GUIDANCE DOCUMENT #693

Division of Materials & Waste Management
Updated December 2014

Siting Criteria

Applicable Rules and Statutes

See Attachment I.

DMWM Cross-referenced guidance documents:

#129 *Procedural and Technical Considerations for the Seismic Impact Zones Location Restriction Demonstration*
#172 *Definition for Aquifer System*
#601 *Variances and Exemptions*
#660 *Geotechnical and Stability Analyses for Ohio Waste Containment Facilities*

Purpose

This document is an educational guideline for the many siting criteria used in the solid waste and infectious waste programs.

This document does not address municipal solid waste location restriction demonstrations. Guidance on this topic may be found in policy #127 *Procedural and Technical Considerations for the Regulatory Floodplain Location Restriction Demonstration*, policy #128 *Procedural and Technical Considerations for the Holocene Faults Location Restriction Demonstration*, policy #129 *Procedural and Technical Considerations for the Seismic Impact Zones Location Restriction Demonstration*, and policy #133 *Procedural and Technical Considerations for the Unstable Areas Location Restriction Demonstration*.

This document does not address siting criteria for construction and demolition debris (C&DD) facilities.

Contact

If you have questions regarding this document or would like additional information, please contact:

Central District Office DMWM Supervisor (614) 728-3778

Northeast District Office DMWM Supervisor (330) 963-1200

Northwest District Office DMWM Supervisor (419) 352-8461

Southeast District Office DMWM Supervisor (740) 385-8501

Southwest District Office DMWM Supervisor (937) 285-6357

Central Office Authorizing Actions and Engineering Unit (614) 644-2621

Disclaimer

This document is intended for guidance purposes only. Completion of the activities and procedures outlined in this document shall not release an owner or operator from any requirement or obligation for complying with Ohio Revised Code (ORC) Chapter 3734 or 3714 if appropriate, the OAC rules adopted thereunder, or any authorizing documents or orders issued thereunder, nor shall it prevent Ohio EPA from pursuing enforcement actions to require compliance with ORC Chapter 3734 or 3714, the OAC rules or any authorizing documents or orders issued thereunder.

Procedure

Each siting criterion addressed in this document may be used by multiple programs in different ways. For example, the prescribed set back distance may not be the same for every program, or the criterion may apply to the entire facility or to specified portions (e.g. limits of waste placement). Therefore, those specifics are not addressed in this document. The reader should refer to the specific siting criteria rule.

Siting Criteria

Some rules apply the siting criterion when the solid waste or infectious waste permit to install application is submitted. If there are no such instructions in the rule, the siting criterion applies at the time the permit or license is issued.

If a facility is expanding in an area for which an alternative was deemed acceptable to the director, or a variance or exemption was previously granted, a new variance or exemption will need to be requested and reviewed independently of the previous approval if the criterion applies to the expansion. For more information about variances and exemptions, refer to OAC 3745-27-03 and guidance #0601 *Variances and Exemptions*. If a new variance or exemption is not granted, it does not prohibit the owner or operator from continuing to fill in the previously authorized area(s) with the existing approval.

SAND AND GRAVEL PITS (a ground water aquifer protection criterion):

Facilities are not to be located in a sand or gravel pit where the sand or gravel deposit has not been completely removed.

Applicable to MSW, ISW, RSW

A sand or gravel pit, defined in OAC 3745-27-01(S)(2), is an excavation resulting from a mining operation where the removal of sand or gravel is undertaken for use in another location or for commercial sale. The term does not include excavations of sand or gravel resulting from the construction of the sanitary landfill facility.

If the sand and gravel has been completely removed, the criterion does not apply. If the sand or gravel pit has been filled in and reclaimed prior to approval of the permit to install, there is no excavation (i.e. no pit) and the criterion does not apply.

LIMESTONE AND SANDSTONE QUARRIES (a ground water aquifer protection criterion):

Facilities are not to be located in a limestone or sandstone quarry.

Applicable to MSW, ISW, RSW

A limestone or sandstone quarry, defined in OAC 3745-27-01(L)(5) and (S)(3), is an excavation resulting from a mining operation where limestone or sandstone is the principal mineral excavated for commercial sale or use in another location. The term does not include excavations of limestone or sandstone resulting from the construction of the sanitary landfill facility.

For the limestone or sandstone to be the 'principal mineral excavated,' the sandstone or limestone should be the material which constituted the greatest volume of all the different materials extracted from the mine for commercial sale or use at another location. The volume of limestone and sandstone removed does not have to be greater than fifty percent of the material removed for commercial sale or use at another location, just larger than the volume of any other individual material extracted from the mine for commercial sale or use at another site. For example, if 25% of the material is shale, 25% sand and gravel, 20% soil, 15% limestone and 15% sandstone, the limestone and sandstone together constitute 30% which would make it the principal mineral excavated.

If the limestone or sandstone quarry has been filled in and reclaimed prior to approval of the permit to install, there is no excavation (i.e. no quarry) and the criterion does not apply.

SOLE SOURCE AQUIFER (a ground water aquifer protection criterion):

Facilities are not to be located above an aquifer declared by the federal government under the Safe Drinking Water Act to be a sole source aquifer.

Applicable to MSW, ISW, RSW, ST monofill

Sole source aquifers are declared by the federal government under the Safe Drinking Water Act (P.L. 93-523). The Act gives the Administrator of U.S. EPA the authority to designate an area as utilizing an aquifer, which is the sole or principal drinking water source. The Administrator may make this determination if there is a potential public health hazard that would result if the aquifer ever became contaminated. Designations are announced in the Federal Register (contact US EPA Region 5, Ground Water Branch at 312/886-5991 or see ***www.epa.gov/region5/water/gwdw/solesourceaquifer/index.htm .***

Currently, four areas have been designated sole source aquifers in Ohio (Attachment II, Figure 1): The Bass Islands Aquifer under Catawba Island (Ottawa County), the Pleasant City Aquifer (Guernsey County), the Great Miami/Little

Siting Criteria

Miami River Basins Buried Valley Aquifer system (southwestern Ohio) and the Allen County Area Combined Aquifer System (western Ohio). To access mapping data used to generate the figures in this document, see ***edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=%7B1D329CAA-31BB-496B-B0DF-23CBDA27E3AD%7D***.

