

APPENDIX M
ECOLOGICAL RISK ASSESSMENT DATA

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**APPENDIX M
(PART I)**

**OHIO RAPID ASSESSMENT FOR WETLANDS
AT
RAMSDELL QUARRY LANDFILL**

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Ramsdell

Ohio Rapid Assessment Method for Wetlands		
Version 5.0	Background Information Score Boundary Worksheet Narrative Rating Quantitative Rating Categorization Worksheets Field Scoring Form	Ohio EPA, Division of Surface Water Final: February 1, 2001
	Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW	

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

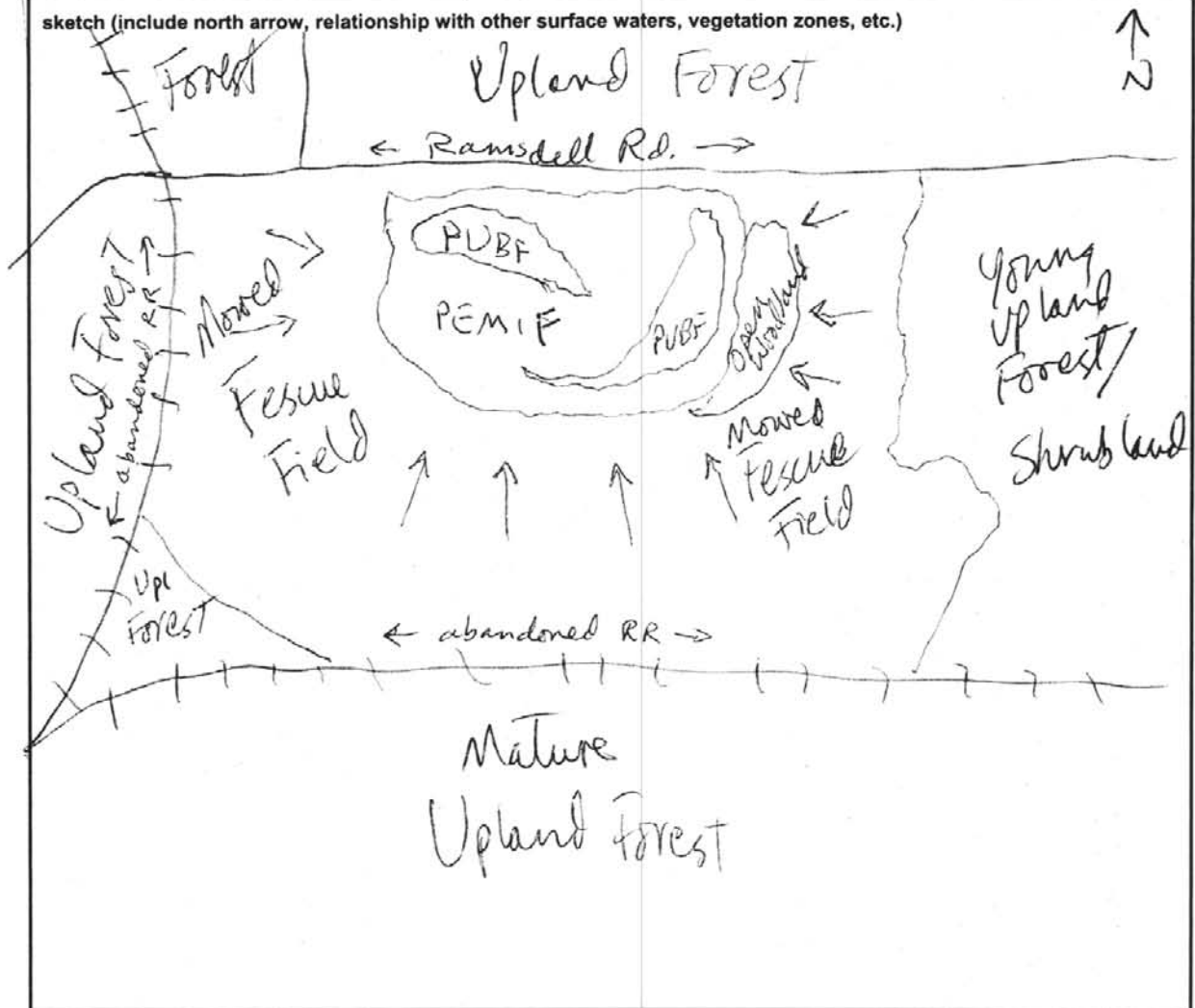
Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Background Information

Name:	Ramsdell Quarry Jimmy Groton		
Date:	Site visit 10/27-30/2003 5/19/04		
Affiliation:	SAIC wetland ecologist		
Address:	151 Lafayette Dr, Oak Ridge, TN		
Phone Number:	865/481-8732		
e-mail address:	grotonj@saic.com		
Name of Wetland:	Ramsdell Quarry		
Vegetation Community(ies):	PUBFx/PEM1E		
HGM Class(es):			
Location of Wetland include map, address, north arrow, landmarks, distances, roads, etc.	↑ N		
Lat/Long or UTM Coordinate	UTM Zone 17 498440E 4562362N (WGS84/NA1983)		
USGS Quad Name	Windham		
County	Portage		
Township			
Section and Subsection			
Hydrologic Unit Code			
Site Visit	10/27-30/2003		
National Wetland Inventory Map			
Ohio Wetland Inventory Map			
Soil Survey			
Delineation report/map			
Wetland Size (acres, hectares)			

Name: Ramsdell Quarry (RVAAP)

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)



Comments, Narrative Discussion, Justification of Category Changes

Quarry active until 1941; southwestern part of quarry used as landfill between 1941 & 1989. Closed in 1989
1940 - 1950s - used to burn waste explosives, incendiary materials, & other wastes

Wetland formed in quarry pit following cessation of waste disposal activities

Currently under study for possible remediation (R/F)

Final score : 22.5

Category

1

Name:

sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)

Comments, Narrative Discussion, Justification of Category Changes

Final score :

Category

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Unit if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a mitigation site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	NA	NA
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	✓	

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/odnr/dnap/>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO Go to Question 8a

#	Question	Circle one	
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO Go to Question 8b
8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	<input checked="" type="radio"/> NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	<input checked="" type="radio"/> NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 9d	<input checked="" type="radio"/> NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	<input checked="" type="radio"/> NO Go to Question 9d
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	<input checked="" type="radio"/> NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	<input checked="" type="radio"/> YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	<input checked="" type="radio"/> NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio, Erie County, and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	<input checked="" type="radio"/> NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalnii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and assign score. Estimated areas should clearly place the wetland within the appropriate class.		score
6pts	>50 acres (> 20.2ha)	
5pts	25 - <50 acres (10.1 - <20.2ha)	
4pts	10 - <25 acres (4.0 - <10.1ha)	
3pts	3 - <10 acres (1.2 - <4.0ha)	
2pts	0.3 - <3 acres (0.12 - <1.2ha)	2
1pt	0.1 - <0.3 acres (0.04 - <0.12ha)	
0pts	< 0.1 acres (0.04ha)	

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft ²	yd ²	ft on side	yd on side	ha	m ²	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 2. Upland buffers and intensity of surrounding land uses. Maximum 14 points. Wetlands are systems transitional between upland and aquatic environments. Wetlands without "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded.		score
2a. Average Buffer Width (abw). Calculate the average buffer width and select only one score. To calculate abw, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: abw of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: $abw = (50m + 25m + 10m + 0m)/4 = 21.25m$. Intensive land uses are not buffers, e.g. active row cropping, recently abandoned fields, paved areas, housing developments, unfenced pasture, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	1
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s). Select one, or double check up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone (if any).		
7pts	VERY LOW. 2 nd growth or older forest, prairie, savannah, wildlife area, etc.	
5pts	LOW. Old field (>10 yrs), shrubland, young 2 nd growth forest, etc.	
3pts	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field, etc.	3
1pt	HIGH. urban, industrial, open pasture, row cropping, mining, construction, etc.	

6

subtotal

<p>Metric 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, to score more than 30 points.</p>		
<p>3a. Sources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.</p>		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
<p>3b. Connectivity. Select all that apply and sum score.</p>		
1pt	100 year floodplain. "Floodplain" is defined in OAC Rule 3745-1-50(P) as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	between stream/lake and other human land use. This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	part of wetland or upland (e.g. forest, prairie) complex. Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "suarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply	1
1pt	part of riparian or upland corridor. See description above.	
<p>3c. Maximum water depth. Select only one and assign score. The Rater <i>does not</i> need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.</p>		
3pts	>0.7m (27.6in)	3
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
<p>3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of secondary indicators is necessary and expected in order to properly answer this Question. Categories correspond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and seasonally saturated.</p>		
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	3
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	

11

3a. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the Rater to evaluate the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

It is very important to stress that this question does not discriminate between wetlands with different types of hydrologic regimes, e.g. between a forested seep wetland located on a floodplain with seasonal inundation and a leatherleaf (*Chamaedaphne calyculata*) bog with precipitation and minor amounts of surface run-off from a small watershed. Rather, it asks the rater to evaluate the "intactness" of the hydrologic regime attributable to *that type of wetland*. In the example above, both the forested seep wetland and the leatherleaf bog can score the maximum points (12) if there no, or no apparent, modifications to the natural hydrologic regime.

Once the Rater has listed all possible past and ongoing disturbances, the Rater should check the most appropriate category to describe the present state of the wetland. In instances where the Rater believes that a wetland falls between two categories, or where the Rater is uncertain as to which category is appropriate, it is appropriate to "double check" and average the score.

The labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a hydrologic disturbance continuum, from very high to very low or no disturbance.

The Rater may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

<input checked="" type="checkbox"/>	ditch(es), in or near the wetland	X	point source discharges to the (non-stormwater)
<input checked="" type="checkbox"/>	tile(s), in or near the wetland	X	filling/grading activities in or near the wetland
<input type="checkbox"/>	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
<input type="checkbox"/>	weir(s), in or near the wetland		dredging activities in or near the wetland
<input checked="" type="checkbox"/>	stormwater inputs (addition of water)	X	other (specify) <i>old quarry pit/waste disposal site</i>

<p>Circle one answer. Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime, or have they occurred so far in the past that current hydrology should be considered to be "natural."?</p>	<p>YES</p> <p>Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.</p>	<p>NO</p> <p>Assign a score of 12 since there are no or no apparent modifications.</p>	<p>NOT SURE</p> <p>Double check "none or none apparent" and "recovered" and assign a score of 9.5.</p>
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Select one or double check adjoining numbers and average the score.		score
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the rater.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	✓
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	✓

4 1/2 = 2

Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

<p>Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be "natural"?</p>	<p>YES</p> <p>Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.</p>	<p>NO</p> <p>Assign a score of 4 since there are no or no apparent modifications.</p>	<p>NOT SURE</p> <p>Double check "none or none apparent" and "recovered" and assign a score of 3.5.</p>

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	✓
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	✓

3/2 = 1.5

<p>4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.</p>		
7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to <u>not</u> be a good example of its type or class because of past or present disturbances, successional state, etc.	1

21.5

subtotal from previous page

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify a possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. In some instances, the scores can be viewed as a habitat alteration continuum, from very high to very low or no disturbance. The Rater may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.

Check all that are observed present in or near the wetland.

<input checked="" type="checkbox"/>	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, sheep, pigs, etc.)	<input checked="" type="checkbox"/>	Sedimentation
	Clearcutting		Dredging
	Selective cutting		Farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
<input checked="" type="checkbox"/>	Toxic pollutants	<input checked="" type="checkbox"/>	Other (specify) <i>old quarry pit</i>
	Shrub/sapling removal		Other (specify) <i>waste disposal activities</i>

<p>Circle one answer. Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat, or have occurred so far in the past that current habitat should be considered to be "natural"?</p>	<p>YES</p> <p>Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.</p>	<p>NO</p> <p>Assign a score of 9 since there are no or no apparent modifications.</p>	<p>NOT SURE</p> <p>Double check "none or none apparent" and "recovered" and assign a score of 7.5.</p>
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Select one score or double check adjoining numbers and average the score.		
9pts	NONE OR NONE APPARENT. There are no alterations, or no alterations that are apparent to the Rater.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	<input checked="" type="checkbox"/>
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	<input checked="" type="checkbox"/>

4/2 = 2

Metric 5. Special wetland communities. Maximum 10 points. Assign or deduct points if wetland has the feature described. Refer to Narrative Rating for guidance. No wetland can receive more than 10 points even if multiple categories are applicable.		score
<input type="radio"/>	Bog (10 pts)	<input type="radio"/>
<input type="radio"/>	Fen (10 pts)	<input type="radio"/>
<input type="radio"/>	Old Growth Forest (10 pts)	<input type="radio"/>
<input type="radio"/>	Mature Forested Wetland (5 pts)	<input type="radio"/>
<input type="radio"/>	Coastal wetlands, unrestricted hydrology (10 pts)	<input type="radio"/>
<input type="radio"/>	Coastal wetlands, restricted hydrology (5 pts)	<input type="radio"/>
<input type="radio"/>	Lake plains sand prairies (Oak Openings) (10 pts)	
<input type="radio"/>	Relict wet prairies (10 pts)	
<input type="radio"/>	Known occurrence of threatened/endangered species (10 pts)	
<input type="radio"/>	Significant migratory songbird/waterfowl habitat (10 pts)	
<input type="radio"/>	Category 1 wetlands (See Narrative Rating #5) (-10 pts)	

23.5

subtotal

Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.		
6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1hectares or 1000m ² (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.		
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (<i>Lemna</i> spp., <i>Spirodela</i> spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
✓	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	1
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB ₃) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

Cover scale	Description
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the wetland
1	vegetation community is present and either, 1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

24.5

subtotal from previous page

6b. Horizontal (plan view) interspersions. Select only one and assign score. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		
5pts	HIGH. Wetland has a high degree of interspersions.	—
4pts	MODERATELY HIGH. Wetland has a moderately high degree of interspersions.	—
3pts	MODERATE. Wetland has a moderate degree of interspersions.	—
2pts	MODERATELY LOW. Wetland has a moderately low degree of interspersions.	—
1pt	LOW. Wetland has a low degree of interspersions.	1
0pts	NONE. Wetland has no plan view interspersions.	0

6c. Coverage of Invasive Plant Species. Refer to Table 1 on Page 7 for list. Select only one and assign score.		
-5pts	Extensive. >75% areal cover of invasive species	✓-5
-3pts	Moderate 25-75% areal cover of invasive species	—
-1pt	Sparse. 5-25% areal cover of invasive species	—
0pts	Nearly absent. <5% areal cover of invasive species	—
1pt	Absent.	—

6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopographic habitat features often present in wetlands.		
Vegetated hummocks and tussocks.		—
Coarse woody debris >15cm (6in) in diameter		—
Standing dead trees >25cm (10in) diameter at breast height		—
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction.		2

Table 6. Cover scale for microtopographic habitat features.

microtopographic habitat quality	narrative description
0	feature is absent or functionally absent from the wetland
1	feature is present in the wetland in very small amounts or if more common, of low quality
2	feature is present in moderate amounts, but not of highest quality, or in small amounts of highest quality
3	present in moderate or greater amounts and of highest quality

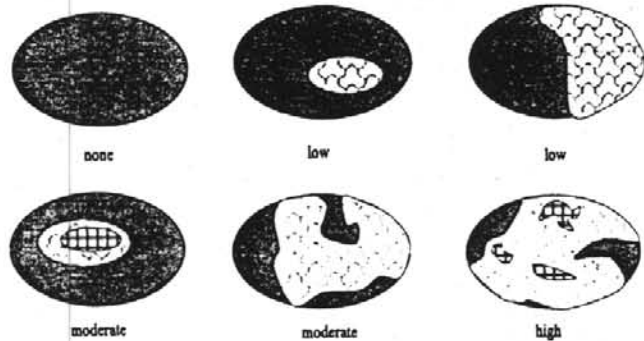


Figure 1. Hypothetical wetlands for estimating degree of interspersions.

22.5

GRAND TOTAL

End of Quantitative Rating. Complete Categorization Worksheets.

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

ORAM Summary Worksheet

			circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	NO	If yes, Category 1.
	Question 6. Bogs	YES	NO	If yes, Category 3.
	Question 7. Fens	YES	NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
Quantitative Rating	Metric 1. Size		2	
	Metric 2. Buffers and surrounding land use		4	
	Metric 3. Hydrology		13	
	Metric 4. Habitat		4.5	
	Metric 5. Special Wetland Communities		0	
	Metric 6. Plant communities, interspersions, microtopography		-1	
	TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401-401.html to determine the wetland's category based on its quantitative score			22.5

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES Wetland is categorized as a Category 3 wetland</p> <p style="text-align: center;">NO</p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES Wetland should be evaluated for possible Category 3 status</p> <p style="text-align: center;">NO</p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to Narrative Rating No. 5</p>	<p>YES Wetland is categorized as a Category 1 wetland</p> <p style="text-align: center;">NO</p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES Wetland is assigned to the appropriate category based on the scoring range</p> <p style="text-align: center;">NO</p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p> <p style="text-align: center;">NO</p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p> <p style="text-align: center;">NO Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

Final Category

Choose one	Category 1	Category 2	Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

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**APPENDIX M
(PART II)**

**ECOLOGICAL RISK COMPUTATIONS
AT
RAMSDELL QUARRY LANDFILL**

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Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (Kows) For Analytes at the Ramsdell Quarry Landfill

Chemical	CAS Registry Number	Log Kow^d (L/kg)	Source	BAF MAX	Source
Aluminum		NA	NA	0.075	HAZWRAP (1994)
Ammonia		NA	NA	1	default value
Antimony		NA	NA	0.05	HAZWRAP (1994)
Arsenic		NA	NA	0.1	HAZWRAP (1994)
Barium		NA	NA	0.0075	HAZWRAP (1994)
Beryllium		NA	NA	0.05	HAZWRAP (1994)
Boron		NA	NA	1	default value
Cadmium		NA	NA	11	HAZWRAP (1994)
Calcium		NA	NA	1	default value
Chloride		NA	NA	1	default value
Chromium		NA	NA	0.28	HAZWRAP (1994)
Chromium, hexavalent		NA	NA	0.28	HAZWRAP (1994)
Cobalt		NA	NA	1	HAZWRAP (1994)
Copper		NA	NA	0.5	HAZWRAP (1994)
Cyanide		NA	NA	0	HAZWRAP (1994)
Fluoride		NA	NA	1	default value
Iron		NA	NA	1	default value
Lead		NA	NA	2	HAZWRAP (1994)
Magnesium		NA	NA	1	default value
Manganese		NA	NA	0.02	HAZWRAP (1994)
Mercury		NA	NA	13	HAZWRAP (1994)
Molybdenum		NA	NA	1	default value
Nickel		NA	NA	0.3	HAZWRAP (1994)
Nitrate		NA	NA	1	default value
Phosphorus		NA	NA	1	default value
Potassium		NA	NA	1	default value
Selenium		NA	NA	0.76	HAZWRAP (1994)
Silicon		NA	NA	1	default value
Silver		NA	NA	0.15	HAZWRAP (1994)
Sodium		NA	NA	1	default value
Sulfide		NA	NA	1	default value

