an individual 401 WQC can take 3-6 months.

In addition, isolated wetlands not covered under the jurisdiction of the federal Clean Water Act are still regulated under Ohio's isolated wetlands law. If you will impact these areas, you must also get an isolated wetland permit from Ohio EPA.

Although Ohio EPA coordinates with the Corps in the 401/404 permit application processes as much as possible, the agencies each have different authority and jurisdictions. This is why you need to work closely with both agencies. We strongly urge you to contact the Corps as early in the process as possible to determine the extent of waters of the U.S. on your site and what permits may be required.

For more about 401 WQC requirements, visit www.epa.ohio.gov/dsw/401/index.aspx. For information about 404 permits, visit www.usace.army.mil/CECW/Pages/reg_permit.aspx.



Ohio EPA File Photo

Best Management Practices to Control Storm Water Run-off and Erosion

Oil and gas exploration and production sites are not required to obtain a permit from EPA for storm water management under the federal Clean Water Act (CWA).¹ The CWA provisions, do, however, remain enforceable if there is a discharge of any reportable quantity of material, or if a discharge from the site contributes to a violation of a water quality standard.

Although a separate storm water permit is not required, ODNR requires oil and gas well operators implement best management practices (BMPs) for sediment/erosion control as part of their drilling authorization permit in urban areas and recommends the use of this BMP in all areas. Examples of BMPs include:

- installing perimeter controls, sediment basins/traps and a stabilized construction entrance;
- isolating drainage from the site to eliminate storm water run-on;
- using a stabilized entrance or wheel wash station to reduce mud on streets/roads from vehicle drag out;
- containing and properly disposing of all drilling fluids, including fluids associated with setting the casing and plugging operations; and
- inspecting the site on a regular basis (especially after wet weather events) to determine if additional stone, seed, mulch, or other measures are needed to stabilize the site.



*A sediment basin/trap can be an effective method to control runoff.
Ohio EPA file photo.*

For more information, see ODNR's *Best Management Practices for Oil and Gas Well Site Construction* at: www.dnr.state.oh.us/Portals/11/oil/pdf/BMP_OIL_GAS_WELL_SITE_CONST.pdf.

Managing Fluids from Oil and Gas Drilling Operations

Total Dissolved Solids (TDS)

Total dissolved solids include minerals, metals and soluble salts such as sodium, chlorides and sulfates.

TDS in the form of soluble salts in brine can reach concentrations as high as 200,000 mg/l. In comparison, the salinity of seawater from concentrated salts is about 35,000 mg/l.

ODNR has the exclusive authority for regulating the disposal of brine² and fluids from oil and gas drilling.

The primary method of disposal is by Class II injection wells.

Brine (including flowback water) picks up minerals from the shale formation, including iron, calcium, magnesium, barium and sulfur. It may contain low levels of naturally occurring radioactive elements such as radium. It also contains high concentrations of total dissolved solids (TDS).

¹ For more information on the federal storm water exemption, go to <http://cfpub.epa.gov/npdes/stormwater/oilgas.cfm>.

² "Brine" includes all saline geological formation water resulting from, obtained from, or produced in connection with the exploration, drilling, or production of oil or gas, including saline water resulting from, obtained from, or produced in connection with well stimulation or plugging of a well. (R.C. 1509.01(U)) The definition of brine includes flowback water from hydraulic fracturing.



Use of steel tanks for temporary storage of drilling-related fluids is recommended over use of temporary on-site pits, and is required in some areas near sensitive water resources. Ohio EPA file photo.

ODNR has regulatory authority over the design and operation of lagoons/pits and tanks used at the drill site to temporarily store fluids that are either being recycled or collected prior to off-site shipment and disposal. Ohio does not authorize long-term storage of fluids in on-site pits.

ODNR recommends the use of tanks as an alternative and requires the use of steel tanks for storage at drilling sites in close proximity to drinking water resources, floodplain areas, or where shallow ground water is susceptible to contamination.

The direct discharge of brine into waters of the state is prohibited. Ohio is not authorizing the disposal of brine at municipal wastewater sewage plants (also called publicly owned treatment works or POTWs). Brine disposed of in Ohio must be sent to an ODNR-permitted Class II injection well, unless granted an exemption by ODNR. Where feasible, recycling flowback water is strongly encouraged.

If certain conditions are met under ODNR's laws, brine collected during the production of a well may be approved for road surface dust and ice control. Flowback water cannot be applied to roadways or the land surface. For more information on road surface application, contact ODNR-DOGRM.

Companies transporting drilling-related fluids in Ohio must register with ODNR-DOGRM. Transporters are required to receive an identification number, maintain a daily log and submit an annual report to ODNR. Transporters are required to have insurance and a surety bond.

Information and forms are available at

<http://ohiodnr.com/mineral/forms/tabid/10372/Default.aspx>.