1. Bass Islands Aquifer: Catawba Island is located in northwest Ohio within Lake Erie. The principal source of drinking water for the residents and tourists to Catawba Island is the Bass Island Aquifer. The Bass Island Aquifer is an unconfined to semi-confined aquifer that transmits water along joints and solution cavities. This aquifer is approximately 120 feet thick and is underlain by the anhydrite-rich Salinas Group. The recharge area of the aquifer includes the entire island. Surface water recharge is rapid due to the presence of sink holes, ponds and collapse features. The areas on Catawba Island above 580 msl are included in the sole source aquifer as designated October 2, 1987 in 52FR37009 and depicted on Attachment II, Figure 2.

2. Pleasant City Aquifer: The Pleasant City Aquifer is located in southern Guernsey County in eastern Ohio. It is an unconsolidated valley-fill aquifer. The Pleasant City Aquifer consists of water-bearing layers of sand and gravel interbedded with silt and clay layers. This aquifer is unconfined and is sixty (60) feet thick in its deepest location. The areal extent of the aquifer is about 1.75 square miles. Recharge to the aquifer is via surface infiltration and ground water underflow from upstream alluvial deposits. The alluvial valley occupied by Pleasant City from S.R. 313 south and west to end at the SW l/4 of Section 7, T8N, R9W, Byesville Ohio are included in the sole source aquifer as designated August 27, 1987 in 52FR32342 and depicted on Attachment II, Figure 3.

3. Great Miami/Little Miami River Basins Buried Valley Aquifer System: The Great Miami/Little Miami River Basins Buried Valley Aquifer System is located in southwestern Ohio. It exists in a bedrock valley that has been buried due to infilling by glacial sediments. The aquifer is composed of heterogeneous deposits of gravel, sand, silt and clay. It ranges from 20 to 400 feet in thickness and from one-tenth (1/10) to three (3) miles in width. This aquifer was designated a sole source aquifer in two parts (northern on May 4, 1988 in 53FR15876 and southern on July 8, 1988 in 53FR25670) and is depicted on Attachment II, Figure 4.

The northern designated sole source aquifer area consists of the area over the Class I and II aquifers from a hydrodynamic boundary, which occurs just south of the City of Franklin in Warren County, to the northern boundary of the Great Miami Basin and including that portion of this aquifer in the little Miami Basin north of Warren County. Excluded is a portion of Class II aquifer in Logan and Shelby counties.

The southern designated sole source aquifer area consists of the area over the Class I and II aquifers south of a hydrodynamic boundary which occurs just south of the southern boundary of the Great Miami Basin and including that portion of the aquifer in the Little Miami Basin in Warren, Clermont and Clinton counties. The designated area does not include the Mill Creek Basin in Butler and Hamilton counties just upstream from the confluence of the Ohio with the Great Miami River. This designation includes no part of the Ohio River Aquifer.

4. Allen County Area Combined Aquifer System: The Allen County Area Combined Aquifer System is located in western Ohio and underlies portions of Allen, Auglaize, Mercer, Putnam and Van Wert Counties. This aquifer system is composed of the Silurian carbonate bedrock and unconsolidated glacial deposits that overlie the bedrock. Precipitation is the main source of recharge to the aquifer system through the glacial drift. The sole source aquifer was designated on November 6, 1992 in 57FR53111 and is depicted on Attachment II, Figure 5.

Ohio EPA applies the siting criterion to the uppermost aquifer system in the sole source aquifer. 'Aquifer system' is defined in OAC 3745- 27-01(A). See also guidance document #0172 *Definition for Aquifer System*. The criterion does not apply to sole source aquifers declared after the permit to install application is submitted to the Ohio EPA.

The sole source aquifer designation may not encompass the entire aquifer. Where the aquifer might extend outside the limits of the designation, it is not part of the sole source aquifer. For purposes of determining the limit of the sole source aquifer designation, the 'outside of the line' is used.

100 GPM UNCONSOLIDATED AQUIFER (a ground water aquifer protection criterion):

A facility is not to be located above an unconsolidated aquifer system capable of sustaining a yield of 100 gallons per minute for a twenty-four hour period to an existing or future water supply well located within the specified distance of the limits of waste placement.

Siting Criteria

Applicable to MSW, ISW, RSW, ST monofill

'Aquifer system' is defined in OAC 3745-27-01(A). See also guidance document #0172 *Definition for Aquifer System*.

If the site specific or publically available information on the regional aquifer system(s) included in the PTI application indicates that a high yield (> 100 gpm) unconsolidated aquifer exists beneath the proposed facility, the applicant must demonstrate that the facility is not above the aquifer system. Even if the yield of the aquifer system is less than 100 gpm beneath the facility, the siting criterion applies if the aquifer system yields 100 gpm within the specified distance from the limits of waste placement. The applicant can do a site specific investigation to determine the yield. A good source of publically available information is the County Ground Water Resource Maps available through ODNR, Division of Water, Ground Water Mapping and Technical Services Department at 614/265-6740. Some maps are available on the internet at ***soilandwater.ohiodnr.gov/maps/groundwater-resources-maps***.