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (Kows) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log Kow^a (L/kg)	Source	BAF MAX	Source
Thallium		NA	NA	1	default value
Vanadium		NA	NA	0.13	HAZWRAP (1994)
Zinc		NA	NA	5	HAZWRAP (1994)
1,1,1-Trichloroethane	71-55-6	2.48	EPA 1995a in Jones, et al 1996	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	2.39	EPA 1995a in Jones, et al 1996	NA	NA
1,1,2,2-Tetrachloroethylene	127-18-4	2.67	EPA 1995e in Sample, et al 1996	NA	NA
1,1,2-Trichloroethane	79-00-5	2.17	EPA 1995	NA	NA
1,1'-Biphenyl	92-52-4	4.09	Schwarzenbach, et al 1993	NA	NA
1,1-Dichloroethane	75-34-3	4.00	EPA 1995a in Jones, et al 1996	NA	NA
1,1-Dichloroethene	75-35-4	2.13	EPA 1995a in Jones, et al 1996	NA	NA
1,1-Dichloroethylene	75-35-4	5.00	EPA 1995e in Sample, et al 1996	NA	NA
1,2,2-Trichloro-1,1,2-trifluoroethane	76-13-1	3.16	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,2,3,4-Tetrachlorobenzene	634-66-2	4.55	Schwarzenbach, et al 1993	NA	NA
1,2,3-Trichlorobenzene	87-61-6	4.05	Sangster 1994 in Syracuse 1996	NA	NA
1,2,3-Trichloropropane	96-18-4	1.98	Russom, et al 1996	NA	NA
1,2,4,5-Tetrachlorobenzene	95-94-3	4.64	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,2,4-Trichlorobenzene	120-82-1	4.02	EPA 1995d	NA	NA
1,2,4-Trimethyl benzene	95-63-6	3.63	Hansch, et al 1995 in Syracuse 1996	NA	NA
1,2-Dibromo-3-Chloropropane	96-12-8	2.96	Chem Inspect Test Inst. 1992 in Syracuse 1996	NA	NA
Indeno(1,2,3- <i>cd</i>)pyrene	193-39-5	6.92	EPA (1994b)	NA	NA
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	2.82	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,2-Dichlorobenzene	95-50-1	3.38	EPA 1995d	NA	NA
1,2-Dichloroethane	107-06-2	1.47	EPA 1995a in Jones, et al 1996	NA	NA
1,2-Dichloroethene	540-59-0	1.86	EPA 1995a in Jones, et al 1996	NA	NA
1,2-Dichloroethylene	540-59-0	1.86	EPA 1995e in Sample, et al 1996	NA	NA
1,2-Dimethylbenzene	95-47-6	3.12	Schwarzenbach, et al 1993	NA	NA
1,2-Diphenylhydrazine	122-66-7	2.94	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,3,5-Trinitrobenzene	99-35-4	1.18	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,3-Butadiene	106-99-0	1.99	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,3-Dichlorobenzene	541-73-1	3.43	EPA 1995a in Jones, et al 1996	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (Kows) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log Kow ^a (L/kg)	Source	BAF MAX	Source
1,3-Dichloropropene	542-75-6	2.00	EPA 1995a in Jones, et al 1996	NA	NA
1,3-Dinitrobenzene	99-65-0	1.49	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,4-Dichlorobenzene	95-50-1	3.42	EPA 1995a in Jones, et al 1996	NA	NA
1,4-Dinitrobenzene	100-25-4	1.46	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1,4-Dioxane	123-91-1	-0.39	EPA 1995e in Sample, et al 1996	NA	NA
1,4-Naphthoquinone	130-15-4	1.71	Hansch, et al 1995 in Syracuse 1996	NA	NA
1-12'-Dimethylbenz(a)anthracene	57-97-6	5.80	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1-Hexanol	111-27-3	2.03	Schwarzenbach, et al 1993	NA	NA
HMX	2691-41-0	--	No Source	NA	NA
1-Methylnapthalene	90-12-0	3.87	Syracuse 1996 in Jones, et al 1996	NA	NA
1-Nitropropane	108-03-2	0.87	Hansch and Leo 1985 in Syracuse 1996	NA	NA
1-Octanol	111-87-5	2.84	Schwarzenbach, et al 1993	NA	NA
1-Pentanol	71-41-0	1.51	Syracuse 1996 in Jones, et al 1996	NA	NA
2,2'-oxybis(1-chloropropane)	108-60-1	2.48	Kawamoto, K and Urano, K 1989 in Syracuse 1996	NA	NA
2,3,4,5-Tetrachlorophenol	4901-51-3	4.21	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	4.45	Russom, et al 1996 ⁱ	NA	NA
2,3,5,6-Tetrachloroaniline	3481-20-7	4.10	Russom, et al 1996	NA	NA
Nitrocellulose	9004-70-0	--	No Source	NA	NA
n-nitrosodiphenylamine	86-30-6	3.13	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2,3,7,8-Tetrachloro-Dibenzodioxin	1746-01-6	6.53	EPA 1995e in Sample, et al 1996 ^f	NA	NA
Tetryl	479-45-8	--	No Source	NA	NA
2,4,5-Trichloroaniline	636-30-6	4.01	EPA 1995a in Jones, et al 1996	NA	NA
2,4,5-Trichlorophenoxyacetic acid	93-76-5	3.31	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2,4,6-Trichlorophenol	88-06-2	3.69	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2,4,6-Trinitrotoluene	118-96-7	1.60	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2,4-D	94-75-7	2.81	EPA 1995c ^k	NA	NA
2,4-Dichloroaniline	554-00-7	2.78	Sangster 1994 in Syracuse 1996	NA	NA
2,4-Dichlorophenol	120-83-2	3.06	Russom, et al 1996	NA	NA
2,4-Dimethylphenol	105-67-9	2.35	Swarzenbch, et al 1993	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
2,4-Dinitrophenol	51-28-5	1.54	Howard 1990	NA	NA
2,4-Dinitrotoluene	121-14-2	1.98	Howard 1990	NA	NA
2,6-Dichlorophenol	87-65-0	2.75	Hansch, et al 1995 in Syracuse 1996	NA	NA
2,6-Dinitrotoluene	606-20-2	1.72	Howard 1990	NA	NA
2-Butanone	79-93-3	0.29	EPA 1995a in Jones et al 1996	NA	NA
2-Chloronaphthalene	91-58-7	3.98	Sangster 1994 in Syracuse 1996	NA	NA
2-Chlorophenol	95-57-8	2.15	Howard 1990.	NA	NA
2-Chloropropane	75-29-6	1.90	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2-Chlorotoluene	95-49-8	3.42	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2-Hexanone	591-78-6	1.38	EPA 1995a in Jones, et al 1996	NA	NA
2-Methylnaphthalene	91-57-6	-1.90	SCDM 1993 in HAZWRAP 1994	NA	NA
2-Methylnaphthalene	91-57-6	3.86	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2-Methylphenol	95-48-7	1.99	EPA 1995a in Jones, et al 1996	NA	NA
2-Naphthylamine	91-59-8	2.28	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2-Nitrophenol	88-75-5	1.79	Howard 1990	NA	NA
2-Octanone	111-13-7	2.37	Syracuse 1996 in Jones, et al 1996	NA	NA
2-Picoline	109-06-8	1.11	Russom, et al 1996	NA	NA
2-Propanol	67-63-0	0.05	Hansch and Leo 1985 in Syracuse 1996	NA	NA
2-Propenoic Acid	79-10-7	0.35	Hansch, et al 1995 in Syracuse 1996	NA	NA
3,3'-Dichlorobenzidine	91-94-1	3.51	Howard 1990 ⁱ	NA	NA
3,3'-Dimethoxybenzidine	119-90-4	1.81	Debnath, et al 1992 in Syracuse 1996	NA	NA
3,3'-Dimethylbenzidine	119-93-7	2.34	Hansch and Leo 1985 in Syracuse 1996	NA	NA
3,4-Dichloroaniline	95-76-1	2.69	Russom, et al 1996	NA	NA
3,4-Dichlorophenol	95-77-2	3.33	Hansch and Leo 1985 in Syracuse 1996	NA	NA
3-Chloroaniline	108-42-9	1.88	Hansch and Leo 1985 in Syracuse 1996	NA	NA
3-Chlorophenol	108-43-0	2.50	Howard 1990.	NA	NA
3-Nitroaniline	99-09-2	1.37	Hansch and Leo 1985 in Syracuse 1996	NA	NA
3-Pentanone	96-22-0	0.99	Hansch and Leo 1985 in Syracuse 1996	NA	NA
4,4-Methylenedianiline	101-77-9	1.59	Hansch and Leo 1985 in Syracuse 1996	NA	NA
4,6-Dinitro-2-methylphenol	534-52-1	2.12	Hansch and Leo 1985 in Syracuse 1996	NA	NA
4-Bromoaniline	106-40-1	2.26	Hansch and Leo 1985 in Syracuse 1996	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
4-Bromophenyl phenyl-ether	101-55-3	5.00	EPA 1995a in Jones et al 1996	NA	NA
4-Chloro-3-methylphenol	35421-08-0	3.10	Russom, et al 1996	NA	NA
4-chloroaniline	106-47-8	1.83	Howard 1990	NA	NA
4-Chlorophenol	106-48-9	2.39	Howard 1990.	NA	NA
4-Chlorophenyl-phenyl ether	7005-72-3	4.08	Sangster 1994 in Syracuse 1996	NA	NA
4-Chlorotoluene	106-43-4	3.33	Hansch and Leo 1985 in Syracuse 1996	NA	NA
4-Methyl 2-Pentanone	108-10-1	1.31	Syracuse 1996 in Jones, et al 1996	NA	NA
4-Methylphenol	106-44-5	1.90	SCDM 1993 in HAZWRAP 1994	NA	NA
4-Nitroaniline	100-01-6	1.39	Hansch and Leo 1985 in Syracuse 1996	NA	NA
4-Nitrophenol	100-02-7	1.91	Howard 1990	NA	NA
4-Nitroquinoline-1-oxide	56-57-5	1.09	Hansch and Leo 1985 in Syracuse 1996	NA	NA
4-Toluidine	106-49-0	1.39	Russom, et al 1996	NA	NA
5-Nitro-o-Toluidine	99-55-8	1.87	Hansch, et al 1995 in Syracuse 1996	NA	NA
Acenaphthene	83-32-9	3.92	EPA 1995a in Jones, et al 1996	NA	NA
Acenaphthylene	208-96-8	4.10	SCDM 1993 in HAZWRAP 1994	NA	NA
Acetone	67-64-1	-0.24	EPA 1995a in Jones, et al 1996	NA	NA
Acetonitrile	75-05-8	0.25	Howard 1990	NA	NA
Acetonitrile	75-05-8	-0.34	Hansch and Leo 1995 in Syracuse 1996	NA	NA
Acrolein	107-02-8	-0.01	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Acrylamide	79-06-1	-0.67	Howard 1990	NA	NA
Aldicarb	116-06-3	1.13	EPA 1995c	NA	NA
Aldrin	309-00-2	6.50	EPA 1995e in Sample, et al 1996	NA	NA
alpha, alpha-Dimethylphenethylamine	122-09-8	1.90	Hansch and Leo 1985 in Syracuse 1996	NA	NA
alpha-BHC	319-84-6	3.80	SCDM 1993 in HAZWRAP 1994	NA	NA
2-Amino-4,6-dinitrotoluene	35572-78-2	1.94	(estimated, Talmage et al. 1999)	NA	NA
4-Amino-2,6-dinitrotoluene	19406-51-0	--	No Source	NA	NA
Aniline	62-53-3	0.90	Howard 1990	NA	NA
Anthracene	120-12-7	4.55	EPA 1995a in Jones, et al 1996	NA	NA
Aroclor 1016	1264-11-2	5.60	ATSDR 1989 in Jones, et al 1996	NA	NA
Aroclor 1221	11104-28-2	4.70	ATSDR 1989 in Jones, et al 1996	NA	NA
Aroclor 1232	11141-16-5	5.10	ATSDR 1989 in Jones, et al 1996	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
Aroclor 1242	53469-21-9	5.60	ATSDR 1989 in Jones, et al 1996	NA	NA
Aroclor 1248	12672-29-6	6.20	ATSDR 1989 in Jones, et al 1996	NA	NA
PCB-1248	12672-29-6	6.20	ATSDR 1989 in Jones, et al 1996	NA	NA
Aroclor 1254	27323-18-8	6.50	ATSDR 1989 in Jones, et al 1996	NA	NA
Aroclor 1260	11096-82-5	6.80	ATSDR 1989 in Jones, et al 1996	NA	NA
Atrazine	1912-24-9	2.75	EPA 1995c	NA	NA
Azobenzene	103-33-3	3.82	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Benzaldehyde	100-52-7	1.48	Schwarzenbach, et al 1993	NA	NA
Benzene	71-43-2	2.13	EPA 1995a in Jones et al 1996	NA	NA
Benzidine	92-87-5	1.66	EPA 1995a in Jones et al 1996	NA	NA
Benzo(a)anthracene	56-55-3	5.70	EPA 1995a in Jones et al 1996	NA	NA
Benzo(a)pyrene	50-32-8	6.11	EPA 1995a in Jones et al 1996	NA	NA
Benzo(b)fluoranthene	205-99-2	6.10	SCDM 1993 in HAZWRAP 1994	NA	NA
Benzo(e)pyrene	192-97-2	6.44	Devoogt, et al 1990 in Syracuse 1996	NA	NA
Benzo(g,h,i)perylene	191-24-2	6.60	SCDM 1993 in HAZWRAP 1994 ^e	NA	NA
Benzo(k)fluoranthene	207-08-9	6.10	SCDM 1993 in HAZWRAP 1994	NA	NA
Benzoic Acid	65-85-0	1.87	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Benzyl Alcohol	100-51-6	1.11	EPA 1995a in Jones et al 1996	NA	NA
Benzyl Chloride	100-44-7	2.30	Hansch and Leo 1985 in Syracuse 1996	NA	NA
beta-BHC	319-85-7	3.81	EPA 1995e in Sample, et al 1996	NA	NA
BHC-mixed isomers	--	5.89	EPA 1995e in Sample, et al 1996	NA	NA
Biphenyl	95-52-4	3.96	EPA 1995b in Jones et al 1996	NA	NA
bis(2-chloroethyl)ether	111-44-4	1.29	Howard 1990	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	7.60	Syracuse 1996 in Jones, et al 1996 ^c	NA	NA
Bromobenzene	108-86-1	2.99	Schwarzenbach, et al 1993	NA	NA
Bromodichloromethane	75-27-4	1.41	Syracuse 1996 in Jones, et al 1996	NA	NA
Butane	106-97-8	2.89	Schwarzenbach, et al 1993	NA	NA
Butylbenzyl phthalate	85-68-7	4.84	EPA 1995a in Jones, et al 1996	NA	NA
Captan	133-06-2	2.35	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Carbaryl	65-25-2	2.36	Schwarzenbach, et al 1993	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
Carbazole	86-74-8	3.76	Hansch and Leo 1979 in HAZWRAP 1994	NA	NA
Carbofuran	1563-66-2	2.32	EPA 1995c	NA	NA
Carbon Disulfide	75-15-0	2.00	EPA1995a in Jones, et al 1996	NA	NA
Carbon Tetrachloride	56-23-5	2.73	EPA 1995a in Jones, et al 1996	NA	NA
Chloracetamide	79-07-2	-0.53	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Chlordane	57-74-9	6.32	EPA 1995a in Jones, et al 1996	NA	NA
Chlordecone	143-50-0	5.30	EPA 1995e in Sample, et al 1996	NA	NA
Chlorobenzene	108-90-7	2.86	EPA 1995a in Jones, et al 1996	NA	NA
Chlorobenzilate	510-15-6	4.74	Chem Inspect Test Inst. 1992 in Syracuse 1996	NA	NA
Chlorodifluoromethane	75-45-6	1.08	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Chloroethane	75-00-3	1.43	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Chloroform	67-66-3	1.92	EPA 1995e in Sample, et al 1996	NA	NA
Chloromethane	74-87-3	0.91	Schwarzenbach, et al 1993	NA	NA
Chloropropene	107-05-1	2.03	Howard 1990	NA	NA
Chrysene	218-01-9	5.70	SCDM 1993 in HAZWRAP 1994	NA	NA
<i>cis</i> -1,3-Dichloropropene	10061-02-6	2.06	Tomlin 1994 in Syracuse 1996	NA	NA
Cumene	98-82-8	3.66	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Cyanogen	460-19-5	0.07	Hansch, et al 1995 in Syracuse 1996	NA	NA
Cyclohexanol	108-93-0	1.23	Schwarzenbach, et al 1993	NA	NA
Cyclohexanone	108-94-1	0.81	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Cyclopentane	287-92-3	3.00	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Dalapon	75-99-0	0.78	EPA 1995c	NA	NA
DDT	50-29-3	6.53	EPA 1995a in Jones, et al 1996	NA	NA
4,4'-DDT	50-29-3	6.53	EPA 1995a in Jones, et al 1996	NA	NA
Decane	124-18-5	5.01	EPA 1995a in Jones, et al 1996	NA	NA
delta-BHC	319-86-8	4.10	SCDM 1993 in HAZWRAP 1994	NA	NA
Diallate	2303-16-4	4.49	Ellington and Stancil 1988 in Syracuse 1996	NA	NA
Diazinon	333-41-5	3.70	EPA 1995a in Jones, et al 1996	NA	NA
Dibenzo(<i>a,h</i>)anthracene	53-70-3	6.50	SCDM 1993 in HAZWRAP 1994	NA	NA
Dibenzofuran	132-64-9	4.12	EPA 1995a in Jones, et al 1996	NA	NA
Dibromochloromethane	124-48-1	2.16	Sangster 1994 in Syracuse 1996	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (Kows) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log Kow ^a (L/kg)	Source	BAF MAX	Source
Dibromomethane	74-95-3	1.70	Martiska, A, Bekarek, V 1990 in Syracuse 1996	NA	NA
Dichlorodifluoromethane	74-71-8	2.53	Swarzenbeh, et al 1993	NA	NA
Dieldrin	60-57-1	5.37	EPA 1995a in Jones, et al 1996	NA	NA
Dienochlor	2227-17-0	3.50	British Crop Protection Council 1987 in ARS 1999	NA	NA
Diethyl Sulfide	352-93-2	1.95	Schwarzenbach, et al 1993	NA	NA
Diethylphthalate	84-66-2	2.50	EPA 1995a in Jones, et al 1996	NA	NA
Diisobutylphthalate	84-69-5	4.11	Schwarzenbach, et al 1993	NA	NA
Dimethoate	60-51-5	0.78	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Dimethylphthalate	131-11-3	1.53	Schwarzenbach, et al 1993	NA	NA
Di-n-butylphthalate	84-74-2	4.61	EPA 1995a in Jones, et al 1996	NA	NA
Di-n-octylphthalate	117-84-0	8.10	Ellington and Floyd 1996 in Syracuse 1996	NA	NA
Dinoseb	88-85-7	3.56	Hansch, et al 1995 in Syracuse 1996	NA	NA
Dioxin	1746-01-6	6.80	EPA 1995d ^d	NA	NA
Diphenyl ether	101-84-8	4.21	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Diphenylamine	122-39-4	3.50	Russom, et al 1996	NA	NA
Diquat	85-00-7	-3.05	EPA 1995c	NA	NA
Disulfoton	298-04-4	4.02	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Diuron	330-54-1	2.80	Dupon Corporation Data 1989 in ARS 1999	NA	NA
Endosulfan	115-29-7	4.10	EPA 1995a in Jones, et al 1996	NA	NA
Endosulfan Sulfate	1031-07-8	3.66	Hansch, et al 1995 in Syracuse 1996	NA	NA
Endosulfan, alpha	959-98-8	3.83	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Endrin	72-20-8	5.06	EPA 1995a in Jones, et al 1996	NA	NA
Endrin Aldehyde	7421-93-4	3.14	Arthur D. Little, Inc. 1981 in HAZWRAP 1994	NA	NA
Epichlorohydrin	106-89-8	0.45	Deneer, et al 1988 in Syracuse 1996	NA	NA
Ethane	74-84-0	1.81	Schwarzenbach, et al 1993	NA	NA
Ethanol	64-17-5	-0.31	EPA 1992b in Sample, et al 1996	NA	NA
Ethyl Acetate	141-78-6	0.69	EPA 1995e in Sample, et al 1996	NA	NA
Ethyl benzene	100-41-4	3.14	EPA 1995a in Jones, et al 1996	NA	NA
Ethyl carbamate	51-79-6	-0.15	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Ethyl ether	60-29-7	0.89	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Ethylene Dibromide	106-93-4	1.96	Hansch, et al 1995 in Syracuse 1996	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
Ethylene glycol	107-21-1	-1.36	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Famphur	52-85-7	2.23	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Fluometuron	2164-17-2	1.34	Schwarzenbch et al 1993	NA	NA
Fluoranthene	206-44-0	5.12	EPA 1995a in Jones, et al 1996	NA	NA
Fluorene	86-73-7	4.21	EPA 1995a in Jones, et al 1996	NA	NA
Fluorobenzene	462-06-6	2.27	Swarzenbch et al 1993	NA	NA
Formaldehyde	50-00-0	-0.05	EPA 1995e in Sample, et al 1996	NA	NA
Formamide	75-12-7	-1.51	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Formic Acid	64-18-6	-0.54	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Furan	110-00-9	1.34	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Furfural	98-01-1	0.41	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Heptachlor	76-44-8	6.10	EPA 1995a in Jones, et al 1996	NA	NA
Heptachlor Epoxide	102-57-3	5.40	SCDM 1993 in HAZWRAP 1994	NA	NA
Heptane	142-82-5	4.66	Miller, M.M., et al 1985 in Syracuse 1996	NA	NA
Hexachlorobenzene	118-74-1	5.50	Schwarzenbach, et al 1993	NA	NA
Hexachlorobutadiene	87-68-3	4.90	Schwarzenbach, et al 1993	NA	NA
Hexachlorocyclopentadiene	77-47-4	5.04	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Hexachloroethane	67-72-1	4.00	EPA 1995a in Jones, et al 1996	NA	NA
Hexachlorophene	70-30-4	7.54	Hansch, et al 1995 in Syracuse 1996	NA	NA
Imazaquin-ammonium	81335-47-9	0.34	Pesticide Manual, 1994 in ARS 1999	NA	NA
Imazilil	35554-44-0	3.82	British Crop Protection Council 1986 in ARS 1999	NA	NA
Isobutyl alcohol	78-83-1	0.76	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Isophorone	78-59-1	1.70	Veith, G.D., et al 1980 in Syracuse 1996	NA	NA
Lindane (gamma-BHC)	58-89-9	3.73	EPA 1995a in Jones, et al 1996	NA	NA
Malathion	121-75-5	2.89	Schwarzenbach, et al 1993	NA	NA
MCPA	94-74-6	2.80	Pionke, H.B., Deangelis, R.J. 1980 in ARS 1999	NA	NA
m-cresol	108-39-4	1.96	Howard 1990.	NA	NA
Methacrylonitril	126-98-7	0.68	Tanii and Hashimoto 1994 in Syracuse 1996	NA	NA
Methanol	67-56-1	-0.71	EPA 1995e in Sample, et al 1996	NA	NA
Methapyrilene	91-80-5	2.87	Sangster 1994 in Syracuse 1996	NA	NA
Methomyl	16752-77-5	0.57	Dupont Corporation Data 1989 In ARS 1999	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
Methoxychlor	72-43-5	5.08	EPA 1995a in Jones, et al 1996	NA	NA
Methyl bromide	74-83-9	1.19	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Methyl iodide	74-88-4	3.36	EPA 1995a in Jones, et al 1996	NA	NA
Methyl methacrylate	80-62-6	1.38	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Methylcyclohexane	108-87-2	3.61	Hansch, et al 1995 in Syracuse 1996	NA	NA
Methylene Chloride	75-09-2	1.25	EPA 1995a in Jones, et al 1996	NA	NA
Methylhydrazine	60-34-4	-1.06	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Methylstyrene	98-83-9	3.48	Hansch, et al 1995 in Syracuse 1996	NA	NA
Mirex	2385-85-5	6.89	Veith, et al 1979 in Syracuse 1996	NA	NA
M-nitrosodiphenylamine	86-30-6	3.13	Hansch and Leo 1985 in Syracuse 1996	NA	NA
m-Nitrotoluene	99-08-1	2.45	Russom, et al 1996	NA	NA
Naphthalene	91-20-3	3.36	EPA 1995a in Jones, et al 1996	NA	NA
n-Butyl benzene	104-51-8	4.38	DeBruijn, J, et al 1989 in Syracuse 1996	NA	NA
n-Hexane	110-54-3	4.11	Schwarzenbach, et al 1993	NA	NA
Nitrobenzene	98-95-3	1.83	Schwarzenbch et al 1993	NA	NA
Nitroglycerin	55-63-0	1.62	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Nitromethane	75-52-5	-0.35	Hansch and Leo 1985 in Syracuse 1996	NA	NA
n-Nitrochlorobenzene	100-00-5	2.39	Hansch and Leo 1985 in Syracuse 1996	NA	NA
N-Nitrosodiethylamine	55-18-5	0.48	Hansch and Leo 1985 in Syracuse 1996	NA	NA
N-Nitrosomorpholine	59-89-2	-0.44	Hansch and Leo 1985 in Syracuse 1996	NA	NA
N-Nitrosopiperidine	100-75-4	0.36	Hansch and Leo 1985 in Syracuse 1996	NA	NA
N-Nitrosopyrrolidine	930-55-2	-0.19	Hansch and Leo 1985 in Syracuse 1996	NA	NA
n-Pentane	109-66-0	3.62	Swarzenbch, et al 1993	NA	NA
n-Pentylbenzene	538-68-1	4.90	Schwarzenbach, et al 1993	NA	NA
n-propyl benzene	103-65-1	3.69	Sangster 1994 in Syracuse 1996	NA	NA
o-Cresol	95-48-7	1.99	EPA 1995e in Sample, et al 1996	NA	NA
Octachloronaphthalene	2234-13-1	8.24	Opperhuizen, A 1985 in Syracuse 1996 ^b	NA	NA
o-Dichlorobenzene	95-50-1	3.38	EPA 1995d	NA	NA
o-Dinitrobenzene	528-29-0	1.69	Hansch, et al 1995 in Syracuse 1996	NA	NA
o-Nitroaniline	88-74-4	1.85	Hansch and Leo 1985 in Syracuse 1996	NA	NA
o-Nitrophenol	88-75-5	1.79	Howard 1990	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (Kows) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log Kow ^a (L/kg)	Source	BAF MAX	Source
o-Nitrotoluene	88-72-2	2.30	Opperhuizen, A 1985 in Syracuse 1996	NA	NA
Oxadiazon	19666-30-9	4.70	Rhone-Poulenc Corporation Data in ARS 1999	NA	NA
p,p'-DDD	72-54-8	6.10	EPA 1995a in Jones, et al 1996	NA	NA
4,4'-DDD	72-54-8	6.10	EPA 1995a in Jones, et al 1996	NA	NA
4,4'-DDE	72-55-9	6.26	EPA 1994b	NA	NA
Parathion	56-38-2	3.81	Schwarzenbach, et al 1993	NA	NA
p-Cresol	106-44-5	1.94	Hansch and Leo 1985 in Syracuse 1996	NA	NA
p-Dichlorobenzene	106-46-7	3.37	EPA 1995d	NA	NA
Pentachloroaniline	527-20-8	4.82	Sangster 1994 in Syracuse 1996	NA	NA
Pentachlorobenzene	608-93-5	5.26	EPA1995a in Jones, et al 1996	NA	NA
Pentachloroethane	76-01-7	3.63	Russom, et al 1996	NA	NA
Pentachloro-nitrobenzene	82-68-8	4.64	EPA 1995e in Sample, et al 1996	NA	NA
Pentachlorophenol	87-86-5	5.09	EPA 1995e in Sample, et al 1996	NA	NA
Phenacetin	62-44-2	1.58	Nakagawa, Y, et al 1992 in Syracuse 1996	NA	NA
Phenanthrene	85-01-8	4.55	EPA1995a in Jones, et al 1996	NA	NA
Phenmediphan	13684-63-4	3.59	Noram Company Data in ARS 1999	NA	NA
Phenol	108-95-2	1.48	EPA1995a in Jones, et al 1996	NA	NA
Phorate	298-02-2	3.56	Hansch, et al 1995 in Syracuse 1996	NA	NA
Phosmet	732-11-6	3.00	Beguhn, M.A. 1989 in ARS 1989	NA	NA
Phthalic Acid	100-21-0	2.00	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Phthalic anhydride	85-44-9	1.60	Panoma 1987 in Syracuse 1996	NA	NA
p-Nitrophenol	100-02-07	1.91	Howard 1990	NA	NA
p-Nitrotoluene	99-99-0	2.37	Howard 1990	NA	NA
p-Phenylenediamine	106-50-3	-0.30	Hansch, et al 1995 in Syracuse 1996	NA	NA
Profenofos	41198-08-7	1.70	Ciba-Geigy Corporation Data 1989 in ARS 1999	NA	NA
Pronamide	23950-58-5	0.05	EPA1995a in Jones, et al 1996	NA	NA
Propionitril	107-12-0	0.16	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Pryidine	110-86-1	0.65	Russom, et al 1996	NA	NA
Pyrene	129-00-0	5.13	Schwarzenbach, et al 1993g	NA	NA
Quinoline	91-22-5	2.03	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Quinone	106-51-4	0.20	Hansch and Leo 1985 in Syracuse 1996	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (K_{ow}) For Analytes at the Ramsdell Quarry Landfill (continued)