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Managing Drill Cuttings

Oil and gas exploration and production wastes, including drill cuttings and drilling muds, are not classified as hazardous waste under state or federal law.³ However, when drill cuttings come into contact with sources of contamination (e.g. drilling muds, oils or other contaminants) and are shipped off-site for disposal, Ohio EPA regulates these cuttings as solid waste. Solid waste must be sent to a licensed solid waste landfill for disposal.

If you want to dispose of drill cuttings at the drill site, this activity must be approved by ODNR. For more information about managing drill cuttings on the drill site, contact ODNR-DOGRM.

Ohio EPA will consider proposals to beneficially reuse drill cuttings off-site. However, anyone interested in beneficially reusing drill cuttings off-site must get prior authorization for this activity from Ohio EPA's Division of Materials and Waste Management (DMWM). For more information on the solid waste requirements or beneficial reuse options, contact Ohio EPA, DMWM.

³ For more information, see U.S. EPA's Publication "Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations," available at www.epa.gov/osw/nonhaz/industrial/special/oil/oil-gas.pdf.

Certain geologic formations contain low levels of naturally occurring radioactive materials (NORM) which can be carried up in drill cuttings. The Ohio Department of Health, Bureau of Radiation Protection, is the regulatory authority for the disposal of waste containing sources of radiation. Drill cuttings are not regulated by the Ohio Department of Health as radioactive material unless the NORM content is elevated to a level greater than is found in its natural state. For more information, see the ODH, Bureau of Radiation Protection website at www.odh.ohio.gov/odhPrograms/rp/nm_saf/nm_saf1.aspx.

Spill Containment, Control and Release Reporting Requirements

Spill Prevention Control and Countermeasure (SPCC) Plan

If you store oil or oil products at the drill site, you could be subject to the Spill Prevention Control and Countermeasure (SPCC) regulations under 40 CFR Part 112. If you have a total aboveground storage capacity of 1,320 gallons or more, you are subject to SPCC requirements, including:

- providing adequate secondary containment for storage and transfer areas to contain any releases; and
- preparing a written SPCC plan.

When determining if you are subject to the rules, the total capacity of your tanks or containers must be considered, not the actual amount of oil/oil products stored. Containers less than 55 gallons in size do not need to be included in calculating your SPCC storage capacity.

Under SPCC regulations, the definition of oil and oil products is very broad and includes soluble oils, heating oil, crude oil, mineral oil, gasoline and diesel fuel.

SPCC requirements are federal regulations, administered by U.S. EPA. Ohio EPA does provide limited support to U.S. EPA for the program, however, there are no state regulations administered specifically by Ohio EPA for this program.

For more information, see Ohio EPA's *Understanding the Spill Prevention, Control and Countermeasure (SPCC) Requirements* fact sheet at www.epa.ohio.gov/portals/41/sb/publications/spcc.pdf or U.S. EPA's website at www.epa.gov/emergencies/content/spcc/index.htm.



Example of secondary containment around oil product storage tanks. Ohio EPA file photo.

Spill/Release Reporting

Ohio Revised Code 3745.50 requires that companies report spills or releases involving a petroleum product (diesel fuel, gasoline, hydraulic fluid, etc.) to local, state and/or federal emergency authorities, if the spill/release exceeds reportable quantities. The reportable quantities are:

- any amount of petroleum that causes a film or sheen on a waterway; or
- any spill or release to the environment (not contained on the spiller's property) of 25 gallons or more.

Ohio EPA's spill hotline
800-282-9378

If you are uncertain how much was released, reporting is encouraged. Petroleum product spills of 25 gallons or more on or adjacent to a public roadway must be reported. Ohio EPA encourages reporting a spill of any amount if it directly threatens a waterway, or, if left unaddressed, can enter a waterway or storm sewer during a rain or snowmelt.

For more information, see www.epa.ohio.gov/portals/30/ersis/er/docs/Guide%20to%20ER.pdf.

Emergency Planning and Community Right-to-Know (EPCRA) Requirements

EPCRA requires facilities report hazardous chemicals being stored on-site. Facilities are subject to EPCRA if all of the following conditions are met:

- the facility is subject to the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard;
- the facility uses, produces, and/or stores hazardous chemicals and/or extremely hazardous substances (EHS); and
- the quantity of hazardous chemicals or extremely hazardous substances stored is in excess of the threshold quantity (TQ).

The definition of hazardous chemicals and the list of extremely hazardous substances, along with the reporting thresholds for each are available at www.epa.ohio.gov/portals/27/serc/SERC_manual2012.pdf.