For a site specific investigation, one recommended method is to conduct a pump test to determine if the aquifer will sustain a yield of 100 gpm for twenty-four hours. Such a pumping test should be conducted in a well that is at least eight (8) inches in diameter and screened across the entire thickness of the aquifer. The well should be pumped at a rate of 100 gpm for 24 hours or until the well goes dry, whichever occurs first. If the well sustains a yield of 100 gpm for 24 hours, the criterion applies to the facility.

ISOLATION DISTANCE (a ground water aquifer protection criterion):

The isolation distance between the uppermost aquifer system and the bottom of the facility is not to be less than the specified thickness of in-situ or added geologic material.

Applicable to MSW, ISW, RSW, ST monofill

This criterion does not prohibit a landfill from being constructed through an aquifer system (Figure A). When this is done, there will be at least two uppermost aquifer systems to which the minimum separation distance will apply. One is the aquifer system through which the landfill will be constructed as it will be the uppermost aquifer system for the sidewalls of the landfill and the other is the lower aquifer system which will be the uppermost aquifer system beneath the rest of the landfill's liner system. Added geologic material will be needed to construct the minimum separation distance between the aquifer system and the sidewalls of the landfill.

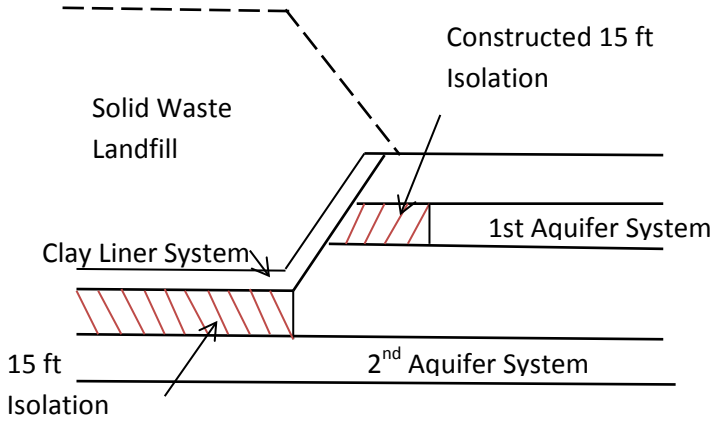


Figure A

Constructing a landfill through an aquifer system may have other consequences which should be considered and which could affect approval of the permit application. These include the effect of construction on ground water levels in the aquifer system, the potential of damage to landfill components due to hydrostatic uplift, the effect of construction on the productivity of the nearest wells, and managing any ground water discharged into the landfill during construction. If construction of the landfill through an aquifer system will adversely affect a nearby residential well, the Ohio EPA may deny the permit application for social and economic reasons, or require terms and conditions to protect public health and safety and the environment.

TIME OF TRAVEL (a ground water setback):

Waste is not to be located within the surface and subsurface areas of a well head protection area or a drinking water source protection area for a public water system using ground water, or within the area surrounding an existing or proposed public water supply well through which contaminants may move toward and may reach the public water supply well through underground geologic or man-made pathways within a period of five years.

Applicable to MSW, ISW, RSW, ST monofill

Siting Criteria

A well head protection area includes areas near or surrounding a public water supply well or well field as delineated by the owner or operator of the public water supply well or well field and endorsed by Ohio EPA. Information on delineated well head protection areas is available through the Division of Drinking and Ground Waters.

A drinking water source protection area for a public water system using ground water includes areas near or surrounding a public water supply well or well field as delineated by Ohio EPA. The criterion does not apply until a map of the delineated area is sent by Ohio EPA and received by the owner or operator of the water supply well or well field. Information on delineated drinking water source protection areas is available through the Division of Drinking and Ground Waters.

The well head protection area and drinking water source area already provide time of travel protection to the well therefore a five year time of travel calculation is not required.

A 'proposed' public water supply well is a well for which plans have been submitted to Ohio EPA for inclusion in a public water supply system on or before the date the permit to install application was submitted. If inclusion of the well is denied, it is no longer 'proposed.'

For determining compliance with this criterion, it is recommended that the applicant show that the nearest downgradient public water supply well is outside of the five year time of travel (TOT) zone, rather than trying to determine the time of travel around the wells. The five year TOT is demonstrated starting at the facility boundary and within the hydrostratigraphic unit that the leachate or waste-derived contaminants are most likely to be present within should they migrate downgradient from the limits of waste placement to the facility boundary. This hydrostratigraphic unit does not have to be the hydrostratigraphic unit that the public water supply well is screened within. The demonstration would proceed with the contaminants migrating in the downgradient direction toward the nearest public water supply well. If, in proceeding with the demonstration, the contaminants are shown not to migrate into the hydrostratigraphic unit the public water supply draws water from, the applicant must document why no vertical migration will occur. If no public water supply wells are intersected during the five year TOT demonstration or if a surface water body is intersected with the contaminant discharging to the surface water body, prior to five years TOT being reached then the demonstration ends.

If the applicant starts the demonstration with a hydrostratigraphic unit different from the one the public water supply well is screened within, then the applicant must demonstrate how the leachate or waste-derived contaminants could migrate from the limits of waste placement to the facility boundary and the hydrostratigraphic unit in question. This demonstration always starts at the limits of waste placement and proceeds in a downgradient direction both horizontally and vertically.

Many methods can be used to demonstrate compliance with this rule, from simple ground water velocity equations to complex three dimensional models. The demonstration should use the method best suited to the site specific situation. The complexity of the demonstration depends on the site-specific hydrogeology and the degree of precision required. The method used should be documented fully, including:

- A description or listing of the governing equations and assumptions used in the model or the ground water velocity equation used;
- A description of all inputs to the model or the velocity equation with justification for use of each input; and
- A description and justification for any boundary conditions if a model is used.