Chemical	CAS Registry Number	Log K _{ow} ^a (L/kg)	Source	BAF MAX	Source
RDX	121-82-4	0.87	Schwarzenbach, et al 1993	NA	NA
sec-Butyl benzene	135-98-8	4.57	Sherblom, et al 1988 in Syracuse 1996	NA	NA
Silvex	93-72-1	3.80	Hansch , et al 1995 in Syracuse 1996	NA	NA
Simazine	122-34-9	2.18	EPA 1995c	NA	NA
Strychnine	57-24-9	1.93	Panoma 1987 in Syracuse 1996	NA	NA
Styrene	100-42-5	2.95	Schwarzenbach, et al 1993	NA	NA
Tebuthiuron	34014-18-1	1.79	ARS 1999	NA	NA
Temephos	3383-96-8	4.90	British Crop Protection Council 1994 in ARS 1999 ^h	NA	NA
tert-Butyl benzene	98-06-6	4.11	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Tetrachloroethane	25322-20-7	2.39	Schwarzenbach, et al 1993	NA	NA
Tetrachloroethene	127-18-4	2.88	Schwarzenbach, et al 1993	NA	NA
Tetrachloroethylene	127-18-4	3.40	EPA 1995d	NA	NA
Tetrachloromethane	56-23-5	2.73	EPA 1995a in Jones, et al 1996	NA	NA
Tetrahydrofuran	109-99-9	0.46	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Toluene	108-883	2.75	EPA 1995a in Jones, et al 1996	NA	NA
Toxaphene	8001-35-2	5.50	EPA 1995e in Sample, et al 1996	NA	NA
<i>trans</i> -1,3-Dichloropropene	10061-02-6	2.03	Tomlin 1994 in Syracuse 1996	NA	NA
Tribromomethane	75-25-2	2.35	EPA 1995a in Jones, et al 1996	NA	NA
Tributyl phosphate	126-73-8	4.00	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Trichloroethene	636-30-6	2.71	EPA 1995a in Jones, et al 1996	NA	NA
Trichloroethylene	79-01-6	2.71	EPA 1995e in Sample, et al 1996	NA	NA
Trichlorofluoromethane	75-69-4	2.16	Schwarzenbach, et al 1993	NA	NA
Triethylamine	121-44-8	1.45	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Trifluorobromomethane	75-63-8	1.86	Hansch and Leo 1985 in Syracuse 1996	NA	NA
Vinyl acetate	108-05-4	0.73	EPA 1995a in Jones, et al 1996	NA	NA
Vinyl Chloride	75-01-4	1.50	EPA 1995e in Sample, et al 1996	NA	NA
Xylene	1330-20-7	3.13	EPA 1995a in Jones, et al 1996	NA	NA
Xylene (mixed isomers)	1330-20-7	3.20	EPA 1995e in Sample, et al 1996	NA	NA
Ziram	137-30-4	1.09	British Crop Protection Council 1994 in ARS 1999	NA	NA

Table M-1. Bioaccumulation Factors and Log Octanol-Water Partition Coefficients (Kow^s) For Analytes at the Ramsdell Quarry Landfill (continued)

^aLog Octanol-Water partition coefficient.

^bSyracuse 1996. Syracuse Research Corporation, Environmental Sciences Center's on-line experimental Log P database conducted June 7, 1996.

^cJones, D.S., R N. Hull, G.W. Suter II 1996. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1996 Revision*, Lockheed Martin Energy Systems, Inc., Oak Ridge, TN 37831.

^dEPA 1995d. National Primary Drinking Water Regulations; Contaminated Specific Fact Sheets Volatile Organic Chemicals, Technical Version. USEPA Office of Water, EPA 811-F-95-004-T.

^eHAZWRAP (Hazardous Waste Remedial Action Program) 1994. Loring Air Force Base, Ecological Risk Assessment Methodology.

^fSample, B.E., D.M. Opresko, G.W. Suter II 1996. *Toxicological Benchmarks for Wildlife*, Lockheed Martin Energy Systems, Inc., Oak Ridge, TN, 37381.

^gSchwarzenbach, R.E., P.M. Gschwend, D.M. Imboden 1993. *Environmental Organic Chemistry*, John Wiley & Sons, New York.

^hUnited States Department of Agriculture, Agricultural Research Service (ARS) 1999. Remote Sensing and Modeling Laboratory, 10300 Baltimore Ave., Bldg. 007, Beltsville, MD, 20705.

ⁱRusson, C.L., S. Bradbury, S. Broderius 1996. *Environmental Toxicology and Chemistry*, V. 16, No. 5, pp.948-967, *Predicting Modes of Toxic Action from chemical structure: Acute Toxicity in the Fathead Minnow (pimephales Promelas)*.

^jHoward, Philip, H. 1990. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals VI*, Lewis Publishers, Chelsea, MI.

^kEPA 1995c. National Primary Drinking Water Regulations; Contaminant Specific Fact Sheets, USEPA Office of Water, EPA 811-F-95-004-T.

U.S. EPA 1994b. Draft Report-Chemical Properties for Soil Screening Levels, Prepared for the OERR, Washington, D.C., July 26.

BAF Max = Bioaccumulation factor maximum (if BAF Max is > 1, the inorganic chemical is likely to bioaccumulate).

BHC = Benzene hexachloride.

CAS = Chemical Abstracts Service.

DDD = Dichlorodiphenyldichloroethene.

DDE = Dichlorodiphenyldichloroethane.

DDT = Dichlorodiphenyltrichloroethene.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

NA = Not applicable.

PCB = Polychlorinated biphenyl.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

-- = no log Kow found.

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Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
<i>Inorganics</i>													
<i>(Target Analyte List)</i>													
Aluminum	7429-90-5	--		--		600	LOEC	50	Soil, LOEC	--		6.00E+02	LOEC
Antimony	7440-36-0	5	PRGs	--		--		5	Soil, LOEC	0.1423	ESL EPA Region 5 (2003)	5.00E+00	PRGs
Arsenic	7440-38-2	9.9	PRGs	60	LOEC	100	LOEC	10	Soil, NOEC	5.7	ESL EPA Region 5 (2003)	9.90E+00	PRGs
Barium	7440-39-3	283	PRGs	--		3000	LOEC	500	Soil, LOEC	1.04	ESL EPA Region 5 (2003)	2.83E+02	PRGs
Beryllium		10	PRGs							1.06	ESL EPA Region 5 (2003)	1.00E+01	PRGs
Bismuth	7440-69-9	--		--		--		20	No Soil, only Solution, LOEC	--		2.00E+01	No Soil, only Solution, LOEC
Boron	7440-42-8	0.5	PRGs	--		20	LOEC	0.5	Soil, LOEC	--		5.00E-01	PRGs
Bromine	7726-95-6	10	PRGs	--		--		10	Soil, LOEC	--		1.00E+01	PRGs
Cadmium	7440-43-9	4	PRGs	20		LOEC		4	Soil, LOEC	0.00222	ESL EPA Region 5 (2003)	4.00E+00	PRGs
Calcium	7440-70-2	--		--		--		--		--		No ESV	No Source
Chromium	16065-83-1	0.4	PRGs	0.4		LOEC		1	Soil, LOEC	0.4	ESL EPA Region 5 (2003)	4.00E-01	PRGs
Chromium, hexavalent	18540-29-9	0.4	PRGs	0.4		LOEC		1	Soil, LOEC	--		4.00E-01	PRGs
Cobalt	7440-48-4	20	PRGs	--		1000	LOEC	20	Soil, LOEC	0.14033	ESL EPA Region 5 (2003)	2.00E+01	PRGs
Copper	7440-50-8	60	PRGs	60		LOEC		100	Soil, NOEC	5.4	ESL EPA Region 5 (2003)	1.39E+01	PPL (SAIC 2002)
Cyanide	57-12-5	--		--		--		--		1.33	ESL EPA Region 5 (2003)	1.08E+00	PPL (SAIC 2002)
Fluorine	7782-41-4	200	PRGs	--		30	LOEC	200	Soil, LOEC	--		2.00E+02	PRGs
Iodine	7553-56-2	4	PRGs	--		--		4	Soil, LOEC	--		4.00E+00	PRGs
Iron	7439-89-6	--		--		200	NOEC	10	No Soil, only Solution, LOEC	--		2.00E+02	NOEC
Lanthanum	7439-91-0	--		--		50	LOEC	--		--		5.00E+01	LOEC
Lead	7439-92-1	40.5	PRGs	500		NOEC		50	Soil, NOEC	0.05373	ESL EPA Region 5 (2003)	4.05E+01	PRGs
Lithium	7439-93-2	2	PRGs	--		10	LOEC	2	Soil, LOEC	--		2.00E+00	PRGs
Magnesium	7439-95-4	--		--		--		--		--		No ESV	No Source
Manganese	7439-96-5	--		--		100	LOEC	500	Soil, LOEC	--		1.00E+02	LOEC
Mercury	7439-97-6	0.00051	PRGs	0.1		LOEC		0.3	Soil, LOEC	0.1	ESL EPA Region 5 (2003)	5.10E-04	PRGs
Molybdenum	7439-98-7	2	PRGs	--		200	LOEC	2	Soil, LOEC	--		2.00E+00	PRGs
Nickel	7440-02-0	30	PRGs	200		NOEC		30	Soil, NOEC	13.6	ESL EPA Region 5 (2003)	3.00E+01	PRGs
Nitrate/nitrite		--		--		--		--		--		No ESV	No Source
Potassium	7440-09-7	--		--		--		--		--		No ESV	No Source
Selenium	7782-49-2	0.21	PRGs	70		LOEC		1	Soil, LOEC	0.02765	ESL EPA Region 5 (2003)	2.10E-01	PRGs