Ohio EPA File Photo

For oil and gas operations subject to EPCRA, ORC Chapter 1509 provides ODNR-DOGRM, in consultation with the emergency response commission, the authority to establish the reporting format (including an electronic database) and information necessary for purposes of responding to an emergency situation. This reporting will include, at a minimum, information required under EPCRA. The statute also sets the parameters under which ODNR will make information submitted and contained in the database accessible to the emergency response commission, emergency response authorities and to the public. For more information, contact ODNR-DOGRM.

Summary of ODNR and Ohio EPA Regulatory Authority Over Oil and Gas Activities

	Ohio Department of Natural Resources	Ohio Environmental Protection Agency
Horizontal oil and gas drilling in shale formations	✓ Issues permits for drilling oil and gas wells in Ohio. ✓ Sets requirements for proper location, design and construction requirements for oil and gas wells. ✓ Inspects and oversees drilling, stimulation, and production activities. ✓ Requires controls and procedures to prevent discharges and releases. ✓ Requires that oil and gas wells no longer capable of production are properly plugged and abandoned. ✓ Requires registration and/or permitting for operators with the capacity to withdraw water at a quantity greater than 100,000 gallons per day. ✓ Establish the reporting format and information necessary for purposes of responding to an emergency situation.	✓ Requires drillers obtain authorization for construction activity where there is an impact to a wetland, stream, river or other water of the state. ✓ Requires drillers obtain an air permit-to-install and operate (PTIO) for units or activities that have emissions of air pollutants. ✓ May be involved in emergency response activities related to spills and releases, in coordination with ODNR and other emergency response authorities.
Fluids and drill cuttings management at drilling sites	✓ Sets design requirements for on-site drilling pits used to store drill cuttings and fluids. ✓ Requires proper closure of on-site drilling pits after drilling operations are completed. ✓ Sets standards for managing drill cuttings and derived sediments left on-site.	✓ Requires contaminated drill cuttings shipped off-site be taken to a licensed solid waste facility for disposal. ✓ Reviews and approves proposals for beneficial reuse of cuttings off-site.
Fluids disposal	✓ Regulates the disposal of brine and other fluids. ✓ Oversees permitting and operation of Class II injection wells used to dispose of waste fluids from oil and gas drilling. ✓ Reviews specifications and issues permits for Class II injection wells. ✓ Reviews well construction and surface facility construction requirements for Class II injection wells.	
Transporting fluids	✓ Registers transporters hauling brine and other oil and gas waste fluids in Ohio.	✓ May be involved in emergency response activities related to spills and releases, in coordination with ODNR and other emergency response authorities.
Connecting the drill site to a public water supply system		✓ Requires proper containment devices at the point of connection to protect the public water system.

ODNR Division of Oil and Gas Resources Management Regional Offices

Contact information for inspectors in oil and gas in each county.

