



DIVISION OF STATE FIRE MARSHAL

BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

FACT SHEET

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Evaluation of Surface Water Body Receptors Under the 2005 Corrective Action Rule

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Purpose

The purposes of this fact sheet are:

- To revise the “Surface Water Quality Standards” section of the 2005 Bureau of Underground Storage Tank Regulations’ (BUSTR) Technical Guidance Manual (BUSTR’s 2005 TGM), Section 3.11.5: “Site Specific Target Level Development.”
- To clarify the procedures for identification and evaluation of receptors in a surface water body during Tier 2 and Tier 3 Evaluations under the 2005 Corrective Action Rule.

The methodologies described in this fact sheet shall not constitute a requirement to perform an ecological investigation for BUSTR regulated sites, nor does this fact sheet represent any modifications to the requirements of a Tier 1 Investigation, pursuant to Ohio Administrative Code (OAC) 1301:7-9-13, effective March 2005.

Surface Water Body Determination

BUSTR’s 2005 TGM explains that a surface water body is defined as “a body of water greater than one acre in size or a river, creek, or stream.” To determine if there is a surface water body within 300 ft. of the underground storage tank (UST) site being evaluated, perform the following:

- Search 7.5 minute United States Geological Survey (USGS) quadrangle maps to identify any continuous or intermittent river, creek, stream, or other water body greater than 1 acre in size within 300 ft. of the UST site;
- Conduct a physical inspection of the area within 300 ft. of the UST site; and,
- Reference the drainage basin rules in OAC 3745-1-08 through 3745-1-32 and the *Water Body Use Designation Index* found at www.epa.state.oh.us/dsw/rules/3745-1.html.

If a surface water body is identified while conducting any of the above, ground water will be considered a potential drinking water source during Tier 1 Evaluations. If a questionable feature is encountered during the physical inspection of the area within 300 ft. of the UST site, contact BUSTR for further clarification on determining its status as a surface water body. During the Tier 2 Evaluation, appropriate receptors must be identified and Surface Water Target Levels developed.

Surface Water Target Level Identification

OAC 1301:7-9-13 (L)(4)(a) states that during a Tier 2 Evaluation, the owner/operator (O/O) must identify “aquatic life and recreational receptors in a surface water body located within 300 ft. of the UST site.” After determining the name of the surface water body, or determining that it is an unnamed surface water body, use the following approach

to identify receptors and to apply the appropriate Surface Water Target Levels to a surface water body during the Tier 2 Evaluation process:

1. Determine the Ohio Environmental Protection Agency (OEPA) “designated use” for the water body as follows:
 - a. Use the *Water Body Use Designation Index* at the website listed above to determine which drainage basin contains the water body segment of interest. The “Foreword” of the *Index* explains how to determine the correct drainage basin rule and page number within OAC 3745-1-08 through 3745-1-30. A generalized map of Ohio’s drainage basins is located in Figure 1 of OAC 3745-1-08 (Hocking River Drainage Basin rule). For further assistance on identifying drainage basins for unnamed or unlisted water bodies, please contact OEPA’s Division of Surface Water. Then,
 - b. Use the drainage basin rule and page number found in step 1(a) to identify whether the designated use(s) for that water body segment include either Public Water Supply (PWS) or Primary Contact Recreation (PCR). These use designations indicate that the surface water body is either used a drinking water source or as a recreational area for full body contact recreation such as swimming, canoeing, etc.
 - c. For the purposes of this fact sheet, use designations other than PWS and PCR (i.e., warm water habitat (WWH), state resource water (SRW), industrial water supply (IWS), etc.) do not require evaluation.
2. Determine the applicable Surface Water Target Levels for the surface water body, as follows:
 - a. Aquatic Life levels listed in Table 1 shall apply at all UST sites where a surface water body exists within 300 ft. of the site, including those not listed in OAC 3745-1-08 through 32.
 - b. The Drinking Water levels listed in Table 1 also apply if the water body is designated as PWS.
 - c. The Human Health (Recreational) levels listed in Table 1 also apply if the water body is designated as PCR. To determine whether Lake Erie or Ohio River Drainage Basin Human Health (Recreational) levels apply, reference the “Lake Erie-Ohio River Divide in Ohio 2004” map found at www.dnr.state.oh.us/water/watersheds.
 - d. The lowest concentration listed for a specific chemical of concern must be used if more than one of the Surface Water Target Levels identified in items (a), (b) and (c) apply during the Tier 2 Evaluation.
3. Lakes, ponds, and reservoirs greater than one acre in size may not be listed in OAC 3745-1-08 through 30, and must be evaluated as follows:
 - a. Aquatic Life levels and Drinking Water levels listed in Table 1 both apply to publicly owned lakes and reservoirs (with the exception of Piedmont reservoir), privately owned lakes and reservoirs used as a source of public drinking water, surface waters within 500 yards of an existing public water supply surface water intake, and surface waters used as emergency water supplies.
 - b. Assume the Human Health (Recreational) levels apply, unless it can be reasonably demonstrated that recreational receptors cannot be impacted.