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997e) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Silver	7440-22-4	2	PRGs	--		50	NOEC	2	Soil, LOEC	4.04	ESL EPA Region 5 (2003)	2.00E+00	PRGs
Sodium	7440-23-5	--		--		--		--		--		No ESV	No Source
Sulfide	18496-25-8	--		--		--		--		0.00358	ESL EPA Region 5 (2003)	3.58E-03	ESL EPA Region 5 (2003)
Technetium	7440-26-8	0.2	PRGs	--		--		0.2	Soil, NOEC	--		2.00E-01	PRGs
Tellurium	13494-80-9	--		--		--		2	No Soil, only Solution, LOEC	--		2.00E+00	No Soil, only Solution, LOEC
Thallium	7440-28-0	1	PRGs	--		--		1	Soil, LOEC	0.05692	ESL EPA Region 5 (2003)	1.00E+00	PRGs
Tin	7440-31-5	50	PRGs	--		2000	LOEC	50	Soil, LOEC	7.62	ESL EPA Region 5 (2003)	5.00E+01	PRGs
Titanium	7440-32-6	--		--		1000	LOEC	0.06	No Soil, only Solution, LOEC	--		1.00E+03	LOEC
Tungsten	7440-33-7	--		--		400	NOEC	--		--		4.00E+02	NOEC
Uranium	7440-61-1	5	PRGs	--		--		5	Soil, NOEC	--		5.00E+00	PRGs
Vanadium	7440-62-2	2	PRGs	--		20	LOEC	2	Soil, LOEC	1.59	ESL EPA Region 5 (2003)	2.00E+00	PRGs
Zinc	7440-66-6	8.5	PRGs	200			LOEC	50	Soil, NOEC	6.62	ESL EPA Region 5 (2003)	8.50E+00	PRGs
<i>Organic Compounds</i>													
Acenaphthene	83-32-9	20	PRGs	--		--		20	Soil, LOEC	682		2.00E+01	PRGs
Acenaphthylene	208-96-8	--		--		--		--		682		6.82E+02	No Source
Acetone	67-64-1	--		--		--		--		2.5	ESL EPA Region 5 (2003)	2.50E+00	ESL EPA Region 5 (2003)
Acrylonitrile	107-13-1	--		--		1000	LOEC	--		1.37		1.00E+03	LOEC
Aldrin	309-00-2	--		--		--		--		0.00332		3.32E-03	No Source
4-Aminobiphenyl	92-67-1	--		--		--		--		0.00305	ESL EPA Region 5 (2003)	3.05E-03	ESL EPA Region 5 (2003)
2-Amino-4,6-dinitrotoluene	35572-78-2	--		--		--		--		--		No ESV	No Source
4-Amino-2,6-dinitrotoluene	19406-51-0	--		--		--		--		--		No ESV	No Source
Aniline	62-53-3	--		--		--		200	No Soil, only Solution, LOEC	0.05678	ESL EPA Region 5 (2003)	2.00E+02	No Soil, only Solution, LOEC
Anthracene	120-12-7	--		--		--		--		1480	ESL EPA Region 5 (2003)	1.48E+03	ESL EPA Region 5 (2003)
PCB-1016	12674-11-2	--		--		--		--		--		No ESV	No Source
Arochlor-1221	11104-28-2	--		--		--		--		--		No ESV	No Source
Arochlor-1232	11141-16-5	--		--		--		--		--		No ESV	No Source
Arochlor-1242	53469-21-9	--		--		--		--		--		No ESV	No Source
Arochlor-1248	12672-29-6	--		--		--		--		--		No ESV	No Source
PCB-1254	11097-69-1	--		--		--		--		--		No ESV	No Source
Arochlor-1260	11096-82-5	--		--		--		--		--		No ESV	No Source

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Benzene	71-43-2	--		--		--		--		0.25462	ESL EPA Region 5 (2003)	2.55E-01	ESL EPA Region 5 (2003)
Benzo(a)anthracene	56-55-3	--		--		--		--		5.21	ESL EPA Region 5 (2003)	5.21E+00	ESL EPA Region 5 (2003)
Benzo(a)pyrene	50-32-8	--		--		--		--		1.52	ESL EPA Region 5 (2003)	1.52E+00	ESL EPA Region 5 (2003)
Benzo(b)fluoranthene	205-99-2	--		--		--		--		59.8	ESL EPA Region 5 (2003)	5.98E+01	ESL EPA Region 5 (2003)
Benzo(g,h,i)perylene	191-24-2	--		--		--		--		119	ESL EPA Region 5 (2003)	1.19E+02	ESL EPA Region 5 (2003)
Benzo(k)fluoranthene	207-08-9	--		--		--		--		148	ESL EPA Region 5 (2003)	1.48E+02	ESL EPA Region 5 (2003)
BHC	608-73-1	--		--		--		--		--		No ESV	No Source
BHC, alpha	319-84-6	--		--		--		--		0.09939	ESL EPA Region 5 (2003)	9.94E-02	ESL EPA Region 5 (2003)
beta-BHC	319-85-7	--		--		--		--		0.00398	ESL EPA Region 5 (2003)	3.98E-03	ESL EPA Region 5 (2003)
BHC, delta	319-86-8	--		--		--		--		9.94	ESL EPA Region 5 (2003)	9.94E+00	ESL EPA Region 5 (2003)
BHC, gamma	58-89-9	--		--		--		--		0.005	ESL EPA Region 5 (2003)	5.00E-03	ESL EPA Region 5 (2003)
Biphenyl	92-52-4	60	PRGs	--		--		60	Soil, LOEC	--		6.00E+01	PRGs
bis(2-chloroethoxy) methane	111-91-1	--		--		--		--		0.302	ESL EPA Region 5 (2003)	3.02E-01	ESL EPA Region 5 (2003)
bis(2-Chloroethyl) ether	111-44-4	--		--		--		--		23.7	ESL EPA Region 5 (2003)	2.37E+01	ESL EPA Region 5 (2003)
bis(2-Ethylhexyl)phthalate	117-81-7	--		--		--		--		0.92594	ESL EPA Region 5 (2003)	9.26E-01	ESL EPA Region 5 (2003)
4-Bromoaniline	106-40-1	--		--		--		100	No Soil, only Solution, LOEC	--		1.00E+02	No Soil, only Solution, LOEC
Bromodichloromethane	75-27-4	--		--		--		--		0.54	ESL EPA Region 5 (2003)	5.40E-01	ESL EPA Region 5 (2003)
Bromoform	75-25-2	--		--		--		--		15.9	ESL EPA Region 5 (2003)	1.59E+01	ESL EPA Region 5 (2003)
Bromomethane	74-83-9	--		--		--		--		--		No ESV	No Source
4-bromophenyl-phenylether	101-55-3	--		--		--		--		--		No ESV	No Source
2-Butanone	78-93-3	--		--		--		--		89.6	ESL EPA Region 5 (2003)	8.96E+01	ESL EPA Region 5 (2003)
Butylbenzyl phthalate	85-68-7	--		--		--		--		0.239	ESL EPA Region 5 (2003)	2.39E-01	ESL EPA Region 5 (2003)
N-Nitrosodi-n-Butylamine	924-16-3	--		--		--		--		0.26707	ESL EPA Region 5 (2003)	2.67E-01	ESL EPA Region 5 (2003)
Carbazole	86-74-8	--		--		--		--		--		No ESV	No Source
Carbon Disulfide	75-15-0	--		--		--		--		0.09412	ESL EPA Region 5 (2003)	9.41E-02	ESL EPA Region 5 (2003)
Carbon Tetrachloride	56-23-5	--		--		1000	LOEC	--		2.98	ESL EPA Region 5 (2003)	1.00E+03	LOEC
Chloroacetamide	79-07-2	2	PRGs	2		LOEC		--		--		2.00E+00	PRGs
p-chloroaniline	106-47-8	--		--		--		--		1.1	ESL EPA Region 5 (2003)	1.10E+00	ESL EPA Region 5 (2003)
3-Chloroaniline	108-42-9	20	PRGs	30		LOEC		20	Soil, LOEC	--		2.00E+01	PRGs
4-chloroaniline	106-47-8	--		--		--		--		1.1	ESL EPA Region 5 (2003)	1.10E+00	ESL EPA Region 5 (2003)
Chlorobenzene	108-90-7	40	PRGs	40		LOEC		--		13.1	ESL EPA Region 5 (2003)	4.00E+01	PRGs
Chlorobenzilate	510-15-6	--		--		--		--		5.05	ESL EPA Region 5 (2003)	5.05E+00	ESL EPA Region 5 (2003)

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Chlordane	12789-03-6	--		--		--		--		0.224	ESL EPA Region 5 (2003)	2.24E-01	ESL EPA Region 5 (2003)
alpha-Chlordane	12789-03-6	--		--		--		--		0.224	ESL EPA Region 5 (2003)	2.24E-01	ESL EPA Region 5 (2003)
gamma-Chlordane	12789-03-6	--		--		--		--		0.224	ESL EPA Region 5 (2003)	2.24E-01	ESL EPA Region 5 (2003)
Chloroethane	75-00-3	--		--		--		--		--		No ESV	No Source
Chloroform	67-66-3	--		--		--		--		1.19	ESL EPA Region 5 (2003)	1.19E+00	ESL EPA Region 5 (2003)
Chloromethane	74-87-3	--		--		--		--		--		No ESV	No Source
2-Chloronaphthalene	91-58-7	--		--		--		--		0.0122	ESL EPA Region 5 (2003)	1.22E-02	ESL EPA Region 5 (2003)
2-Chlorophenol	95-57-8	--		--		--		60	No Soil, only Solution, LOEC	0.243	ESL EPA Region 5 (2003)	6.00E+01	No Soil, only Solution, LOEC
3-Chlorophenol	108-43-0	7	PRGs	10				7	Soil, LOEC	--		7.00E+00	PRGs
4-Chlorophenol	106-48-9	--		--		--		50	No Soil, only Solution, LOEC	--		5.00E+01	No Soil, only Solution, LOEC
4-Chlorophenyl-phenyl ether	7005-72-3	--		--		--		--		--		No ESV	No Source
4-chloro-3-methylphenol	59-50-7	--		--		--		--		--		No ESV	No Source
Chloropropene	107-05-1	--		--		--		--		0.0029	ESL EPA Region 5 (2003)	2.90E-03	ESL EPA Region 5 (2003)
Chrysene	218-01-9	--		--		--		--		4.73	ESL EPA Region 5 (2003)	4.73E+00	ESL EPA Region 5 (2003)
4,6-dinitro-o-Cresol	534-52-1	--		--		--		--		0.144	ESL EPA Region 5 (2003)	1.44E-01	ESL EPA Region 5 (2003)
m-Cresol	108-39-4	--		--		--		--		3.49	ESL EPA Region 5 (2003)	3.49E+00	ESL EPA Region 5 (2003)
o-Cresol	95-48-7	--		--		--		--		40.4	ESL EPA Region 5 (2003)	4.04E+01	ESL EPA Region 5 (2003)
2-Cresol	95-48-7	--		--		--		--		40.4	ESL EPA Region 5 (2003)	4.04E+01	ESL EPA Region 5 (2003)
p-chloro-m-Cresol	59-50-7	--		--		--		--		7.95	ESL EPA Region 5 (2003)	7.95E+00	ESL EPA Region 5 (2003)
p-Cresol	106-44-5	--		--		--		--		163	ESL EPA Region 5 (2003)	1.63E+02	ESL EPA Region 5 (2003)
Diallate	2303-16-4	--		--		--		--		0.452	ESL EPA Region 5 (2003)	4.52E-01	ESL EPA Region 5 (2003)
2,4-D	94-75-7	--		--		--		--		0.0272	ESL EPA Region 5 (2003)	2.72E-02	ESL EPA Region 5 (2003)
4,4'-DDD	72-54-8	--		--		--		--		0.758	ESL EPA Region 5 (2003)	7.58E-01	ESL EPA Region 5 (2003)
4,4'-DDE	72-55-9	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
4,4'-DDT	50-29-3	--		--		--		--		0.0035	ESL EPA Region 5 (2003)	3.50E-03	ESL EPA Region 5 (2003)
Diazinon	333-41-5	--		--		--		--		--		No ESV	No Source
Dibenzo(a,h)anthracene	53-70-3	--		--		--		--		18.4	ESL EPA Region 5 (2003)	1.84E+01	ESL EPA Region 5 (2003)
Dibenzofuran	132-64-9	--		--		--		--		--		No ESV	No Source
1,2-Dibromo-3-Chloropropane	96-12-8	--		--		--		--		0.0352	ESL EPA Region 5 (2003)	3.52E-02	ESL EPA Region 5 (2003)
Dibromochloromethane	124-48-1	--		--		--		--		2.05	ESL EPA Region 5 (2003)	2.05E+00	ESL EPA Region 5 (2003)
Dibromoethane	106-93-4	--		--		--		--		1.23	ESL EPA Region 5 (2003)	1.23E+00	ESL EPA Region 5 (2003)
2,4-Dichloroaniline	554-00-7	100	PRGs	100					NOEC	--		1.00E+02	PRGs

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
3,4-Dichloroaniline	95-76-1	20	PRGs	20				10	No Soil, only Solution, LOEC	--		2.00E+01	PRGs
o-Dichlorobenzene	95-50-1	--		--		--		--		2.96	ESL EPA Region 5 (2003)	2.96E+00	ESL EPA Region 5 (2003)
p-Dichlorobenzene	106-46-7	20	PRGs	20				--		0.546	ESL EPA Region 5 (2003)	2.00E+01	PRGs
1,2-Dichlorobenzene	95-50-1	--		--		--		--		2.96	ESL EPA Region 5 (2003)	2.96E+00	ESL EPA Region 5 (2003)
1,3-Dichlorobenzene	541-73-1	--		--		--		--		37.7	ESL EPA Region 5 (2003)	3.77E+01	ESL EPA Region 5 (2003)
1,4-Dichlorobenzene	106-46-7	20	PRGs	20				--		0.546	ESL EPA Region 5 (2003)	2.00E+01	PRGs
3,3'-Dichlorobenzidine	91-94-1	--		--		--		--		0.646	ESL EPA Region 5 (2003)	6.46E-01	ESL EPA Region 5 (2003)
cis-1,4-Dichloro-2-butene	1476-11-5	--		--		1000	LOEC	--		--		1.00E+03	LOEC
trans-1,4-Dichloro-2-butene	110-57-6	--		--		1000	LOEC	--		--		1.00E+03	LOEC
1,1-Dichloroethane	75-34-3	--		--		--		--		20.1	ESL EPA Region 5 (2003)	2.01E+01	ESL EPA Region 5 (2003)
1,2-Dichloroethane	107-06-2	--		--		--		--		21.2	ESL EPA Region 5 (2003)	2.12E+01	ESL EPA Region 5 (2003)
1,1-Dichloroethene	75-35-4	--		--		--		--		8.28	ESL EPA Region 5 (2003)	8.28E+00	ESL EPA Region 5 (2003)
1,2-Dichloroethene	540-59-0	--		--		--		--		--		No ESV	No Source
Dichlorodifluoromethane	75-71-8	--		--		--		--		39.5	ESL EPA Region 5 (2003)	3.95E+01	ESL EPA Region 5 (2003)
2,4-Dichlorophenol	120-83-2	--		--		--		20	No Soil, only Solution, LOEC	87.5	ESL EPA Region 5 (2003)	2.00E+01	No Soil, only Solution, LOEC
2,6-Dichlorophenol	87-65-0	--		--		--		--		1.17	ESL EPA Region 5 (2003)	1.17E+00	ESL EPA Region 5 (2003)
3,4-Dichlorophenol	95-77-2	20	PRGs	20				20	Soil, LOEC	--		2.00E+01	PRGs
1,2-Dichloropropane	78-87-5	700	PRGs	700				--		32.7	ESL EPA Region 5 (2003)	7.00E+02	PRGs
cis-1,3-Dichloropropene	10061-01-5	--		--		--		--		0.398	ESL EPA Region 5 (2003)	3.98E-01	ESL EPA Region 5 (2003)
trans-1,3-Dichloropropene	10061-02-6	--		--		--		--		0.398	ESL EPA Region 5 (2003)	3.98E-01	ESL EPA Region 5 (2003)
Dieldrin	60-57-1	--		--		--		--		0.00238	ESL EPA Region 5 (2003)	2.38E-03	ESL EPA Region 5 (2003)
Diethylphthalate	84-66-2	100	PRGs	--		--		100	Soil, LOEC	24.8	ESL EPA Region 5 (2003)	1.00E+02	PRGs
3,3'-Dimethylbenzidine	119-93-7	--		--		--		--		0.104	ESL EPA Region 5 (2003)	1.04E-01	ESL EPA Region 5 (2003)
Dimethoate	60-51-5	--		--		--		--		0.218	ESL EPA Region 5 (2003)	2.18E-01	ESL EPA Region 5 (2003)
7,12'-Dimethylbenz(a)anthracene	57-97-6	--		--		--		--		16.3	ESL EPA Region 5 (2003)	1.63E+01	ESL EPA Region 5 (2003)
Dimethylphthalate	131-11-3	200	PRGs	200				--		734	ESL EPA Region 5 (2003)	2.00E+02	PRGs
alpha,alpha-Dimethylphenethylamine	122-09-8	--		--		--		--		0.3	ESL EPA Region 5 (2003)	3.00E-01	ESL EPA Region 5 (2003)
2,4-Dimethylphenol	105-67-9	--		--		--		--		0.01	ESL EPA Region 5 (2003)	1.00E-02	ESL EPA Region 5 (2003)
Di-n-butylphthalate	84-74-2	200	PRGs	--		--		200	Soil, NOEC	0.15	ESL EPA Region 5 (2003)	2.00E+02	PRGs
Di-n-octylphthalate	117-84-0	--		--		--		--		709	ESL EPA Region 5 (2003)	7.09E+02	ESL EPA Region 5 (2003)
m-Dinitrobenzene	99-65-0	--		--		--		--		0.655	ESL EPA Region 5 (2003)	6.55E-01	ESL EPA Region 5 (2003)
1,3-Dinitrobenzene	99-65-0	--		--		--		--		0.655	ESL EPA Region 5 (2003)	6.55E-01	ESL EPA Region 5 (2003)

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
2,4-Dinitrophenol	51-28-5	20	PRGs	--		--		20	Soil, NOEC	0.0609	ESL EPA Region 5 (2003)	2.00E+01	PRGs
2,4-Dinitrotoluene	121-14-2	--		--		--		--		1.28	ESL EPA Region 5 (2003)	1.28E+00	ESL EPA Region 5 (2003)
2,6-Dinitrotoluene	606-20-2	--		--		--		--		0.0328	ESL EPA Region 5 (2003)	3.28E-02	ESL EPA Region 5 (2003)
4,6-Dinitro-2-methylphenol	534-52-1	--		--		--		--		--		No ESV	No Source
Dinoseb	88-85-7	--		--		--		--		0.0218	ESL EPA Region 5 (2003)	2.18E-02	ESL EPA Region 5 (2003)
1,4-Dioxane	123-91-1	--		--		--		--		2.05	ESL EPA Region 5 (2003)	2.05E+00	ESL EPA Region 5 (2003)
Diphenylamine	122-39-4	--		--		--		--		1.01	ESL EPA Region 5 (2003)	1.01E+00	ESL EPA Region 5 (2003)
Disulfoton	298-04-4	--		--		--		--		0.0199	ESL EPA Region 5 (2003)	1.99E-02	ESL EPA Region 5 (2003)
Endosulfan, alpha	959-98-8	--		--		--		--		0.119	ESL EPA Region 5 (2003)	1.19E-01	ESL EPA Region 5 (2003)
Endosulfan, beta	33213-65-9	--		--		--		--		0.119	ESL EPA Region 5 (2003)	1.19E-01	ESL EPA Region 5 (2003)
Endosulfan, mixed isomers		--		--		--		--		--		No ESV	No Source
Endosulfan Sulfate	1031-07-8	--		--		--		--		0.0358	ESL EPA Region 5 (2003)	3.58E-02	ESL EPA Region 5 (2003)
Endrin	72-20-8	--		--		--		--		0.0101	ESL EPA Region 5 (2003)	1.01E-02	ESL EPA Region 5 (2003)
Endrin Aldehyde	7421-93-4	--		--		--		--		0.0105	ESL EPA Region 5 (2003)	1.05E-02	ESL EPA Region 5 (2003)
Ethyl methacrylate	97-63-2	--		--		--		--		30	ESL EPA Region 5 (2003)	3.00E+01	ESL EPA Region 5 (2003)
Ethylbenzene	100-41-4	--		--		--		--		5.16	ESL EPA Region 5 (2003)	5.16E+00	ESL EPA Region 5 (2003)
Famphur	52-85-7	--		--		--		--		0.0497	ESL EPA Region 5 (2003)	4.97E-02	ESL EPA Region 5 (2003)
Fluoranthene	206-44-0	--		--		--		--		122	ESL EPA Region 5 (2003)	1.22E+02	ESL EPA Region 5 (2003)
Fluorene	86-73-7	30	PRGs	30		LOEC		--		122	ESL EPA Region 5 (2003)	3.00E+01	PRGs
Furan	110-00-9	600	PRGs	--		--		600	Soil, LOEC	--		6.00E+02	PRGs
gamma-BHC (lindane)	58-89-9	--		--		--		--		0.005	ESL EPA Region 5 (2003)	5.00E-03	ESL EPA Region 5 (2003)
Heptane	142-82-5	--		--		--		1	No Soil, only Solution, LOEC	--		1.00E+00	No Soil, only Solution, LOEC
Heptachlor	76-44-8	--		--		--		--		0.00598	ESL EPA Region 5 (2003)	5.98E-03	ESL EPA Region 5 (2003)
Heptachlor Epoxide	1024-57-3	--		--		--		--		0.152	ESL EPA Region 5 (2003)	1.52E-01	ESL EPA Region 5 (2003)
Hexachlorobenzene	118-74-1	--		--		1000	LOEC	--		0.199	ESL EPA Region 5 (2003)	1.00E+03	LOEC
Hexachlorobutadiene	87-68-3	--		--		--		--		0.0398	ESL EPA Region 5 (2003)	3.98E-02	ESL EPA Region 5 (2003)
Hexachlorocyclopentadiene	77-47-4	10	PRGs	--		--		10	Soil, LOEC	0.755	ESL EPA Region 5 (2003)	1.00E+01	PRGs
Hexachloroethane	67-72-1	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
Hexachlorophene	70-30-4	--		--		--		--		0.199	ESL EPA Region 5 (2003)	1.99E-01	ESL EPA Region 5 (2003)
2-Hexanone	591-78-6	--		--		--		--		12.6	ESL EPA Region 5 (2003)	1.26E+01	ESL EPA Region 5 (2003)
HMX	2691-41-0	--		--		--		--		--		No ESV	No Source
Indeno(1,2,3-cd)pyrene	193-39-5	--		--		--		--		109	ESL EPA Region 5 (2003)	1.09E+02	ESL EPA Region 5 (2003)