All inputs should be conservative (i.e., worst case) and should yield the fastest TOT possible given the available range of hydraulic conductivities, effective porosities, etc. Any method used should consider the steepening that occurs in the hydraulic gradient next to a pumping well.

UNDERGROUND MINE (a ground water setback):

Facilities are not to be located within an area of potential subsidence due to an underground mine or within the angle of draw of an underground mine, unless the potential impact to the facility due to subsidence is minimized.

Applicable to MSW, ISW, RSW, ST monofill

Siting Criteria

If mining maps from ODNR (see the Ohio Department of Natural Resources, Division of Geological Survey's *Mines of Ohio* interactive map application at ***gis.ohiodnr.gov/website/mrm/OhioMines/***) or other information indicate that underground mines are located in proximity to the limits of waste placement, then an in-depth site investigation is recommended. Drilling in search of voids should not be conducted on a grid pattern as pillars remaining after mining operations may be encountered each time instead of the mine void.

Potential impact to the facility due to subsidence can be minimized if the mine voids are filled, or if the overburden is removed to eliminate the mine. Then the criterion does not apply.

The criterion does not apply to underground mines that come into existence after the permit to install application is submitted to Ohio EPA.

WELL (a ground water setback):

Waste is not to be located within a specified distance of a water supply well or developed spring.

Applicable to MSW, ISW, RSW, ST monofill, and Class I, II and III Composting

A 'developed spring' is any spring that has been permanently modified by the addition of pipes or a collection basin to facilitate the collection and use of the spring water.

The criterion does not apply to wells or springs that come into existence after the permit to install application is submitted to Ohio EPA. The criterion does not apply if one or more of the following conditions are met:

- The water supply well or developed spring is controlled by the applicant and provided
    - The water supply well or developed spring is needed as a source of nonpotable water in order to meet the requirements of the approved permit; and
    - No other reasonable alternative water source is available; and
    - The water supply well or developed spring is constructed to prevent contamination of the ground water
- The water supply well or developed spring is at least five hundred feet hydrogeologically upgradient of the limits of solid waste placement and the applicant demonstrates that the potential for migration of landfill gas to that well or spring is minimized
- The water supply well or developed spring is separate from the limits of solid waste placement by a hydrogeologic barrier
- The water supply well or developed spring was constructed and is used solely for monitoring ground water quality

PARKS (a general setback):

Facilities are not to be located within the specified distance of certain types of parks.

Applicable to MSW, ISW, RSW, TF, Class I, II, III and IV Composting, Incinerator, ST transporters, ST transporter portable equipment, ST facility, ST collection/storage/recovery, ST mobile recovery, ST monofill, ST beneficial use

Parks are identified as:

- National park or recreation area (see ***www.nps.gov/state/oh/index.htm***)
- Candidate area for potential including in the national park system (contact the Chief of Planning and Compliance, Midwest Region at 402/661-1840)
- State park (see ***parks.ohiodnr.gov/***) or established state park purchase area (contact the Office of Real Estate at 614/265-6649)
- Any property that lies within the boundaries of a national park or recreation area but that has not been acquired or is not administered by the secretary of the US Department of the Interior.

Siting Criteria

The criterion does not apply to a solid waste facility located within a park or recreation area that exclusively disposes of wastes generated within the park. The criterion does not apply to a park that comes into existence after the permit to install application is submitted to Ohio EPA.

ORC 3734.02(M) prohibits the director from granting a variance or exemption to locate a facility in a park.

For some programs, the rules state that the criterion does not apply if the applicant obtains a written authorization from the owner(s) and the designated authority of the subject park to locate the limits of solid waste placement within 1000 feet of the park boundary.

NATURAL AREAS (a general setback):

Facilities are not to be located within a specified distance of natural areas.

Applicable to MSW, ISW, RSW, TF, Incinerators, Class I, II, and III Composting, ST transporters, ST transporter portable equipment, ST facility, ST collection/storage/recovery, ST mobile recovery, ST monofill, ST beneficial use

'Natural areas' are:

- Areas designated by the Ohio Department of Natural Resources as either a state nature preserve, including all lands dedicated under the Ohio natural areas law, a state wildlife area, or a state wild, scenic or recreational river. For nature preserves and wildlife areas, contact ODNR Natural Heritage Program at 614/265-6818 or see ***naturepreserves.ohiodnr.gov/find-a-state-nature-preserve*** and ***wildlife.ohiodnr.gov/wildlifeareas***. For state (and national) wild, scenic and recreational rivers see ***watercraft.ohiodnr.gov/scenicriversmap***.
- Areas designated, owned, and managed by the Ohio historical society (***www.ohiohistory.org/***) as a nature preserve. Contact the Ohio History Connection, Historic Sites and Facilities at 614/297-2300.
- Areas designated by the United States department of the interior as either a national wildlife refuge or a national wild, scenic or recreational river. For wildlife refuges see ***www.fws.gov/refuges/***. For national wild, scenic or recreational rivers see ***www.nps.gov/rivers*** (or ***www.dnr.state.oh.us/dnap/sr/***).
- Areas designated by the United States forest service as either a special interest area or a research natural area in the Wayne national forest. Contact the Forest Botanist at 740/753-0101. For a map of the 2006 Wayne national forest plan, including special interest areas and research natural areas, see ***www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm9_005879.pdf***
- Stream segments designated by Ohio EPA as a state resource water, a coldwater habitat, or an exceptional warmwater habitat. See the water body use designation rules OAC 3745-1-08 to 34 at ***www.epa.state.oh.us/dsw/rules/3745_1.aspx***.

The criterion does not apply to natural areas that come into existence after the permit to install application is submitted to Ohio EPA.

PROPERTY LINE (a general setback):

Waste is not to be located within the specified distance to the property line.