- ▶ NORTH REGION
- ▶ SOUTH REGION
- ▶ WEST REGION



West Region Offices

2045 Morse Road, Bldg. H-3
Columbus, OH 43229-6693
614-265-6633
(FAX on H3) 614-265-7998
(FAX on H2) 614-265-7999

952 Lima Avenue
Findlay, OH 45840
419-429-8304
(FAX) 419-424-5008

505 South State Route 741
Lebanon, OH 45036-9518

South Region



South Region Offices

280 East State Street
Athens, OH 45701-1827
740-592-3748
(FAX) 740-593-7086

2050 E. Wheeling Avenue
Cambridge, OH 43725-2159
740-439-9213 or 740-439-9079
(FAX) 740-432-7711

North Region



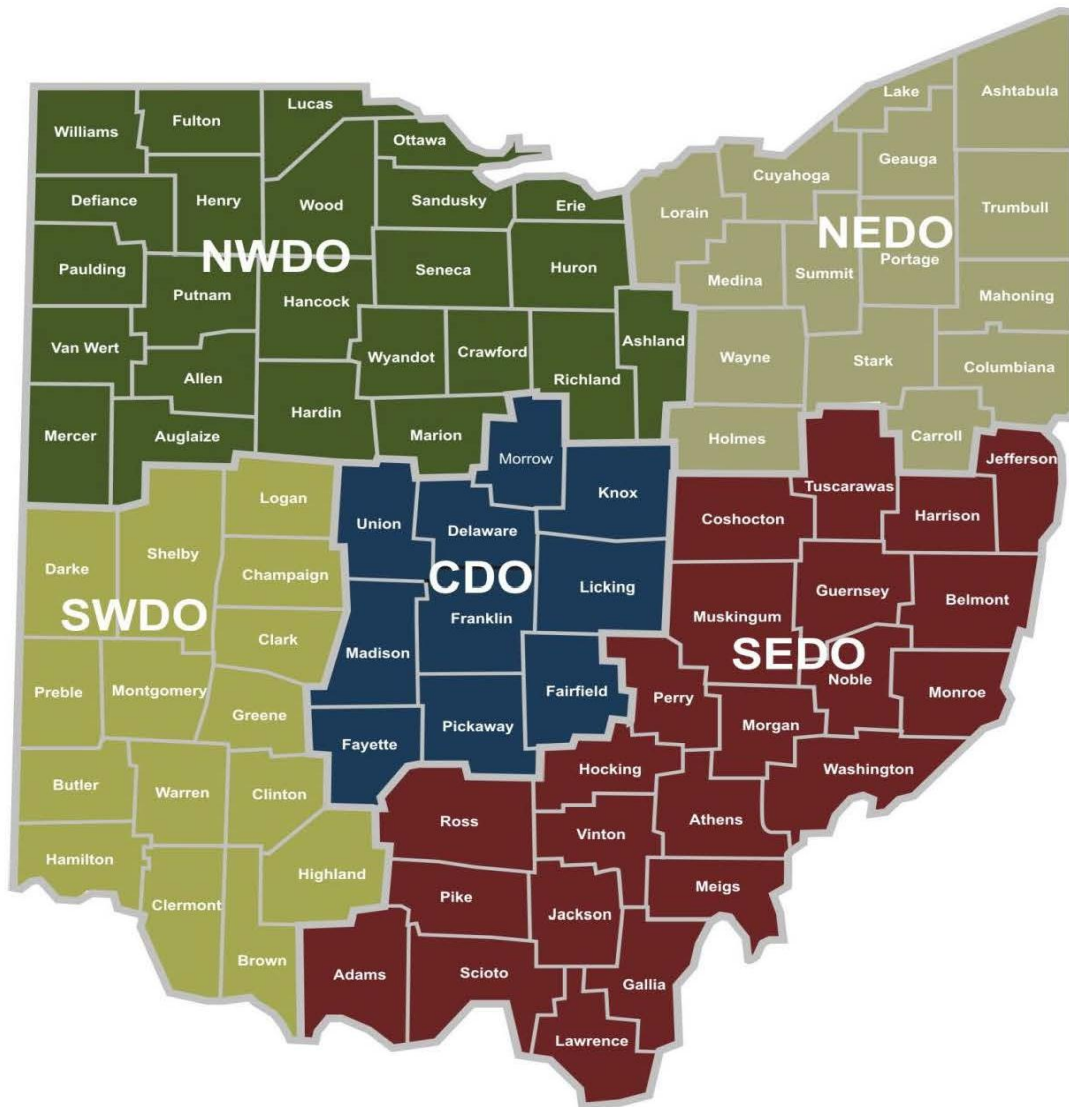
North Region Offices

2207 Reiser Avenue SE
New Philadelphia, OH
44663-3333
330-339-2207
(FAX) 330-339-4688

3601 Newgarden Road
Salem, OH 44460-9571
330-222-1527
(FAX) 330-222-2137

3575 Forest Lake Drive,
Suite 150
Uniontown, OH 44685
330-896-0616
(FAX) 330-896-1849

Ohio EPA District Offices



Central Office

P.O. Box 1049
Columbus, Ohio 43216-1049
(614) 644-3020

Central District Office

P.O. Box 1049
Columbus, Ohio 43216-1049
(614) 728-3778

Northeast District Office

2110 East Aurora Road
Twinsburg, Ohio 44087-1924
(330) 963-1200

Northwest District Office

347 North Dunbridge Road
Bowling Green, Ohio 43402-9398
(419) 352-8461

Southeast District Office

2195 Front Street
Logan, Ohio 43138-8637
(740) 385-8501

Southwest District Office

401 East Fifth Street
Dayton, Ohio 45402-2911
(937) 285-6357

Additional Contacts

Ohio Department of Natural Resources—Division of Oil and Gas Resources Management

2045 Morse Rd., Building F-2
Columbus, OH 43229-6693
Phone (614) 265-6922
Fax (614) 265-6910
<http://ohiodnr.com/mineral/oil/tabid/10371/default.aspx>

Ohio Department of Natural Resources—Division of Soil and Water Resources

2045 Morse Road, Bldg. B
Columbus, Ohio 43229-6693
Water Planning Information: (614) 265-6739
Water Inventory Information: (614) 265-6742
water@dnr.state.oh.us

Ohio Department of Health—Bureau of Radiation Protection

246 North High Street
Columbus, Ohio 43215
Telephone: (614) 644-2727
Fax: (614) 466-0381
BRadiation@odh.ohio.gov
www.odh.ohio.gov/odhPrograms/rp/nm_saf/nm_saf1.aspx

U.S. Army Corps of Engineers Offices

Huntington District	www.lrh.usace.army.mil/or/permits/
Buffalo District	www.lrb.usace.army.mil/orgs/reg/index.htm
Louisville District	www.lrl.usace.army.mil/
Pittsburgh District	www.lrp.usace.army.mil/or/or-f/permits.htm