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Isobutyl Alcohol	78-83-1	--		--		--		--		20.8	ESL EPA Region 5 (2003)	2.08E+01	ESL EPA Region 5 (2003)
Isodrin	465-73-6	--		--		--		--		0.00332	ESL EPA Region 5 (2003)	3.32E-03	ESL EPA Region 5 (2003)
Isophorone	78-59-1	--		--		--		--		139	ESL EPA Region 5 (2003)	1.39E+02	ESL EPA Region 5 (2003)
Isosafrole	120-58-1	--		--		--		--		9.94	ESL EPA Region 5 (2003)	9.94E+00	ESL EPA Region 5 (2003)
Kepone	143-50-0	--		--		--		--		0.0327	ESL EPA Region 5 (2003)	3.27E-02	ESL EPA Region 5 (2003)
Malathion	121-75-5	--		--		--		--		--		No ESV	No Source
Methacrylonitrile	126-98-7	--		--		--		--		0.057	ESL EPA Region 5 (2003)	5.70E-02	ESL EPA Region 5 (2003)
Methapyrilene	91-80-5	--		--		--		--		2.78	ESL EPA Region 5 (2003)	2.78E+00	ESL EPA Region 5 (2003)
Methoxychlor	72-43-5	--		--		--		--		0.0199	ESL EPA Region 5 (2003)	1.99E-02	ESL EPA Region 5 (2003)
Methyl Bromide	74-83-9	--		--		--		--		0.235	ESL EPA Region 5 (2003)	2.35E-01	ESL EPA Region 5 (2003)
Methyl Chloride	74-87-3	--		--		--		--		10.4	ESL EPA Region 5 (2003)	1.04E+01	ESL EPA Region 5 (2003)
Methyl iodide	74-88-4	--		--		--		--		1.23	ESL EPA Region 5 (2003)	1.23E+00	ESL EPA Region 5 (2003)
Methylene Chloride	75-09-2	--		--		--		--		1.05	ESL EPA Region 5 (2003)	1.05E+00	ESL EPA Region 5 (2003)
2-Methylnaphthalene	91-57-6	--		--		--		--		3.24	ESL EPA Region 5 (2003)	3.24E+00	ESL EPA Region 5 (2003)
2-Methylphenol	95-48-7	--		--		--		--		--		No ESV	No Source
4-Methylphenol	106-44-5	--		--		--		--		--		No ESV	No Source
4-Methyl-2-pentanone	108-10-1	--		--		--		--		443	ESL EPA Region 5 (2003)	4.43E+02	ESL EPA Region 5 (2003)
Mirex	2385-85-5	--		--		--		--		--		No ESV	No Source
Naphthalene	91-20-3	--		--		--		10	No Soil, only Solution, LOEC	0.0994	ESL EPA Region 5 (2003)	1.00E+01	No Soil, only Solution, LOEC
1-Naphthylamine	134-32-7	--		--		--		--		9.34	ESL EPA Region 5 (2003)	9.34E+00	ESL EPA Region 5 (2003)
2-Naphthylamine	91-59-8	--		--		--		--		3.03	ESL EPA Region 5 (2003)	3.03E+00	ESL EPA Region 5 (2003)
1,4-Naphthoquinone	130-15-4	--		--		--		--		1.67	ESL EPA Region 5 (2003)	1.67E+00	ESL EPA Region 5 (2003)
m-Nitroaniline	99-09-2	--		--		--		--		3.16	ESL EPA Region 5 (2003)	3.16E+00	ESL EPA Region 5 (2003)
o-Nitroaniline	88-74-4	--		--		--		--		74.1	ESL EPA Region 5 (2003)	7.41E+01	ESL EPA Region 5 (2003)
p-Nitroaniline	100-01-6	--		--		--		--		21.9	ESL EPA Region 5 (2003)	2.19E+01	ESL EPA Region 5 (2003)
2-Nitroaniline	88-74-4	--		--		--		--		74.1	ESL EPA Region 5 (2003)	7.41E+01	ESL EPA Region 5 (2003)
3-Nitroaniline	99-09-2	--		--		--		--		3.16	ESL EPA Region 5 (2003)	3.16E+00	ESL EPA Region 5 (2003)
4-Nitroaniline	100-01-6	--		--		--		--		21.9	ESL EPA Region 5 (2003)	2.19E+01	ESL EPA Region 5 (2003)
Nitrobenzene	99-95-3	40	PRGs	40		LOEC		8	No Soil, only Solution, LOEC	1.31	ESL EPA Region 5 (2003)	4.00E+01	PRGs
Nitrocellulose	9004-70-0	--		--		--		--		--		No ESV	No Source
Nitroglycerin	55-63-0	--		--		--		--		--		No ESV	No Source
Nitroguanidine		--		--		--		--		--		No ESV	No Source

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
o-Nitrophenol	88-75-5	--		--		--		--		1.6	ESL EPA Region 5 (2003)	1.60E+00	ESL EPA Region 5 (2003)
p-Nitrophenol	100-02-7	--		--		--		--		5.12	ESL EPA Region 5 (2003)	5.12E+00	ESL EPA Region 5 (2003)
2-Nitrophenol	88-75-5	--		--		--		--		1.6	ESL EPA Region 5 (2003)	1.60E+00	ESL EPA Region 5 (2003)
4-Nitrophenol	100-02-7	--		--		--		--		5.12	ESL EPA Region 5 (2003)	5.12E+00	ESL EPA Region 5 (2003)
4-Nitroquinoline-1-oxide	56-57-5	--		--		--		--		0.122	ESL EPA Region 5 (2003)	1.22E-01	ESL EPA Region 5 (2003)
3-Nitrotoluene	99-08-1	--		--		--		--		--		No ESV	No Source
N-Nitrosodiethylamine	55-18-5	--		--		--		--		0.0693	ESL EPA Region 5 (2003)	6.93E-02	ESL EPA Region 5 (2003)
N-Nitrosodimethylamine	62-75-9	--		--		--		--		3.2E-05	ESL EPA Region 5 (2003)	3.21E-05	ESL EPA Region 5 (2003)
N-Nitrosomethylamine	10595-95-6	--		--		--		--		0.00166	ESL EPA Region 5 (2003)	1.66E-03	ESL EPA Region 5 (2003)
N-Nitrosomorpholine	59-89-2	--		--		--		--		0.0706	ESL EPA Region 5 (2003)	7.06E-02	ESL EPA Region 5 (2003)
N-Nitrosopiperidine	100-75-4	--		--		--		--		0.00665	ESL EPA Region 5 (2003)	6.65E-03	ESL EPA Region 5 (2003)
N-Nitrosopyrrolidine	930-55-2	--		--		--		--		0.0126	ESL EPA Region 5 (2003)	1.26E-02	ESL EPA Region 5 (2003)
N-nitroso-di-n-dipropylamine	621-64-7	--		--		--		--		--		No ESV	No Source
N-nitrosodiphenylamine	86-30-6	20	PRGs	20		LOEC		--		0.545	ESL EPA Region 5 (2003)	2.00E+01	PRGs
2-Nitrotoluene	88-72-2	--		--		--		--		--		No ESV	No Source
5-nitro-o-Toluidine	99-55-8	--		--		--		--		8.73	ESL EPA Region 5 (2003)	8.73E+00	ESL EPA Region 5 (2003)
2,2'-oxybis(1-Chloropropane)	108-60-1	--		--		--		--		--		No ESV	No Source
Parathion	56-38-2	--		--		--		--		3.40E-04	ESL EPA Region 5 (2003)	3.40E-04	ESL EPA Region 5 (2003)
PCDD-S		--		--		--		--		1.99E-07	ESL EPA Region 5 (2003)	1.99E-07	ESL EPA Region 5 (2003)
Pentachlorophenol	87-86-5	3	PRGs	6		NOEC		3	Soil, LOEC	0.119	ESL EPA Region 5 (2003)	3.00E+00	PRGs
Pentachloroaniline	527-20-8	100	PRGs	100		LOEC		--		--		1.00E+02	PRGs
Pentachlorobenzene	608-93-5	20	PRGs	20		LOEC		--		0.497	ESL EPA Region 5 (2003)	2.00E+01	PRGs
Pentachloroethane	76-01-7	--		--		--		--		10.7	ESL EPA Region 5 (2003)	1.07E+01	ESL EPA Region 5 (2003)
Pentachloronitrobenzene	82-68-8	--		--		--		--		7.09	ESL EPA Region 5 (2003)	7.09E+00	ESL EPA Region 5 (2003)
Phenacetin	62-44-2	--		--		--		--		11.7	ESL EPA Region 5 (2003)	1.17E+01	ESL EPA Region 5 (2003)
Phenanthrene	85-01-8	--		--		--		--		45.7	ESL EPA Region 5 (2003)	4.57E+01	ESL EPA Region 5 (2003)
Phenol	108-95-2	30	PRGs	30		LOEC		70	Soil, LOEC	120	ESL EPA Region 5 (2003)	3.00E+01	PRGs
p-Phenylenediamine	106-50-3	--		--		--		--		6.16	ESL EPA Region 5 (2003)	6.16E+00	ESL EPA Region 5 (2003)
phorate	298-02-2	--		--		--		--		4.96E-04	ESL EPA Region 5 (2003)	4.96E-04	ESL EPA Region 5 (2003)
2-Picoline	109-06-8	--		--		--		--		9.9	ESL EPA Region 5 (2003)	9.90E+00	ESL EPA Region 5 (2003)
Polynuclear Aromatic Hydrocarbons		--		--		--		--		--		No ESV	No Source
Polychlorinated Biphenyls	1336-36-3	0.371	PRGs	--		--		40	Soil, NOEC	3.32E-04	ESL EPA Region 5 (2003)	3.71E-01	PRGs

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Polychlorinated Dibenzofurans	51207-31-9	--		--		--		--		3.86E-05	ESL EPA Region 5 (2003)	3.86E-05	ESL EPA Region 5 (2003)
Pronamide	23950-58-5	--		--		--		--		0.0136	ESL EPA Region 5 (2003)	1.36E-02	ESL EPA Region 5 (2003)
Propionitrile	107-12-0	--		--		--		--		0.0498	ESL EPA Region 5 (2003)	4.98E-02	ESL EPA Region 5 (2003)
4-Nitrotoluene	99-99-0	--		--		--		--		--		No ESV	No Source
Pyrene	129-00-0	--		--		--		--		78.5	ESL EPA Region 5 (2003)	7.85E+01	ESL EPA Region 5 (2003)
Pryidine	110-86-1	--		--		--		--		1.03	ESL EPA Region 5 (2003)	1.03E+00	ESL EPA Region 5 (2003)
RDX (cyclonite)	121-82-4	--		--		--		--		--		No ESV	No Source
RDX	121-82-4	--		--		--		--		--		No ESV	No Source
Safrole	94-59-7	--		--		--		--		0.404	ESL EPA Region 5 (2003)	4.04E-01	ESL EPA Region 5 (2003)
2,4,5-TP (Silvex)	93-72-1	--		--		--		--		0.109	ESL EPA Region 5 (2003)	1.09E-01	ESL EPA Region 5 (2003)
Styrene	100-42-5	300	PRGs	--		--		300	Soil	4.69	ESL EPA Region 5 (2003)	3.00E+02	PRGs
TCDD	1746-1-6	3.15E-06	PRGs							1.99E-08	ESL EPA Region 5 (2003)	3.15E-06	PRGs
TCDF		8.40E-04	PRGs							--		8.40E-04	PRGs
2,3,5,6-Tetrachloroaniline	3481-20-7	20	PRGs	20		LOEC		20	Soil, LOEC	--		2.00E+01	PRGs
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	--		--		--		--		1.99E-07	ESL EPA Region 5 (2003)	1.99E-07	ESL EPA Region 5 (2003)
1,2,4,5-Tetrachlorobenzene	95-94-3	--		--		--		--		2.02	ESL EPA Region 5 (2003)	2.02E+00	ESL EPA Region 5 (2003)
1,2,3,4-Tetrachlorobenzene	634-66-2	10	PRGs	10		LOEC		--		--		1.00E+01	PRGs
Tetrachloroethene	127-18-4	--		--		--		10	No Soil, only Solution	9.92	ESL EPA Region 5 (2003)	1.00E+01	No Soil, only Solution
Tetrachloroethylene	127-18-4	--		--		--		--		9.92	ESL EPA Region 5 (2003)	9.92E+00	ESL EPA Region 5 (2003)
1,1,1,2-Tetrachloroethane	630-20-6	--		--		--		--		225	ESL EPA Region 5 (2003)	2.25E+02	ESL EPA Region 5 (2003)
1,1,2,2-Tetrachloroethane	79-34-5	--		--		--		--		0.127	ESL EPA Region 5 (2003)	1.27E-01	ESL EPA Region 5 (2003)
Tetrachloromethane	56-23-5	--		--		--		--		--		No ESV	No Source
2,3,4,5-Tetrachlorophenol	4901-51-3	20	PRGs	20		LOEC		--		--		2.00E+01	PRGs
2,3,4,6-Tetrachlorophenol	58-90-2	--		--		--		--		0.199	ESL EPA Region 5 (2003)	1.99E-01	ESL EPA Region 5 (2003)
Tetraethyl dithiopyrophosphate	3689-24-5	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
Tetryl	479-45-8	--		--		--		--		--		No ESV	No Source
Toluene	108-88-3	200	PRGs	--		--		200	Soil, NOEC	5.45	ESL EPA Region 5 (2003)	2.00E+02	PRGs
o-Toluidine	95-53-4	--		--		--		--		2.97	ESL EPA Region 5 (2003)	2.97E+00	ESL EPA Region 5 (2003)
4-Toluidine	106-49-0	--		--		--		100	No Soil, only Solution, LOEC	--		1.00E+02	No Soil, only Solution, LOEC
Toxaphene	8001-35-2	--		--		--		--		0.119	ESL EPA Region 5 (2003)	1.19E-01	ESL EPA Region 5 (2003)
Tribromomethane	75-25-2	--		--		--		--		--		No ESV	No Source
2,4,5-Trichloroaniline	636-30-6	20	PRGs	20		LOEC		20	Soil, LOEC	--		2.00E+01	PRGs

Table M-2. Soil Ecological Screening Values For Level II Screen For the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Soil Screening Values											
		Efroymsen et al. (1997a) Preliminary Remediation Goals for Ecological Endpoints ^a		Benchmarks for Earthworm		Benchmarks for Soil Microorganism		Soil Screening values for Plants (Efroymsen et al. 1997c) ^c		Ecological Screening Level (ESL) ^d		Preferred Ecological Screening Value (ESV) ^e	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg) (mg/L)	Source (Soil) (Solution)	Number (mg/kg)	Source	Number (mg/kg)	Source
Trichloroethene	79-01-6	--		--		--		100	No Soil, only Solution	12.4	ESL EPA Region 5 (2003)	1.00E+02	No Soil, only Solution
1,2,3-Trichlorobenzene	87-61-6	20	PRGs	20				--		--		2.00E+01	PRGs
1,2,4-Trichlorobenzene	120-82-1	20	PRGs	20				--		11.1	ESL EPA Region 5 (2003)	2.00E+01	PRGs
1,1,1-Trichloroethane	71-55-6	--		--		--		--		29.8	ESL EPA Region 5 (2003)	2.98E+01	ESL EPA Region 5 (2003)
1,1,2-Trichloroethane	79-00-5	--		--		--		--		28.6	ESL EPA Region 5 (2003)	2.86E+01	ESL EPA Region 5 (2003)
Trichloroethylene	79-01-6	--		--		--		--		12.4	ESL EPA Region 5 (2003)	1.24E+01	ESL EPA Region 5 (2003)
Trichlorofluoromethane	75-69-4	--		--		--		--		16.4	ESL EPA Region 5 (2003)	1.64E+01	ESL EPA Region 5 (2003)
2,4,5-Trichlorophenol	95-95-4	9	PRGs	9				4	Soil, LOEC	14.1	ESL EPA Region 5 (2003)	9.00E+00	PRGs
2,4,6-Trichlorophenol	88-06-2	4	PRGs	10				10	No Soil, only Solution, LOEC	9.94	ESL EPA Region 5 (2003)	4.00E+00	PRGs
1,2,3-Trichloropropane	96-18-4	--		--		--		--		3.36	ESL EPA Region 5 (2003)	3.36E+00	ESL EPA Region 5 (2003)
2,4,5-Trichlorophenoxyacetic acid	93-76-5	--		--		--		--		0.596	ESL EPA Region 5 (2003)	5.96E-01	ESL EPA Region 5 (2003)
1,3,5-Trinitrobenzene	99-35-4	--		--		--		--		0.376	ESL EPA Region 5 (2003)	8.60E-01	PPL (SAIC 2002)
2,4,6-Trinitrotoluene	118-96-7	--		--		--		--		--		7.10E+01	PPL (SAIC 2002)
Vinyl Acetate	108-05-4	--		--		--		--		12.7	ESL EPA Region 5 (2003)	1.27E+01	ESL EPA Region 5 (2003)
Vinyl Chloride	75-01-4	--		--		--		--		0.646	ESL EPA Region 5 (2003)	6.46E-01	ESL EPA Region 5 (2003)
Xylenes (total)	1330-20-7	--		--		--		100	No Soil, only Solution, LOEC	10	ESL EPA Region 5 (2003)	1.00E+02	No Soil, only Solution, LOEC

^aEfroymsen, R.A., G.W. Suter, II, B.E. Sample, and D.S. Jones 1997a. Preliminary Remediation Goals for Ecological Endpoints, ES/ER/TM-162/R2.