Applicable to MSW, ISW, RSW, Infectious waste treatment, ST transporter portable equipment, ST facility, ST collection/storage/recovery, ST mobile recovery, ST monofill, ST beneficial use

The property line should be determined by a professional surveyor registered in Ohio. Easements do not affect the application of the siting criterion.

DOMICILE (a general setback):

Waste is not to be located within the specified limits to a domicile (or other designated structures).

Applicable to MSW, ISW, RSW, TF, Incinerators, Class I, II and III Composting, Infectious Waste treatment, ST transporter portable equipment, ST facility, ST collection/storage/recovery, ST mobile recovery, ST monofill, ST beneficial use

Siting Criteria

The criterion does not apply if the owner of the domicile has consented in writing to the location of the facility. The criterion applies only to those domiciles in existence on the date of receipt of the permit to install application. 'In existence' means that the domicile is occupyable, a building permit is not sufficient.

For infectious waste treatment facilities, the criterion specifically includes schools, prisons and jails. For all other programs, the criterion applies only to domiciles.

For ST facilities, ST, mobile recovery, ST monofills and ST beneficial use, the criterion addresses domiciles not owned or leased by the property owner or scrap tire party. For ST transporter portable equipment, ST facility, ST collection/storage/recovery, ST mobile recovery, and ST beneficial use, the criterion includes buildings or structures not owned or leased by the property owner or scrap tire party.

SURFACE WATERS (a general setback):

Waste is not to be located within the specified distance to certain surface waters.

Applicable to MSW, ISW, RSW, ST transporter portable equipment, ST facility, ST collection/storage/recovery, ST mobile recovery, ST monofill, ST beneficial use, Class I, II, III and IV Composting

For the composting program (Class I, II, III, and IV), and the scrap tire beneficial use storage refer to 'surface waters of the state.' Surface waters of the state is defined in OAC 3745-1-02 as all streams, lakes, reservoirs, ponds, marshes, wetlands or other waterways which are situated wholly or partially within the boundaries of the state, except those private waters which do not combine or effect a junction with natural surface or underground waters. Waters defined in section 6111.01 of the Revised Code as sewerage system, treatment works, or disposal system, are not included.

The remainder of the applicable programs refers to streams, lakes, and wetlands. Streams, lakes, and wetlands are determined by Ohio EPA or the US Army Corps of Engineers (to determine the appropriate Great Lakes and Ohio River Division to contact, see ***www.lrd.usace.army.mil/***).

The culverted portions of streams are considered streams if the culvert outlets to another stream segment and not to a waste water treatment plant.

FLOODWAY, FLOODPLAIN (a general setback):

Facilities are not to be located within the specified distance of a floodway or floodplain.

Applicable to ISW, RSW, Infectious Waste treatment, Class I, II and III Composting, ST monofill, ST beneficial use

For some programs, the criterion applies only to regulatory flood plains. 'Regulatory floodplain' is defined in OAC 3745-27-01(R). The regulatory floodplain for specific sites can be identified from flood insurance rate maps (FIRMs) maintained by the Federal Insurance and Mitigation Administration's Hazard Mapping Division of the Federal Emergency Management Agency (FEMA). See ***msc.fema.gov/portal*** to order maps. Other programs add a means for calculating the flood plain for those streams that are not depicted on a flood insurance rate map published by FEMA.

The floodway is where the water is likely to be deepest and fastest. Some FIRMs will show designated floodways.

If the criterion is limited to flood plains of a watercourse, then it does not apply to flood plains associated with lakes, wet lands or other features.

If the applicant believes that the FIRM is outdated our inaccurate, the applicant may apply to FEMA for:

- a letter of map amendment (LOMA), or
- a letter of map revision - based on fill (LOMRF), if fill placement is the basis of the request, or
- a letter of determination review (LODR).

SEISMIC IMPACT ZONE (a general setback):

Waste is not to be located within a seismic impact zone.

Applicable to ST monofill

Siting Criteria

A seismic impact zone is an area where the maximum horizontal acceleration in lithified earth material exceeds 0.10g. The maximum horizontal acceleration in lithified earth material is the maximum expected horizontal acceleration depicted on a seismic map, with a 90% or greater probability that the acceleration will not be exceeded in 250 years.