For the purposes of this fact sheet, BUSTR does not consider a man-made, roadside ditch to be a “surface water body” unless one or more of the following applies to the ditch: (a) it is listed in OAC 3745-1-08 through 3745-1-32; (b) it is identified on a 7.5 minute USGS quadrangle map; or (c) it is a point of ground water discharge.

Fate and Transport Model Evaluation

When applying the Surface Water Target Levels to a UST site during a fate and transport model evaluation, note the following:

1. BUSTR considers the point of exposure (POE) to be the point where ground water discharges to the surface water body, prior to mixing with the water body.
2. The Surface Water Target Levels listed in Table 1 are centerline concentrations, and not averaged across the plume. Ground water fate and transport modeling (e.g. BUSTR-Screen) shall consider these to be POE concentrations at the point of discharge into the surface water body.

3. Due to the sensitivity of receptors and complexity of surface water body mixing calculations, additional mixing calculations may not be conducted to develop Site Specific Target Levels for the source area.
4. The site conceptual exposure model assumes that ground water is discharging into a surface water body if the surface water body is within 300 ft. of the UST site.
5. At sites where the ground water ingestion and the surface water pathways are both considered complete, both pathways (and the corresponding POEs, POE distances, and action/target levels) must be evaluated during the Tier 2 Evaluation.
6. Documentation identifying the “designated use” of the surface water body being evaluated must be submitted along with the Tier 2 Evaluation report (i.e., specific rule reference and a print out of the use designation page in OAC 3745-1-08 through 32).

Table 1 – BUSTR Surface Water Target Levels

| | Drinking Water ⁽¹⁾ | Aquatic Life | Human Health (Recreational) ⁽²⁾ | |
|------------------------------------|-------------------------------|--------------|--|----------------------------|
| | Statewide | Statewide | Lake Erie Drainage Basins | Ohio River Drainage Basins |
| Volatile Organics | | | | |
| Benzene | 5 | 1,400 | 310 | 710 |
| Toluene | 1,000 | 1,100 | 51,000 | 200,000 |
| Ethylbenzene | 700 | 1,100 | 8,900 | 29,000 |
| Xylenes | 10,000 | 480 | 83,000 | -- |
| Methyl tertiary-butyl ether (MTBE) | 40 | 13,000 | -- | -- |
| PAHs⁽³⁾ | | | | |
| Benzo(a)anthracene | 0.26 | 85 | -- | 0.49 |
| Benzo(a)pyrene | 0.2 | 1.1 | 0.00002 ⁽⁴⁾ | 0.49 |
| Benzo(b)fluoranthene | 0.17 | 47 | -- | 0.49 |
| Benzo(k)fluoranthene | 1.7 | -- | -- | 0.49 |
| Chrysene | 47 | 85 | -- | 0.49 |
| Dibenz(a,h)anthracene | 0.2 | -- | -- | 0.49 |
| Indeno(1,2,3-c,d)pyrene | 0.22 | -- | -- | 0.49 |
| Naphthalene | 140 | 340 | 1,200 | -- |

Table Notes:

- All concentrations are expressed as micrograms per liter (ug/L).
- "--"Indicates that there is insufficient data and OEPA does not currently have an aquatic life or recreational use value.
- All Aquatic Life and Human Health (Recreational) concentrations were obtained from the OEPA’s tables dated and revised 7/27/05 (see www.epa.state.oh.us/dsw/wqs/criteria.html). As the concentrations listed above are subject to change, updated tables and concentrations from OEPA should be used as they become available.
- Methodology behind the development of BUSTR Aquatic Life and Human Health (Recreational) Target Levels may be found in OAC 3745-1-36 & 38.

⁽¹⁾ Corresponds to OEPA designated use of Public Water Supply (PWS)

⁽²⁾ Corresponds to OEPA designated use of Primary Contact Recreation (PCR)

⁽³⁾ Polynuclear aromatic hydrocarbons (PAHs)

⁽⁴⁾ When a laboratory detection limit cannot achieve this Surface Water Target Level, BUSTR will evaluate the results based on the proximity of the ground water sample to the surface water body, concentrations of other PAHs, etc.