^bEfroymsen, R.A., M.E. Will., and G.W. Suter 1997b. Toxicological Benchmarks for Potential Contaminants of Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process Martin Marietta Energy Systems, Inc., ES/ER/TM-126/R1, Oak Ridge National Laboratory, Oak Ridge, TN.

^cEfroymsen, R.A., M.E. Will, G.W. Suter, and A.C. Wooten 1997c. Toxicological Benchmarks for Screening Contaminants of Concern for Effects on Terrestrial Plants: 1997 Revision, Lockheed Martin Energy Systems, Inc., ES/ER/TM-85/R3, Oak Ridge National Laboratory, Oak Ridge, TN.

^dEcological Screening Levels (ESL), U.S. EPA Region 5, Updated per website: <http://www.epa.gov/reg5rcra/ca/edql.htm>, August 2003.

^eThe Preferred Soil Value hierarchy is as follows: Efroymsen et al. (1997a), followed by Efroymsen et al. (1997b), followed by Efroymsen et al. (1997c), followed by ESLs. Note that PPLs (SAIC 2002) that were developed for Winklepeck Burning Grounds are used for copper, cyanide, 1,3,5-trinitrobenzene, and 2,4,6-trinitrotoluene.

BHC = Benzene hexachloride.

CAS = Chemical Abstracts Service.

LOEC = Lowest observed effect concentration.

DDD = Dichlorodiphenyldichloroethene.

DDE = Dichlorodiphenyldichloroethane.

DDT = Dichlorodiphenyltrichloroethene.

Diss = Dissolved analyte.

EPA = U. S. Environmental Protection Agency.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

NOEC = No observed effect concentration.

PCB = Polychlorinated biphenyl.

PPL = Plant protection level.

PRG = Preliminary remediation goal.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

-- = no value.

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
<i>Inorganics</i>							
<i>(Target Analyte List)</i>							
Aluminum	7429-90-5					No ESV	No Source
Antimony	7440-36-0					No ESV	No Source
Arsenic	7440-38-2	9.79	MacDonald et al. (2000)	9.79	ESL EPA Region 5 (2003)	9.79E+00	MacDonald et al. (2000)
Barium	7440-39-3					No ESV	No Source
Beryllium	7440-41-7					No ESV	No Source
Cadmium	7440-43-9	0.99	MacDonald et al. (2000)	0.99	ESL EPA Region 5 (2003)	9.90E-01	MacDonald et al. (2000)
Calcium	7440-70-2					No ESV	No Source
Chromium	7440-47-3	43.4	MacDonald et al. (2000)	43.4	ESL EPA Region 5 (2003)	4.34E+01	MacDonald et al. (2000)
Chromium, hexavalent	7440-47-3	43.4	MacDonald et al. (2000)	43.4	ESL EPA Region 5 (2003)	4.34E+01	MacDonald et al. (2000)
Cobalt	7440-48-4			50	ESL EPA Region 5 (2003)	5.00E+01	ESL EPA Region 5 (2003)
Copper	7440-50-8	31.6	MacDonald et al. (2000)	31.6	ESL EPA Region 5 (2003)	3.16E+01	MacDonald et al. (2000)
Cyanide	57-12-5			0.0001	ESL EPA Region 5 (2003)	1.00E-04	ESL EPA Region 5 (2003)
Iron	7439-89-6					No ESV	No Source
Lead	7439-92-1	35.8	MacDonald et al. (2000)	35.8	ESL EPA Region 5 (2003)	3.58E+01	MacDonald et al. (2000)
Magnesium	7439-95-4					No ESV	No Source
Manganese	7439-96-5					No ESV	No Source
Mercury	7439-97-6	0.18	MacDonald et al. (2000)	0.174	ESL EPA Region 5 (2003)	1.80E-01	MacDonald et al. (2000)
Nickel	7440-02-0	22.7	MacDonald et al. (2000)	22.7	ESL EPA Region 5 (2003)	2.27E+01	MacDonald et al. (2000)
Nitrate/Nitrite						No ESV	No Source
Potassium	7440-07-7					No ESV	No Source
Selenium	7782-49-2					No ESV	No Source

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
Silver	7440-22-4			0.5	ESL EPA Region 5 (2003)	5.00E-01	ESL EPA Region 5 (2003)
Sodium	7440-23-5					No ESV	No Source
Sulfide	18496-25-8					No ESV	No Source
Thallium	7440-28-0					No ESV	No Source
Vanadium	7440-62-2					No ESV	No Source
Zinc	7440-66-6	121	MacDonald et al. (2000)	121	ESL EPA Region 5 (2003)	1.21E+02	MacDonald et al. (2000)
<i>Organic Compounds</i>							
Acenaphthene	83-32-9			0.00671	ESL EPA Region 5 (2003)	6.71E-03	ESL EPA Region 5 (2003)
Acenaphthylene	208-96-8			0.00587	ESL EPA Region 5 (2003)	5.87E-03	ESL EPA Region 5 (2003)
Acetone	67-64-1			0.0099	ESL EPA Region 5 (2003)	9.90E-03	ESL EPA Region 5 (2003)
Aldrin	309-00-2			0.002	ESL EPA Region 5 (2003)	2.00E-03	ESL EPA Region 5 (2003)
Anthracene	120-12-7	0.0572	MacDonald et al. (2000)	0.0572	ESL EPA Region 5 (2003)	5.72E-02	MacDonald et al. (2000)
Arochlor-1016	12674-11-2			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1221	11104-28-2			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1232	11141-16-5			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1242	53469-21-9			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1248	12672-29-6			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
PCB-1248	12672-29-6			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
PCB-1254	11097-69-1			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Arochlor-1260	11096-82-5			5.98E-02	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
Benzene	71-43-2			0.142	ESL EPA Region 5 (2003)	1.42E-01	ESL EPA Region 5 (2003)
Benzenemethanol						No ESV	No Source
Benzo(a)anthracene	56-55-3	0.108	MacDonald et al. (2000)	0.108	ESL EPA Region 5 (2003)	1.08E-01	MacDonald et al. (2000)
Benzo(a)pyrene	50-32-8	0.15	MacDonald et al. (2000)	0.15	ESL EPA Region 5 (2003)	1.50E-01	MacDonald et al. (2000)

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
Benzo(<i>b</i>)fluoranthene	205-99-2			10.4	ESL EPA Region 5 (2003)	1.04E+01	ESL EPA Region 5 (2003)
Benzo(<i>g,h,i</i>)perylene	191-24-2			0.17	ESL EPA Region 5 (2003)	1.70E-01	ESL EPA Region 5 (2003)
Benzo(<i>k</i>)fluoranthene	207-08-9			0.24	ESL EPA Region 5 (2003)	2.40E-01	ESL EPA Region 5 (2003)
Benzoic Acid						No ESV	No Source
BHC	608-73-1					No ESV	No Source
BHC, alpha	319-84-6			0.006	ESL EPA Region 5 (2003)	6.00E-03	ESL EPA Region 5 (2003)
Beta-BHC	319-85-7			0.005	ESL EPA Region 5 (2003)	5.00E-03	ESL EPA Region 5 (2003)
Biphenyl	92-52-4				No Source	No ESV	No Source
bis(2-chloroethoxy) methane	111-91-1				No Source	No ESV	No Source
bis(2-Chloroethyl) ether	111-44-4			3.52	ESL EPA Region 5 (2003)	3.52E+00	ESL EPA Region 5 (2003)
Bis(2-chloroisopropyl) ether	108-60-1				No Source	No ESV	No Source
bis(2-Ethylhexyl)phthalate	117-81-7			0.182	ESL EPA Region 5 (2003)	1.82E-01	ESL EPA Region 5 (2003)
Bromodichloromethane	74-97-5				No Source	No ESV	No Source
Bromochloromethane	74-97-5					No ESV	No Source
Bromoform	75-25-2			0.492	ESL EPA Region 5 (2003)	4.92E-01	ESL EPA Region 5 (2003)
Bromomethane	74-83-9				No Source	No ESV	No Source
4-bromophenyl-phenylether	101-55-3			1.55	ESL EPA Region 5 (2003)	1.55E+00	ESL EPA Region 5 (2003)
2-Butanone	78-93-3			0.0424	ESL EPA Region 5 (2003)	4.24E-02	ESL EPA Region 5 (2003)
Butylbenzylphthalate	85-68-7			1.97	ESL EPA Region 5 (2003)	1.97E+00	ESL EPA Region 5 (2003)
Carbazole	86-74-8					No ESV	No Source
Carbon Disulfide	75-15-0			0.0239	ESL EPA Region 5 (2003)	2.39E-02	ESL EPA Region 5 (2003)
Carbon Tetrachloride	56-23-5			1.45	ESL EPA Region 5 (2003)	1.45E+00	ESL EPA Region 5 (2003)
4-Chloroaniline	106-47-8			0.146	ESL EPA Region 5 (2003)	1.46E-01	ESL EPA Region 5 (2003)
Chlorobenzene	108-90-7			0.291	ESL EPA Region 5 (2003)	2.91E-01	ESL EPA Region 5 (2003)

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
alpha-Chlordane	5103-71-9	0.00324	MacDonald et al. (2000)	0.00324	ESL EPA Region 5 (2003)	3.24E-03	MacDonald et al. (2000)
gamma-Chlordane	5103-74-2	0.00324	MacDonald et al. (2000)	0.00324	ESL EPA Region 5 (2003)	3.24E-03	MacDonald et al. (2000)
Chloroethane	75-00-3				No Source	No ESV	No Source
Chloroform	67-66-3			0.121	ESL EPA Region 5 (2003)	1.21E-01	ESL EPA Region 5 (2003)
Chloromethane	74-87-3				No Source	No ESV	No Source
2-Chloronaphthalene	91-58-7			0.417	ESL EPA Region 5 (2003)	4.17E-01	ESL EPA Region 5 (2003)
2-Chlorophenol	95-57-8			0.0319	ESL EPA Region 5 (2003)	3.19E-02	ESL EPA Region 5 (2003)
4-Chlorobenzamine	106-47-8			0.146	ESL EPA Region 5 (2003)	1.46E-01	ESL EPA Region 5 (2003)
4-Chlorophenyl-phenyl ether	7005-72-3				No Source	No ESV	No Source
4-chloro-3-methylphenol	59-50-7				No Source	No ESV	No Source
Chrysene	218-01-9	0.166	MacDonald et al. (2000)	0.166	ESL EPA Region 5 (2003)	1.66E-01	MacDonald et al. (2000)
4,4'-DDD	72-54-8	0.00488	MacDonald et al. (2000)	0.00488	ESL EPA Region 5 (2003)	4.88E-03	MacDonald et al. (2000)
4,4'-DDE	72-55-9	0.00316	MacDonald et al. (2000)	0.00316	ESL EPA Region 5 (2003)	3.16E-03	MacDonald et al. (2000)
4,4'-DDT	50-29-3	0.00416	MacDonald et al. (2000)	0.00416	ESL EPA Region 5 (2003)	4.16E-03	MacDonald et al. (2000)
Diazinon	333-41-5					No ESV	No Source
Dibenzo(<i>a,h</i>)anthracene	53-70-3	0.033	MacDonald et al. (2000)	0.033	ESL EPA Region 5 (2003)	3.30E-02	MacDonald et al. (2000)
Dibenzofuran	132-64-9			0.449	ESL EPA Region 5 (2003)	4.49E-01	ESL EPA Region 5 (2003)
Dibromochloromethane	124-48-1				No Source	No ESV	No Source
1,2-Dibromoethane	106-93-4				No Source	No ESV	No Source
1,2-Dichlorobenzene	95-50-1			0.294	ESL EPA Region 5 (2003)	2.94E-01	ESL EPA Region 5 (2003)
1,3-Dichlorobenzene	541-73-1			1.315	ESL EPA Region 5 (2003)	1.32E+00	ESL EPA Region 5 (2003)
1,4-Dichlorobenzene	106-46-7			0.318	ESL EPA Region 5 (2003)	3.18E-01	ESL EPA Region 5 (2003)
3,3'-Dichlorobenzidine	91-94-1			0.127	ESL EPA Region 5 (2003)	1.27E-01	ESL EPA Region 5 (2003)
1,1-Dichloroethane	75-34-3			0.000575	ESL EPA Region 5 (2003)	5.75E-04	ESL EPA Region 5 (2003)

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
1,2-Dichloroethane	107-06-2			0.26	ESL EPA Region 5 (2003)	2.60E-01	ESL EPA Region 5 (2003)
1,1-Dichloroethene	75-35-4			0.0194	ESL EPA Region 5 (2003)	1.94E-02	ESL EPA Region 5 (2003)
1,2-Dichloroethene	540-59-0					No ESV	No Source
2,4-Dichlorophenol	120-83-2			0.0817	ESL EPA Region 5 (2003)	8.17E-02	ESL EPA Region 5 (2003)
1,2-Dichloropropane	78-87-5			0.333	ESL EPA Region 5 (2003)	3.33E-01	ESL EPA Region 5 (2003)
<i>cis</i> -1,3-Dichloropropene	10061-02-6				No Source	No ESV	No Source
<i>trans</i> -1,3-Dichloropropene	10061-02-6				No Source	No ESV	No Source
Dieldrin	60-57-1	0.0019	MacDonald et al. (2000)	0.0019	ESL EPA Region 5 (2003)	1.90E-03	MacDonald et al. (2000)
Diethylphthalate	84-66-2			0.295	ESL EPA Region 5 (2003)	2.95E-01	ESL EPA Region 5 (2003)
Dimethylbenzene	1330-20-7				No Source	No ESV	No Source
Dimethylphthalate	131-11-3				No Source	No ESV	No Source
2,4-Dimethylphenol	105-67-9			0.304	ESL EPA Region 5 (2003)	3.04E-01	ESL EPA Region 5 (2003)
Di-n-butylphthalate	84-74-2			1.114	ESL EPA Region 5 (2003)	1.11E+00	ESL EPA Region 5 (2003)
Di-n-octylphthalate	117-84-0			40.6	ESL EPA Region 5 (2003)	4.06E+01	ESL EPA Region 5 (2003)
1,3-Dinitrobenzene	99-65-0			0.00861	ESL EPA Region 5 (2003)	8.61E-03	ESL EPA Region 5 (2003)
2,4-Dinitrophenol	51-28-5			0.00621	ESL EPA Region 5 (2003)	6.21E-03	ESL EPA Region 5 (2003)
2,4-Dinitrotoluene	121-14-2			0.0144	ESL EPA Region 5 (2003)	1.44E-02	ESL EPA Region 5 (2003)
2,6-Dinitrotoluene	606-20-2			0.0398	ESL EPA Region 5 (2003)	3.98E-02	ESL EPA Region 5 (2003)
2-Amino-4,6-dinitrotoluene	35572-78-2					No ESV	No Source
4-Amino-2,6-dinitrotoluene	19406-51-0					No ESV	No Source
2-Methyl-4,6-dinitrophenol	534-52-1				No Source	No ESV	No Source
4,6-Dinitro-2-methylphenol	534-52-1				No Source	No ESV	No Source
Endosulfan, alpha	959-98-8			0.0026	ESL EPA Region 5 (2003)	2.60E-03	ESL EPA Region 5 (2003)
Endosulfan, beta	33213-65-9			0.00194	ESL EPA Region 5 (2003)	1.94E-03	ESL EPA Region 5 (2003)

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
Endosulfan, mixed isomers	--					No ESV	No Source
Endosulfan Sulfate	1031-07-8			0.0346	ESL EPA Region 5 (2003)	3.46E-02	ESL EPA Region 5 (2003)
Endrin	72-20-8	0.00222	MacDonald et al. (2000)	0.00222	ESL EPA Region 5 (2003)	2.22E-03	MacDonald et al. (2000)
Endrin Aldehyde	7421-93-4			0.48	ESL EPA Region 5 (2003)	4.80E-01	ESL EPA Region 5 (2003)
Endrin Ketone	53494-70-5					No ESV	No Source
Ethylbenzene	100-41-4			0.175	ESL EPA Region 5 (2003)	1.75E-01	ESL EPA Region 5 (2003)
Fluoranthene	206-44-0	0.423	MacDonald et al. (2000)	0.423	ESL EPA Region 5 (2003)	4.23E-01	MacDonald et al. (2000)
Fluorene	86-73-7	0.0774	MacDonald et al. (2000)	0.0774	ESL EPA Region 5 (2003)	7.74E-02	MacDonald et al. (2000)
gamma-BHC (lindane)	58-89-9	0.00237	MacDonald et al. (2000)	0.00237	ESL EPA Region 5 (2003)	2.37E-03	MacDonald et al. (2000)
Heptachlor	76-44-8			0.0006	ESL EPA Region 5 (2003)	6.00E-04	ESL EPA Region 5 (2003)
Heptachlor Epoxide	1024-57-3	0.00247	MacDonald et al. (2000)	0.00247	ESL EPA Region 5 (2003)	2.47E-03	MacDonald et al. (2000)
Hexachlorobenzene	118-74-1			0.02	ESL EPA Region 5 (2003)	2.00E-02	ESL EPA Region 5 (2003)
Hexachlorobutadiene	87-68-3			0.00265	ESL EPA Region 5 (2003)	2.65E-03	ESL EPA Region 5 (2003)
Hexachlorocyclopentadiene	77-47-4			0.901	ESL EPA Region 5 (2003)	9.01E-01	ESL EPA Region 5 (2003)
Hexachloroethane	67-72-1			0.584	ESL EPA Region 5 (2003)	5.84E-01	ESL EPA Region 5 (2003)
2-Hexanone	591-78-6			0.0582	ESL EPA Region 5 (2003)	5.82E-02	ESL EPA Region 5 (2003)
HMX	2691-41-0					No ESV	No Source
Indeno(1,2,3- <i>cd</i>)pyrene	193-39-5			0.2	ESL EPA Region 5 (2003)	2.00E-01	ESL EPA Region 5 (2003)
Isophorone	78-59-1			0.4232	ESL EPA Region 5 (2003)	4.23E-01	ESL EPA Region 5 (2003)
Malathion	121-75-5					No ESV	No Source
Methoxychlor	72-43-5			0.0136	ESL EPA Region 5 (2003)	1.36E-02	ESL EPA Region 5 (2003)
Methylene Chloride	75-09-2			0.159	ESL EPA Region 5 (2003)	1.59E-01	ESL EPA Region 5 (2003)
Methyl Chloride	74-87-3					No ESV	No Source
2-Methylnaphthalene	91-57-6			0.0202	ESL EPA Region 5 (2003)	2.02E-02	ESL EPA Region 5 (2003)

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
2-Methylphenol	95-48-7				No Source	No ESV	No Source
4-Methylphenol	106-44-5				No Source	No ESV	No Source
4-Methyl-2-pentanone	108-10-1			0.0251	ESL EPA Region 5 (2003)	2.51E-02	ESL EPA Region 5 (2003)
Mirex	2385-85-5					No ESV	No Source
Naphthalene	91-20-3	0.176	MacDonald et al. (2000)	0.176	ESL EPA Region 5 (2003)	1.76E-01	MacDonald et al. (2000)
2-Nitroaniline	88-74-4				No Source	No ESV	No Source
3-Nitroaniline	99-09-2				No Source	No ESV	No Source
4-Nitroaniline	100-01-6				No Source	No ESV	No Source
2-Nitrobenzenamine	88-74-4				No Source	No ESV	No Source
3-Nitrobenzenamine	99-09-2				No Source	No ESV	No Source
Nitrobenzene	99-95-3			0.145	ESL EPA Region 5 (2003)	1.45E-01	ESL EPA Region 5 (2003)
4-Nitrobenzenamine	100-01-6				No Source	No ESV	No Source
Nitrocellulose	9004-70-0					No ESV	No Source
Nitroglycerin	55-63-0					No ESV	No Source
Nitroguanidine	--					No ESV	No Source
2-Nitrophenol	88-75-5				No Source	No ESV	No Source
4-Nitrophenol	100-02-7			0.0133	ESL EPA Region 5 (2003)	1.33E-02	ESL EPA Region 5 (2003)
m-Nitrotoluene	99-08-1					No ESV	No Source
N-nitroso-di-n-dipropylamine	621-64-7				No Source	No ESV	No Source
N-nitrosodiphenylamine	86-30-6				No Source	No ESV	No Source
N-Nitroso-di-n-propylamine	621-64-7				No Source	No ESV	No Source
o-Nitrotoluene	88-72-2					No ESV	No Source
2,2'-oxybis(1-Chloropropane)	108-60-1				No Source	No ESV	No Source