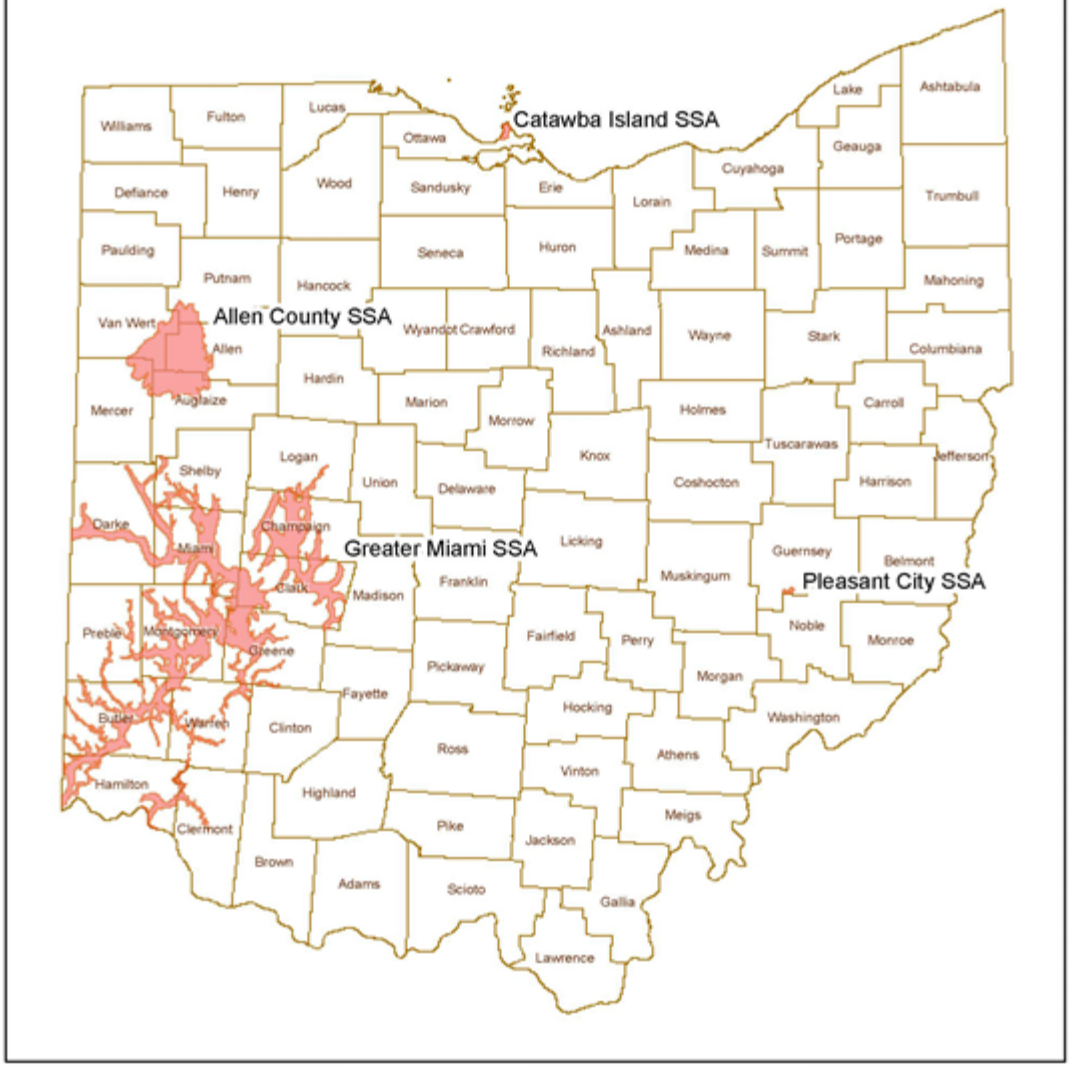
If the facility is located in a seismic impact zone, then the design of the containment structures, including liners, leachate collection systems, sedimentation ponds, and surface water control systems, will need to resist the maximum horizontal acceleration in lithified earth material for the site. DMWM will accept use of maps showing 2% probability that the acceleration will be exceeded in 50 years. These maps have a slightly longer return period and would correspond to slightly larger ground motions. Therefore use of these maps is suitable for design purposes. Seismic hazard maps are available through the US Geological Survey, see ***earthquake.usgs.gov/hazards/***. The maximum horizontal acceleration can also be the maximum expected horizontal acceleration based on a site specific seismic risk assessment. See policies #129 *Procedural and Technical Considerations for the Seismic Impact Zones Location Restriction Demonstration* and #660 *Geotechnical and Stability Analyses for Ohio Waste Containment Facilities* for more information regarding how to do the above demonstration.

Siting Criteria – Attachment I – Applicability Table

Program	Sand/Gravel Pits	Sandstone/Limestone Quarries	Sole Source Aquifer	100 gpm Unconsolidated Aquifer	Isolation Distance	Time of Travel	Underground Mine	Well	Parks, ORC 3734.02(M)	Natural Areas	Property Line	Domicile	Stream, Lake, Wetland	Surface Waters of the State	Floodway, Floodplain	Seismic Impact Zone
Municipal Solid Waste Landfill (MSW) OAC 3745-27-07(H)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			
Transfer Facility (TF) OAC 3745-27-22									◆	◆		◆				
Infectious Waste Treatment OAC 3745-27-37(D), ORC 3734.021(C)(2)											◆	◆			◆	
Composting Class I OAC 3745-27-43(C)								◆	◆	◆		◆		◆	◆	
Composting Class II, III OAC 3745-27-45(M)								◆	◆	◆		◆		◆	◆	
Composting Class IV OAC 3745-27-45(M)									◆					◆		
Incinerator/Energy Recovery OAC 3745-27-51									◆	◆		◆				
Scrap Tire (ST) Transporter OAC 3745-27-54(C) and -55(A)									◆	◆						
Scrap Tire (ST) Transporter, Portable Equipment OAC 3745-27-56(C)									◆	◆	◆	◆	◆			
Scrap Tire (ST) Facility OAC 3745-27-62(B)									◆	◆	◆	◆	◆			
Scrap Tire (ST) Collection, Storage, Recovery OAC 3745-27-65(N)									◆	◆	◆	◆	◆			
Scrap Tire (ST) Mobile Recovery OAC 3745-27-67(F)									◆	◆	◆	◆	◆			
Scrap Tire (ST) Monofill OAC 3745-27-71(H)			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆
Scrap Tire (ST) Beneficial Use Storage OAC 3745-27-78(J)									◆	◆	◆	◆		◆	◆	
Industrial Solid Waste Landfill (ISW) OAC 3745-29-07(H)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	
Residual Solid Waste Landfill (RSW) OAC 3745-30-06(H)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	

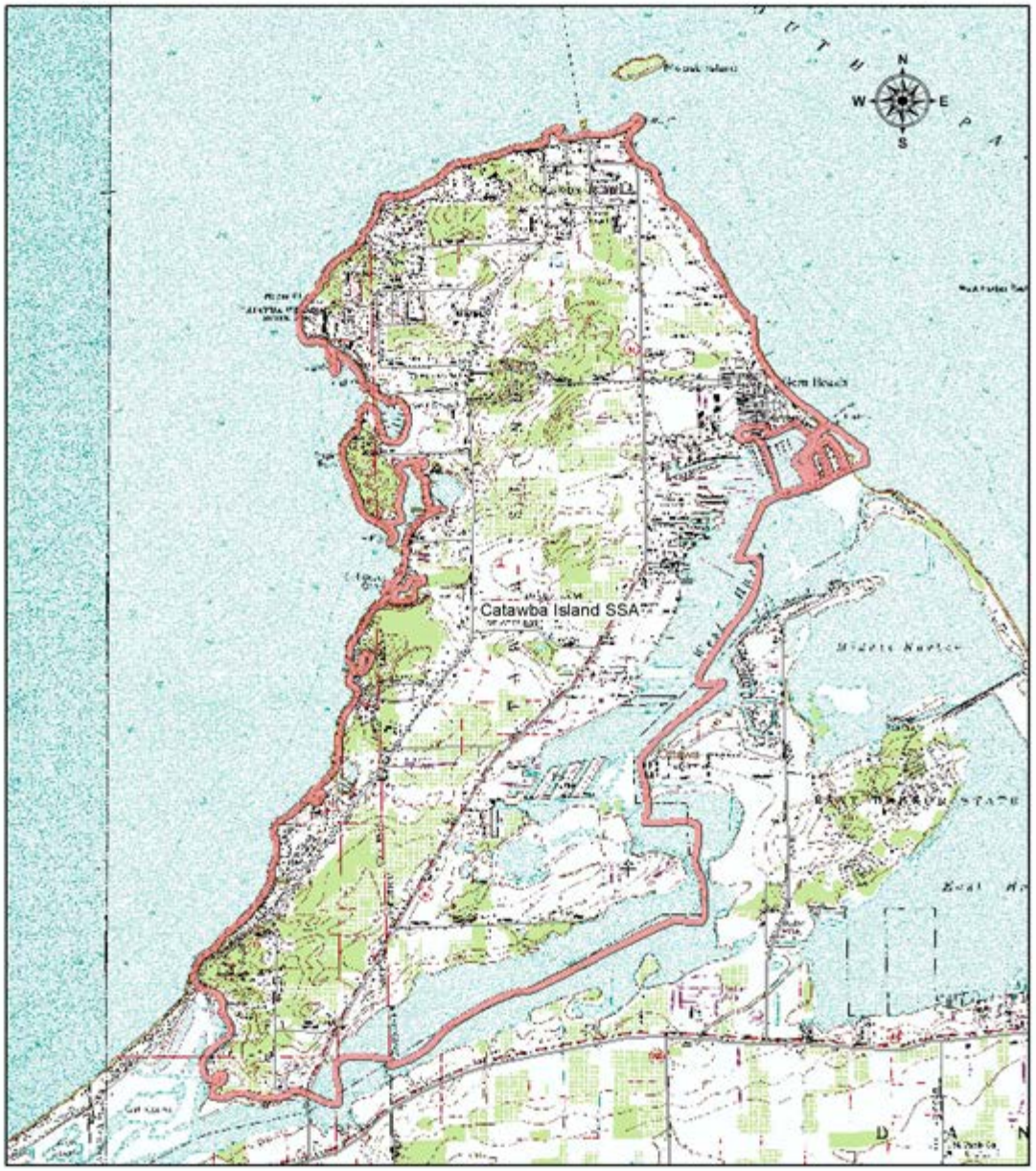
Siting Criteria – Attachment II – Sole Source Aquifers

Figure 1.
General Geographic Locations of Declared
Sole Source Aquifers Within Ohio



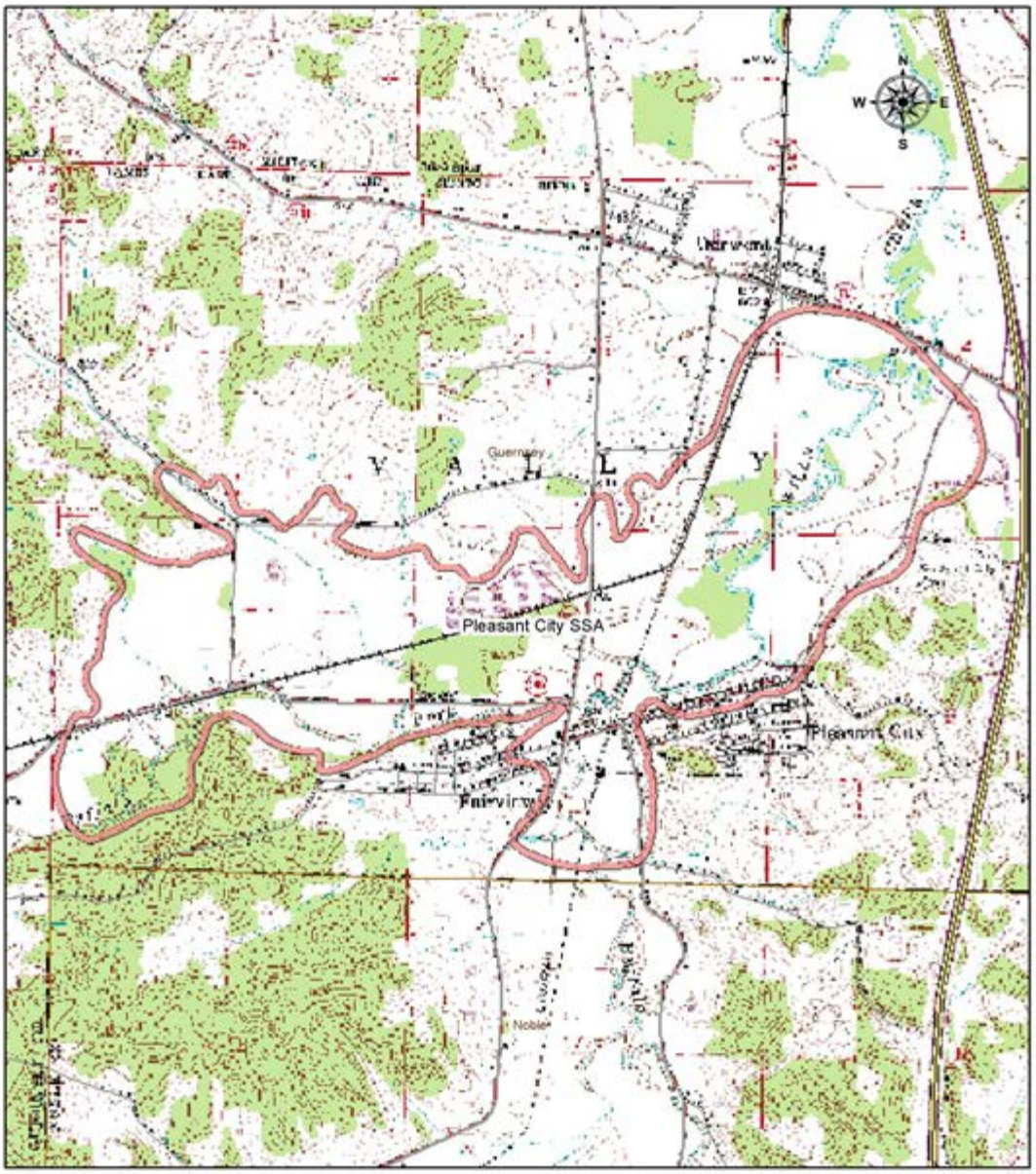
Siting Criteria – Attachment II – Sole Source Aquifers