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
Pentachlorophenol	87-86-5			23	ESL EPA Region 5 (2003)	2.30E+01	ESL EPA Region 5 (2003)
Pentachlorobenzene	608-93-5			0.024	ESL EPA Region 5 (2003)	2.40E-02	ESL EPA Region 5 (2003)
Phenanthrene	85-01-8	0.204	MacDonald et al. (2000)	0.204	ESL EPA Region 5 (2003)	2.04E-01	MacDonald et al. (2000)
Phenol	108-95-2			0.0491	ESL EPA Region 5 (2003)	4.91E-02	ESL EPA Region 5 (2003)
Polynuclear Aromatic Hydrocarbons						No ESV	No Source
Polychlorinated Biphenyls	1336-36-3			0.0598	ESL EPA Region 5 (2003)	5.98E-02	ESL EPA Region 5 (2003)
p-Nitrotoluene	99-99-0					No ESV	No Source
Pyrene	129-00-0	0.195	MacDonald et al. (2000)	0.195	ESL EPA Region 5 (2003)	1.95E-01	MacDonald et al. (2000)
RDX (cyclonite)	121-82-4					No ESV	No Source
Styrene	100-42-5			0.254	ESL EPA Region 5 (2003)	2.54E-01	ESL EPA Region 5 (2003)
Tetrachloroethene	127-18-4			0.99	ESL EPA Region 5 (2003)	9.90E-01	ESL EPA Region 5 (2003)
Tetrachloroethylene	127-18-4			0.99	ESL EPA Region 5 (2003)	9.90E-01	ESL EPA Region 5 (2003)
1,1,2,2-Tetrachloroethane	79-34-5			0.85	ESL EPA Region 5 (2003)	8.50E-01	ESL EPA Region 5 (2003)
Tetrachloromethane	56-23-5			1.45	ESL EPA Region 5 (2003)	1.45E+00	ESL EPA Region 5 (2003)
Tetryl	479-45-8					No ESV	No Source
Toluene	108-88-3			1.22	ESL EPA Region 5 (2003)	1.22E+00	ESL EPA Region 5 (2003)
Total Organic Carbon						No ESV	No Source
Toxaphene	8001-35-2			7.70E-05	ESL EPA Region 5 (2003)	7.70E-05	ESL EPA Region 5 (2003)
Tribromomethane	75-25-2			0.492	ESL EPA Region 5 (2003)	4.92E-01	ESL EPA Region 5 (2003)
Trichloroethene	79-01-6			0.112	ESL EPA Region 5 (2003)	1.12E-01	ESL EPA Region 5 (2003)
1,2,4-Trichlorobenzene	120-82-1			5.062	ESL EPA Region 5 (2003)	5.06E+00	ESL EPA Region 5 (2003)
1,1,1-Trichloroethane	71-55-6			0.213	ESL EPA Region 5 (2003)	2.13E-01	ESL EPA Region 5 (2003)
1,1,2-Trichloroethane	79-00-5			0.518	ESL EPA Region 5 (2003)	5.18E-01	ESL EPA Region 5 (2003)
Trichloroethylene	79-01-6			0.112	ESL EPA Region 5 (2003)	1.12E-01	ESL EPA Region 5 (2003)

Table M-3. Derivation of Sediment Ecological Screening Values for the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Sediment Screening Values					
		Consensus-Based Sediment Quality Guidelines ^a		Ecological Screening Level (ESL) ^b		Preferred Ecological Screening Value (ESV) ^c	
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number (mg/kg)	Source
2,4,5-Trichlorophenol	95-95-4				No Source	No ESV	No Source
2,4,6-Trichlorophenol	88-06-2			0.208	ESL EPA Region 5 (2003)	2.08E-01	ESL EPA Region 5 (2003)
1,3,5-Trinitrobenzene	99-35-4				ESL EPA Region 5 (2003)	No ESV	ESL EPA Region 5 (2003)
2,4,6-Trinitrotoluene	118-96-7				No Source	No ESV	No Source
Vinyl Chloride	75-01-4			0.202	ESL EPA Region 5 (2003)	2.02E-01	ESL EPA Region 5 (2003)
Xylenes (total)	1330-20-7			0.433	ESL EPA Region 5 (2003)	4.33E-01	ESL EPA Region 5 (2003)

^aD.D. MacDonald, C.G. Ingersoll, T.A. Berger 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems.

^bEPA 1998d. RCRA QAPP Instructions, USEPA Region 5, Chicago, IL, April 1998 revision, <http://www.epa.gov/reg5rcra/wptdiv/cars/cars.htm>.

^cThe Preferred Soil Value is MacDonald et al. (2000) value (first choice if it is available) else the EDQL.

^dPreferred ESV based on EDQL EPA Region 5 value for PCBs.

BHC = Benzene hexachloride.

CAS = Chemical Abstracts Service.

DDD = Dichlorodiphenyldichloroethene.

DDE = Dichlorodiphenyldichloroethane.

DDT = Dichlorodiphenyltrichloroethene.

EPA = U. S. Environmental Protection Agency.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

PCB = Polychlorinated biphenyl.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

**Table M-4. OAC Water Quality Criteria for Chemical Constituents in Surface Water
at the Ramsdell Quarry Landfill**

Chemicals of Interest	CAS Registry Number	Surface Water	
		Ohio EPA Outside Mixing Zone Average ^a	
		Number (ug/L)	Source
<i>Inorganics</i>			
<i>(Target Analyte List)</i>			
Aluminum	7429-90-5	--	No Source
Antimony	7440-36-0	190	Ohio Administrative Code
Arsenic	7440-38-2	150	Ohio Administrative Code
Arsenic III (diss)	7440-38-2	150	Ohio Administrative Code
Arsenic (TR)	7440-38-2	150	Ohio Administrative Code
Arsenic V (diss)	7440-38-2	--	No Source
Barium	7440-39-3	220	Ohio Administrative Code
Cadmium ^b	7440-43-9	2.5	Ohio Administrative Code
Cadmium ^b (diss)	7440-43-9	2.2	Ohio Administrative Code
Cadmium ^b (TR)	7440-43-9	2.5	Ohio Administrative Code
Calcium	7440-70-2	--	No Source
Chromium ^b	7440-47-3	86	Ohio Administrative Code
Chromium ^b (diss)	7440-47-3	74	Ohio Administrative Code
Cobalt	7440-48-4	24	Ohio Administrative Code
Copper ^b	7440-50-8	9.3	Ohio Administrative Code
Copper ^b (diss)	7440-50-8	9	Ohio Administrative Code
Copper ^b (TR)	7440-50-8	9.3	Ohio Administrative Code
Iron	7439-89-6	--	No Source
Lead ^b (diss)	7439-92-1	5.1	Ohio Administrative Code
Lead ^b	7439-92-1	6.4	Ohio Administrative Code
Magnesium	7439-95-4	--	No Source
Manganese	7439-96-5	--	Ohio Administrative Code
Mercury	7439-97-6	0.91	Ohio Administrative Code
Mercury (CVAA) (diss)	7439-97-6	0.77	Ohio Administrative Code
Mercury (TR)	7439-97-6	0.91	Ohio Administrative Code
Nickel ^b	7440-02-0	52	Ohio Administrative Code
Nickel ^b (diss)	7440-02-0	52	Ohio Administrative Code
Nickel ^b (TR)	7440-02-1	52	Ohio Administrative Code
Nitrate/nitrite		--	No Source
Potassium	7440-09-7	--	No Source
Selenium (diss)	7782-49-2	4.6	Ohio Administrative Code
Selenium	7782-49-2	5	Ohio Administrative Code

**Table M-4. OAC Water Quality Criteria for Chemical Constituents in Surface Water
at the Ramsdell Quarry Landfill (continued)**

Chemicals of Interest	CAS Registry Number	Surface Water	
		Ohio EPA Outside Mixing Zone Average ^a	
		Number (ug/L)	Source
Sodium	7440-23-5	--	No Source
Sulfate	14808-79-8	--	No Source
Sulfide	18496-25-8	--	No Source
Thallium	7440-28-0	17	Ohio Administrative Code
Vanadium	7440-62-2	44	Ohio Administrative Code
Zinc ^b	7440-66-6	120	Ohio Administrative Code
Zinc ^b (diss)	7440-66-6	120	Ohio Administrative Code
Zinc ^b (TR)	7440-66-6	120	Ohio Administrative Code
Organic Compounds			
Acetone	67-64-1	--	No Source
Aldrin	309-00-2	--	No Source
bis(2-Ethylhexyl)phthalate	117-81-7	8.4	Ohio Administrative Code
2-Butanone	78-93-3	22000	Ohio Administrative Code
Carbon Disulfide	75-15-0	15	Ohio Administrative Code
Chloride	16887-00-6	--	No Source
Chloroform	67-66-3	140	Ohio Administrative Code
Chrysene	218-01-9	--	No Source
2-Amino-4,6-dinitrotoluene	35572-78-2	18	Ohio Administrative Code
4-Amino-2,6-dinitrotoluene	19406-51-0	11	Ohio Administrative Code
4,4'-DDT	50-29-3	--	No Source
4,4'-DDD	72-54-8	--	No Source
1,3-Dinitrobenzene	99-65-0		No Source
2,4-Dinitrotoluene	121-14-2	390	Ohio Administrative Code
2,6-Dinitrotoluene	606-20-2	730	Ohio Administrative Code
Fluoranthene	206-44-0	2.3	Ohio Administrative Code
Methylene Chloride	75-09-2	1900	Ohio Administrative Code
Nitrocellulose	9004-70-0	--	No Source
2-Nitrotoluene	88-72-2	71	Ohio Administrative Code
3-Nitrotoluene	99-08-1	42	Ohio Administrative Code
4-Nitrotoluene	99-99-0	46	Ohio Administrative Code
n-Nitrosodiphenylamine	86-30-6	--	No Source
2,4,6-Trinitrotoluene	118-96-7	13	Ohio Administrative Code
HMX	2691-41-0	220	Ohio Administrative Code
Pyrene	129-00-0	42	Ohio Administrative Code

Table M-4. OAC Water Quality Criteria for Chemical Constituents in Surface Water at the Ramsdell Quarry Landfill (continued)

Chemicals of Interest	CAS Registry Number	Surface Water	
		Ohio EPA Outside Mixing Zone Average ^a	
		Number (ug/L)	Source
RDX	121-82-4	79	Ohio Administrative Code
Tetrachloroethene	127-18-4	53	Ohio Administrative Code
Tetryl	479-45-8	ID	No Source

^aOhio EPA, Division of Surface Water 2002. Aquatic Life Tier I Criteria and Tier II Screening Values pursuant to OAC Chapters 3745-1 and 3745-2, December 30.

^bHardness adjusted to 100 mg/L CaCO₃.

CAS = Chemical Abstracts Service

DDD = Dichlorodiphenyldichloroethene.

DDT = Dichlorodiphenyltrichloroethene.

diss = Dissolved.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

ID = Identifier.

OAC = Ohio Administrative Code.

Ohio EPA = Ohio Environmental Protection Agency.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

-- = No value.

Table M-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at the Ramsdell Quarry Landfill

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	Site Background (mg/kg)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
<i>Inorganics</i>										
Aluminum	7429-90-5	15/ 15	100	2.21E+04	--	no	1.77E+04	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Antimony	7440-36-0	11/ 15	73	1.64E+01	--	no	9.60E-01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Arsenic	7440-38-2	15/ 15	100	2.96E+01	--	no	1.54E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Barium	7440-39-3	15/ 15	100	2.68E+02	--	no	8.84E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Beryllium	7440-41-7	13/ 15	87	1.30E+00	--	no	8.80E-01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Cadmium	7440-43-9	10/ 15	67	4.70E+00	--	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Calcium	7440-70-2	15/ 15	100	2.87E+04	--	no	1.58E+04	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Chromium	7440-47-3	15/ 15	100	2.00E+02	--	no	1.74E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Cobalt	7440-48-4	15/ 15	100	1.39E+01	--	no	1.04E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Copper	7440-50-8	15/ 15	100	3.50E+02	--	no	1.77E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Iron	7439-89-6	15/ 15	100	7.30E+04	--	no	2.31E+04	yes	yes	COPEC per freq of detect > 5%, maximum detect > background

Table M-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	Site Background (mg/kg)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
Lead	7439-92-1	15/ 15	100	3.71E+03	--	yes	2.61E+01	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Magnesium	7439-95-4	15/ 15	100	2.21E+04	--	no	3.03E+03	yes	yes	COPEC per freq of detect > 5% and maximum detect > background
Manganese	7439-96-5	15/ 15	100	1.12E+03	--	no	1.45E+03	no	no	Not a COPEC per maximum detect < background and not a PBT
Mercury	7487-94-6	13/ 15	87	8.90E-01	--	yes	3.60E-02	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
Nickel	7440-02-0	15/ 15	100	1.32E+02	--	no	2.11E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Potassium	7440-09-7	15/ 15	100	3.30E+03	--	no	9.27E+02	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Selenium	7782-49-2	2/ 15	13	2.00E+00	--	no	1.40E+00	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Silver	7440-22-4	10/ 15	67	1.30E+00	--	no	no data	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Sodium	7440-23-5	12/ 15	80	1.37E+02	--	no	1.23E+02	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Thallium	7440-28-0	2/ 15	13	6.20E-01	--	no	no data	yes	yes	COPEC per freq of detect > 5%, maximum detect > background
Vanadium	7440-62-2	15/ 15	100	4.07E+01	--	no	3.11E+01	yes	yes	COPEC per freq of detect > 5%, maximum detect > background

**Table M-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification
for Surface Soil at the Ramsdell Quarry Landfill (continued)**

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	Site Background (mg/kg)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
Zinc	7440-66-6	15/ 15	100	7.37E+02	--	yes	6.18E+01	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, maximum detect > background
<i>Organics-Explosives</i>										
2-Amino-4,6-dinitrotoluene	35572-78-2	2/ 10	20	8.60E+00	1.94E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
4-Amino-2,6-dinitrotoluene	19406-51-0	2/ 10	20	1.30E+00	No Kow	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
1,3-Dinitrobenzene	99-65-0	1/ 15	7	3.90E+00	1.49E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
2,4-Dinitrotoluene	121-14-2	1/ 15	7	4.70E-02	1.98E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
2,6-Dinitrotoluene	606-20-2	1/ 15	7	8.20E+00	1.72E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
HMX	2691-41-0	5/ 15	33	6.80E-01	No Kow	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
Nitroglycerin	55-63-0	1/ 7	14	1.40E+02	1.62E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
2-Nitrotoluene	88-72-2	1/ 15	7	7.00E-02	2.30E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
RDX	121-82-4	1/ 15	7	3.50E-01	8.70E-01	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
2,4,6-Trinitrotoluene	121-14-2	3/ 15	20	4.00E+00	1.60E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background data
<i>Organics-Semivolatiles</i>										
2-Methylnaphthalene	91-57-6	8/ 15	53	6.10E+01	- 1.90E+00	no	no data	yes	yes	
Acenaphthene	83-32-9	5/ 15	33	3.60E+02	3.92E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Acenaphthylene	208-96-8	2/ 15	13	4.30E+00	4.10E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Anthracene	120-12-7	10/ 15	67	1.00E+03	4.55E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background

Table M-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	Site Background (mg/kg)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
Benzo(a)anthracene	56-55-3	12/ 15	80	1.40E+03	5.70E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(a)pyrene	50-32-8	12/ 15	80	9.60E+02	6.11E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(b)fluoranthene	205-99-2	12/ 15	80	1.20E+03	6.10E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(g,h,i)perylene	191-24-2	11/ 15	73	6.50E+02	6.60E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Benzo(k)fluoranthene	207-08-9	11/ 15	73	5.80E+02	6.10E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Bis(2-ethylhexyl)phthalate	117-81-7	6/ 15	40	2.10E-01	7.60E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Carbazole	86-74-8	7/ 15	47	4.60E+02	3.76E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Chrysene	218-01-9	12/ 15	80	1.00E+03	5.70E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Dibenzo(a,h)anthracene	53-70-3	3/ 15	20	1.80E+02	6.50E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Dibenzofuran	132-64-9	6/ 15	40	2.70E+02	4.12E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Fluoranthene	206-44-0	13/ 15	87	3.10E+03	5.12E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Fluorene	86-73-7	5/ 15	33	4.50E+02	4.21E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background

Table M-5. Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification for Surface Soil at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	Site Background (mg/kg)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
Indeno(1,2,3- <i>cd</i>)pyrene	193-39-5	12/ 15	80	6.30E+02	6.60E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Naphthalene	91-20-3	6/ 15	40	1.00E+02	3.36E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Phenanthrene	85-01-8	12/ 15	80	3.20E+02	4.55E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Pyrene	129-00-0	13/ 15	87	3.00E+03	5.13E+00	yes	no data	yes	yes	COPEC per being a PBT compound, freq of detect > 5%, and no background
Organics-Volatiles										
Acetone	67-64-1	3/ 6	50	9.80E-02	-2.40E-01	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
2-Butanone	78-93-3	2/ 6	33	3.50E-02	2.90E-01	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Methylene Chloride	75-09-2	1/ 6	17	7.30E-04	1.25E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background

^a"yes" = COI meets the criterion for being a PBT compound; else "no."

^b"yes" = maximum detect is > than the background value; else "no."

^c"yes" = COI frequency of detection is > 5% and maximum detect exceeds the background value and/or the COI is a PBT; else "no."

CAS = Chemical Abstracts Service.

COI = Chemical of interest.

COPEC = Constituent of potential ecological concern.

HMX = Octahydro-1,3,5,7-tetrazocine-1,3,5,7-tetrazocine.

Log Kow = Log of octanol-water partition coefficient (Kow).

PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).

PCB = Polychlorinated biphenyl.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

-- = Not applicable, Kow applies only to organic compounds.