Figure 2.
Catawba Island Sole Source Aquifer

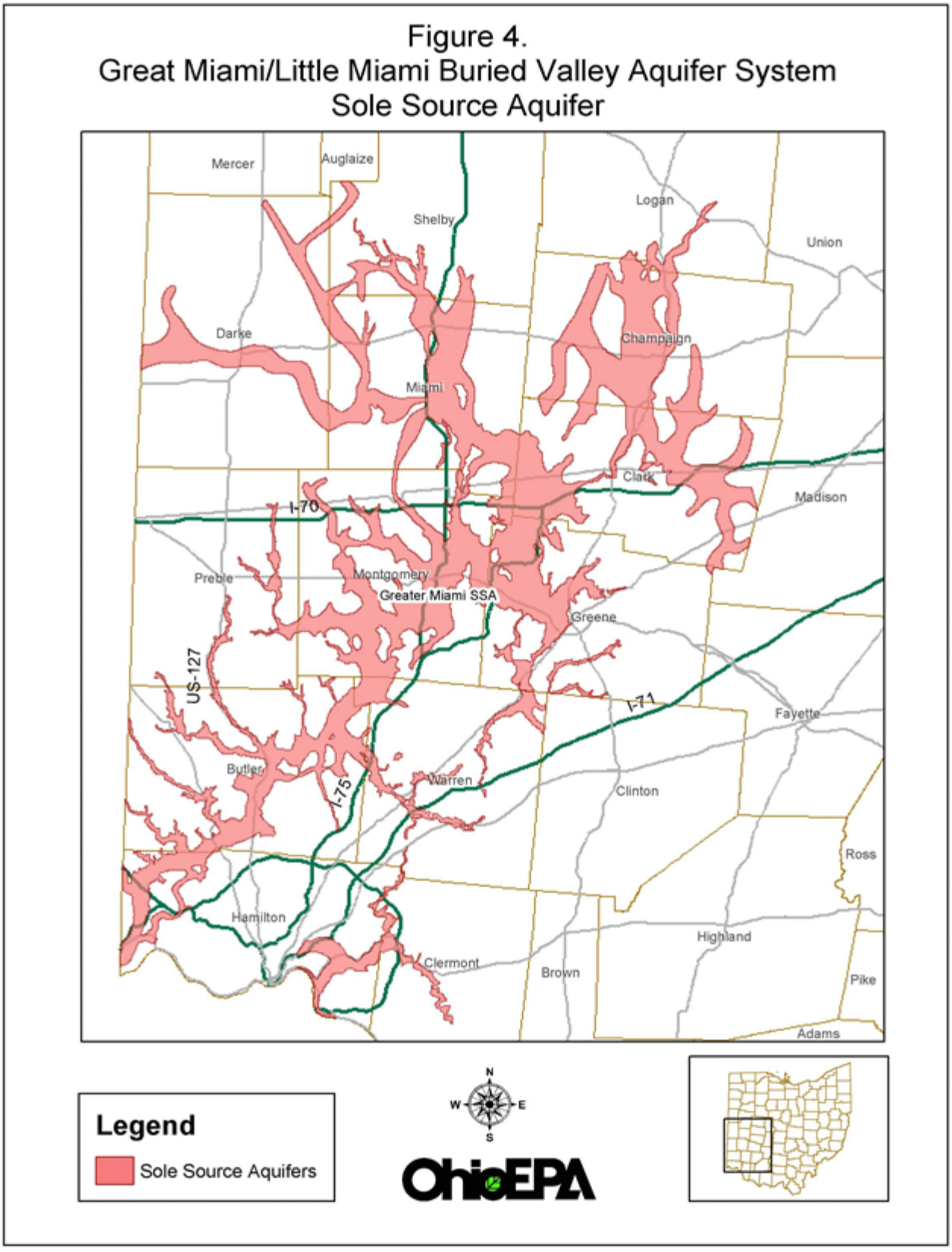


Siting Criteria – Attachment II – Sole Source Aquifers

Figure 3.
Pleasant City Sole Source Aquifer



Siting Criteria – Attachment II – Sole Source Aquifers



Siting Criteria – Attachment II – Sole Source Aquifers