Table M-6. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at the Ramsdell Quarry Landfill

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	EOLP SRV (mg/kg)	Is Maximum Detect > SRV ^b ?	Site Background (mg/kg)	Is Maximum Detect > Background ^c ?	COPEC ^d ?	Justification
<i>Inorganics</i>												
Aluminum	7429-90-5	5/ 5	100	2.12E+04	--	no	2.90E+04	no	1.39E+04	yes	no	Not a COPEC per maximum detect < SRV and not a PBT
Arsenic	7440-38-2	5/ 5	100	3.25E+01	--	no	2.50E+01	yes	1.95E+01	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Barium	7440-39-3	5/ 5	100	1.45E+02	--	no	1.90E+02	no	1.23E+02	yes	no	Not a COPEC per maximum detect < SRV and not a PBT
Beryllium	7440-41-7	4/ 5	80	6.50E-01	--	no	8.00E-01	no	3.80E-01	yes	no	Not a COPEC per maximum detect < SRV and not a PBT
Cadmium	7440-43-9	3/ 5	60	6.40E+00	--	yes	7.90E-01	yes	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Calcium	7440-70-2	5/ 5	100	4.69E+04	--	no	2.10E+04	yes	5.51E+03	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Chromium	7440-47-3	5/ 5	100	3.09E+01	--	no	2.90E+01	yes	1.81E+01	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Cobalt	7440-48-4	5/ 5	100	3.36E+01	--	no	1.20E+01	yes	9.10E+00	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV

Table M-6. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	EOLP SRV (mg/kg)	Is Maximum Detect > SRV ^b ?	Site Background (mg/kg)	Is Maximum Detect > Background ^c ?	COPEC ^d ?	Justification
Copper	7440-50-8	5/ 5	100	1.34E+02	--	no	3.20E+01	yes	2.76E+01	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Cyanide	57-12-5	1/ 5	20	2.80E+00	--	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5% and no SRV or background
Iron	7439-89-6	5/ 5	100	4.14E+04	--	no	4.10E+04	yes	2.82E+04	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Lead	7439-92-1	5/ 5	100	8.72E+01	--	yes	4.70E+01	yes	2.74E+01	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Magnesium	7439-95-4	5/ 5	100	5.80E+04	--	no	7.10E+03	yes	2.76E+03	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Manganese	7439-96-5	5/ 5	100	2.59E+03	--	no	1.50E+03	yes	1.95E+03	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV
Mercury	7439-97-6	5/ 5	100	1.80E-01	--	yes	1.20E-01	yes	5.90E-02	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Nickel	7440-02-0	5/ 5	100	8.68E+01	--	no	3.30E+01	yes	1.77E+01	yes	yes	COPEC per freq of detect > 5% and maximum detect > SRV

Table M-6. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	EOLP SRV (mg/kg)	Is Maximum Detect > SRV ^b ?	Site Background (mg/kg)	Is Maximum Detect > Background ^c ?	COPEC ^d ?	Justification
Potassium	7440-09-7	5/ 5	100	3.01E+03	--	no	6.80E+03	no	1.95E+03	yes	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Selenium	7782-49-2	1/ 5	20	1.10E+00	--	no	1.70E+00	no	1.70E+00	no	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Sodium	7440-23-5	5/ 5	100	1.09E+02	--	no	No SRV	No SRV	1.12E+02	no	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Thallium	7440-28-0	2/ 5	40	1.90E+00	--	no	4.70E+00	no	8.90E-01	yes	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Vanadium	7440-62-2	5/ 5	100	3.81E+01	--	no	4.00E+01	no	2.61E+01	yes	no	Not a COPEC per maximum detect < SRV and not a PBT compound
Zinc	7440-66-6	5/ 5	100	8.94E+02	--	yes	1.60E+02	yes	5.32E+02	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Organics-Explosives												
2,4-Dinitrotoluene	121-14-2	1/ 5	20	6.40E-02	1.98E+00	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5%, no SRV or background
3-Nitrotoluene	99-08-1	1/ 5	20	7.10E-02	2.45E+00	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5%, no SRV or background
HMX	2691-41-0	2/ 5	40	1.20E-01	No Kow	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5%, no SRV or background

Table M-6. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	EOLP SRV (mg/kg)	Is Maximum Detect > SRV ^b ?	Site Background (mg/kg)	Is Maximum Detect > Background ^c ?	COPEC ^d ?	Justification
Nitrocellulose	9004-70-4	1/ 5	20	4.30E+00	No Kow	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5%, no SRV or background
<i>Organics-Semivolatiles</i>												
Anthracene	78-93-3	1/ 5	20	1.80E-01	4.55E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Benzo(a)anthracene	56-55-3	2/ 5	40	4.30E-01	5.70E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Benzo(a)pyrene	50-32-8	2/ 5	40	3.40E-01	6.11E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Benzo(b)fluoranthene	205-99-2	2/ 5	40	4.30E-01	6.10E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Benzo(g,h,i)perylene	191-24-2	1/ 5	20	1.70E-01	6.60E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Benzo(k)fluoranthene	207-08-9	1/ 5	20	1.80E-01	6.10E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV

Table M-6. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% Results > Detect Limit	Maximum Detect (mg/kg)	Log Kow	Is the COI a PBT ^a ?	EOLP SRV (mg/kg)	Is Maximum Detect > SRV ^b ?	Site Background (mg/kg)	Is Maximum Detect > Background ^c ?	COPEC ^d ?	Justification
Carbazole	86-74-8	1/ 5	20	1.30E-01	3.76E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Chrysene	218-01-9	2/ 5	40	4.10E-01	5.70E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Fluoranthene	206-44-0	4/ 5	80	1.00E+00	5.12E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Indeno(1,2,3-cd)pyrene	193-39-5	2/ 5	40	2.00E-01	6.60E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Phenanthrene	85-01-8	2/ 5	40	7.00E-01	4.55E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
Pyrene	129-00-0	4/ 5	80	7.80E-01	5.13E+00	yes	No SRV	No SRV	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > SRV
<i>Organics-Volatiles</i>												
Acetone	67-64-1	5/ 5	100	3.40E-02	-2.40E-01	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5%, no SRV or background
2-Butanone	78-93-3	3/ 5	60	1.00E-02	2.90E-01	no	No SRV	No SRV	no data	yes	yes	COPEC per freq of detect > 5%, no SRV or background

Table M-6. Data and Media Evaluations for Frequency of Detection, Sediment Reference Values and Background Comparison, and PBT Identification for Sediment at the Ramsdell Quarry Landfill (continued)

^a"yes" = COI meets the criterion for being a PBT compound; else "no."

^b"yes" = COI maximum detect exceeds the SRV; else "no."

^c"yes" = maximum detect is > than the background value; else "no."

^d"yes" = COI frequency of detection is > 5% and maximum detect exceeds the SRV or background value and/or the COI is a PBT; else "no."

CAS = Chemical Abstracts Service.

COI = Chemical of interest.

COPEC = Constituent of potential ecological concern.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

EOLP = Erie Ontario Lake Plain ecoregion (Ohio EPA 2003).

Log Kow = Log of octanol-water partition coefficient (Kow).

PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).

PCB = Polychlorinated biphenyl.

SRV = Sediment reference value (Ohio EPA 2003).

-- = Not applicable, Kow applies only to organic compounds.

Table M-7. Data and Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification Surface Water at the Ramsdell Quarry Landfill

Detected COI	CAS Registry Number	Frequency of Detect	% results > detect limit	Maximum Detect (µg/L)	Log Kow	Is the COI a PBT ^a ?	Site Background (µg/L)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
<i>Inorganics</i>										
Aluminum	7429-90-5	6/ 9	50	4.96E+04	--	no	3.37E+03	yes	yes	COPEC per freq of detect > 5% and maximum detect > background
Arsenic	7440-38-2	4/ 9	44	3.93E+01	--	no	3.20E+00	yes	yes	COPEC per freq of detect > 5% and maximum detect > background
Barium	7440-39-3	9/ 9	100	4.05E+02	--	no	4.75E+01	yes	yes	COPEC per freq of detect > 5% and maximum detect > background
Cadmium	7440-43-9	2/ 9	22	4.20E+00	--	yes	no data	yes	yes	COPEC per being PBT compound, freq of detect > 5%, and no background
Calcium	7440-70-2	9/ 9	100	9.67E+04	--	no	4.14E+04	yes	yes	COPEC per freq of detect > 5% and maximum detect > background
Chloride	16887-00-6	2/ 3	67	2.20E+03	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Chromium	7440-47-3	4/ 9	44	6.47E+01	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Cobalt	7440-48-4	2/ 9	22	2.95E+01	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Copper	7440-50-8	5/ 7	71	1.60E+02	--	no	7.90E+00	yes	yes	COPEC per freq of detect > 5% and maximum detect > background
Iron	7439-89-6	9/ 9	100	8.02E+04	--	no	2.56E+03	yes	yes	Not a COPEC per maximum detect < background and not a PBT
Lead	7439-92-1	5/ 9	56	1.43E+02	--	yes	no data	yes	yes	COPEC per being PBT compound, freq of detect > 5%, and no background
Magnesium	7439-95-4	9/ 9	100	2.02E+05	--	no	1.08E+04	yes	yes	COPEC per freq of detect > 5% and maximum detect > background

Table M-7. Data and Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification Surface Water at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% results > detect limit	Maximum Detect (µg/L)	Log Kow	Is the COI a PBT ^a ?	Site Background (µg/L)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
Manganese	7439-96-5	9/9	100	5.62E+03	--	no	3.91E+02	yes	yes	Not a COPEC per maximum detect < background and not a PBT
Mercury	7439-97-6	4/9	44	2.60E-01	--	yes	no data	yes	yes	COPEC per being PBT compound, freq of detect > 5%, and no background
Nickel	7440-02-0	3/9	33	7.01E+01	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Nitrate/Nitrite		1/3	33	4.00E+02	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Potassium	7440-09-7	9/9	100	9.55E+03	--	no	3.17E+03	yes	yes	COPEC per freq of detect > 5% and maximum is > background
Selenium	7782-49-2	1/9	11	4.60E+00	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Sodium	7440-23-5	8/9	89	6.15E+03	--	no	2.13E+04	no	no	Not a COPEC per maximum detect < background and not a PBT
Sulfate	14808-79-8	3/3	100	2.86E+05	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Thallium	7440-28-0	3/9	33	1.80E+00	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Vanadium	7440-62-2	3/9	33	8.53E+01	--	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Zinc	7440-66-6	6/9	67	1.57E+03	--	yes	4.20E+01	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > background
Organics-Explosives										
4-Nitrotoluene	99-99-0	1/9	11	2.40E-01	2.37E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Organics-Pesticides										
Aldrin	309-00-2	1/3	33	1.20E-02	6.50E+00	yes	no data	yes	yes	COPEC per being a PBT chemical, freq of detect > 5%, maximum detect > background
Organics-Volatiles										
Acetone	67-64-1	1/9	11	6.30E+00	-2.40E-01	no	no data	yes	yes	COPEC per freq of detect > 5% and no background

Table M-7. Data and Media Evaluations for Frequency of Detection, Background Comparison, and PBT Identification Surface Water at the Ramsdell Quarry Landfill (continued)

Detected COI	CAS Registry Number	Frequency of Detect	% results > detect limit	Maximum Detect (µg/L)	Log Kow	Is the COI a PBT ^a ?	Site Background (µg/L)	Is Maximum Detect > Background ^b ?	COPEC ^c ?	Justification
Methylene Chloride	75-09-2	1/9	11	1.20E+01	1.25E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background
Tetrachloroethene	127-18-4	1/9	11	6.00E-01	2.88E+00	no	no data	yes	yes	COPEC per freq of detect > 5% and no background

^a"yes" = COI meets the criterion for being a PBT compound; else "no."

^b"yes" = maximum detect is > than the background value; else "no."

^c"yes" = COI frequency of detection is > 5% and maximum detect exceeds the background value and/or the COI is a PBT; else "no."

CAS = Chemical Abstracts Service.

COI = Chemical of interest.

COPEC = Constituent of potential ecological concern.

Log Kow = Log of octanol-water partition coefficient (Kow).

PBT = Persistent, bioaccumulative, and toxic compound (inorganics include cadmium, lead, mercury, and zinc; organics include Log Kow of at least 3.0).

-- = Not applicable, Kow applies only to organic compounds.

Table M-8. Ramsdell Quarry Landfill Media Screening Table for Surface Soil

COPECs from Data and Media Evaluation	CAS Registry Number	Surface Soil Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum above or below the Preferred ESV?	PBT Compound? ^a	COPEC Retained ^b ?
<i>Inorganics</i>							
Aluminum	7429-90-5	2.21E+04	6.00E+02	LOEC	above	no	yes
Antimony	7440-36-0	1.64E+01	5.00E+00	PRGs	above	no	yes
Arsenic	7440-38-2	2.96E+01	9.90E+00	PRGs	above	no	yes
Barium	7440-39-3	2.68E+02	2.83E+02	PRGs	below	no	no
Beryllium	7440-41-7	1.30E+00	1.00E+01	PRGs	below	no	no
Cadmium	7440-43-9	4.70E+00	4.00E+00	PRGs	above	yes	yes
Calcium	7440-70-2	2.87E+04	No ESV	No Source	no screening value	no	yes
Chromium	7440-47-3	2.00E+02	4.00E-01	PRGs	above	no	yes
Cobalt	7440-48-4	1.39E+01	2.00E+01	PRGs	below	no	no
Copper	7440-50-8	3.50E+02	1.39E+01	PPL (SAIC 2002)	above	no	yes
Iron	7439-89-6	7.30E+04	2.00E+02	NOEC	above	no	yes
Lead	7439-92-1	3.71E+03	4.05E+01	PRGs	above	yes	yes
Magnesium	7439-95-4	2.21E+04	No ESV	No Source	no screening value	no	yes
Mercury	7439-97-6	8.90E-01	5.10E-04	PRGs	above	yes	yes
Nickel	7440-02-0	1.32E+02	3.00E+01	PRGs	above	no	yes
Potassium	7440-09-7	3.30E+03	No ESV	No Source	no screening value	no	yes
Selenium	7782-49-2	2.00E+00	2.10E-01	PRGs	above	no	yes
Silver	7440-22-4	1.30E+00	2.00E+00	PRGs	below	no	no
Sodium	7440-23-5	1.37E+02	No ESV	No Source	no screening value	no	yes
Thallium	7440-28-0	6.20E-01	1.00E+00	PRGs	below	no	no
Vanadium	7440-62-2	4.07E+01	2.00E+00	PRGs	above	no	yes
Zinc	7440-66-6	7.37E+02	8.50E+00	PRGs	above	yes	yes
<i>Organics-Explosives</i>							
2-Amino-4,6-dinitrotoluene	35572-78-2	8.60E+00	No ESV	No Source	no screening value	no	yes
4-Amino-2,6-dinitrotoluene	19406-51-0	1.30E+00	No ESV	No Source	no screening value	No Kow	yes
1,3-Dinitrobenzene	99-65-0	3.90E+00	6.55E-01	ESL EPA Region 5 (2003)	above	no	yes
2,4-Dinitrotoluene	121-14-2	4.70E-02	1.28E+00	ESL EPA Region 5 (2003)	below	no	no
2,6-Dinitrotoluene	606-20-2	8.20E+00	3.28E-02	ESL EPA Region 5 (2003)	above	no	yes
HMX	2691-41-0	6.80E-01	No ESV	No Source	no screening value	No Kow	yes
Nitroglycerin	55-63-0	1.40E+02	No ESV	No Source	no screening value	no	yes
2-Nitrotoluene	88-72-2	7.00E-02	No ESV	No Source	no screening value	no	yes

Table M-8. Ramsdell Quarry Landfill Media Screening Table for Surface Soil (continued)

COPECs from Data and Media Evaluation	CAS Registry Number	Surface Soil Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum above or below the Preferred ESV?	PBT Compound? ^a	COPEC Retained ^b ?
RDX	121-82-4	3.50E-01	No ESV	No Source	no screening value	no	yes
2,4,6-Trinitrotoluene	121-14-2	4.00E+00	7.10E+01	PPL (SAIC 2002)	below	no	no
<i>Organics-Semivolatiles</i>							
2-Methylnaphthalene	91-57-6	6.10E+01	3.24E+00	ESL EPA Region 5 (2003)	above	no	yes
Acenaphthene	83-32-9	3.60E+02	2.00E+01	PRGs	above	yes	yes
Acenaphthylene	208-96-8	4.30E+00	6.82E+02	No Source	below	yes	yes
Anthracene	120-12-7	1.00E+03	1.48E+03	ESL EPA Region 5 (2003)	below	yes	yes
Benzo(a)anthracene	56-55-3	1.40E+03	5.21E+00	ESL EPA Region 5 (2003)	above	yes	yes
Benzo(a)pyrene	50-32-8	9.60E+02	1.52E+00	ESL EPA Region 5 (2003)	above	yes	yes
Benzo(b)fluoranthene	205-99-2	1.20E+03	5.98E+01	ESL EPA Region 5 (2003)	above	yes	yes
Benzo(g,h,i)perylene	191-24-2	6.50E+02	1.19E+02	ESL EPA Region 5 (2003)	above	yes	yes
Benzo(k)fluoranthene	207-08-9	5.80E+02	1.48E+02	ESL EPA Region 5 (2003)	above	yes	yes
Bis(2-ethylhexyl)phthalate	117-81-7	2.10E-01	9.26E-01	ESL EPA Region 5 (2003)	below	yes	yes
Carbazole	86-74-8	4.60E+02	No ESV	No Source	no screening value	yes	yes
Chrysene	218-01-9	1.00E+03	4.73E+00	ESL EPA Region 5 (2003)	above	yes	yes
Dibenzo(a,h)anthracene	53-70-3	1.80E+02	1.84E+01	ESL EPA Region 5 (2003)	above	yes	yes
Dibenzofuran	132-64-9	2.70E+02	No ESV	No Source	no screening value	yes	yes
Fluoranthene	206-44-0	3.10E+03	1.22E+02	ESL EPA Region 5 (2003)	above	yes	yes
Fluorene	86-73-7	4.50E+02	3.00E+01	PRGs	above	yes	yes
Indeno(1,2,3-cd)pyrene	193-39-5	6.30E+02	1.09E+02	ESL EPA Region 5 (2003)	above	yes	yes
Naphthalene	91-20-3	1.00E+02	1.00E+01	No Soil, only Solution, LOEC	above	yes	yes
Phenanthrene	85-01-8	3.20E+02	4.57E+01	ESL EPA Region 5 (2003)	above	yes	yes
Pyrene	129-00-0	3.00E+03	7.85E+01	ESL EPA Region 5 (2003)	above	yes	yes
<i>Organics-Volatiles</i>							
Acetone	67-64-1	9.80E-02	2.50E+00	ESL EPA Region 5 (2003)	below	no	no
2-Butanone	78-93-3	3.50E-02	8.96E+01	ESL EPA Region 5 (2003)	below	no	no
Methylene Chloride	75-09-2	7.30E-04	1.05E+00	ESL EPA Region 5 (2003)	below	no	no

Table M-8. Ramsdell Quarry Landfill Media Screening Table for Surface Soil (continued)

^aYes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, "no."

^bYes = Maximum detect > preferred ecological screening value or no ecological screening value, and/or PBT compound;

no = Maximum detect < preferred ecological screening value.

CAS = Chemical Abstracts Service.

COPEC = Constituent of potential ecological concern.

EDQL = Ecological data quality level.

EPA = U. S. Environmental Protection Agency.

ESV = Ecological screening value.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

Kow = Octanol-water partition coefficient.

LOEC = Lowest observed effect concentration.

PBT = Persistent, bioaccumulative, and toxic pollutants.

PPL = Plant protection level.

PRG = Preliminary remediation goal.

NOEC = No observed effect concentration.

RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table M-9. Ramsdell Quarry Landfill Media Screening Table for Sediment

COPECs from Data and Media Evaluation	CAS Registry Number	Sediment Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum above or below the Preferred ESV?	PBT Compound? ^a	COPEC Retained? ^b
<i>Inorganics</i>							
Arsenic	7440-38-2	3.25E+01	9.79E+00	MacDonald et al. (2000)	above	no	yes
Cadmium	7440-43-9	6.40E+00	9.90E-01	MacDonald et al. (2000)	above	yes	yes
Calcium	7440-70-2	4.69E+04	No ESV	No Source	no screening value	no	yes
Chromium	7440-47-3	3.09E+01	4.34E+01	MacDonald et al. (2000)	below	no	no
Cobalt	7440-48-4	3.36E+01	5.00E+01	ESL EPA Region 5 (2003)	below	no	no
Copper	7440-50-8	1.34E+02	3.16E+01	MacDonald et al. (2000)	above	no	yes
Cyanide	51-12-5	2.80E+00	1.00E-04	ESL EPA Region 5 (2003)	above	no	yes
Iron	7439-89-6	4.14E+04	No ESV	No Source	no screening value	no	yes
Lead	7439-92-1	8.72E+01	3.58E+01	MacDonald et al. (2000)	above	yes	yes
Magnesium	7439-95-4	5.80E+04	No ESV	No Source	no screening value	no	yes
Manganese	7439-96-5	2.59E+03	No ESV	No Source	no screening value	no	yes
Mercury	7439-97-6	1.80E-01	1.80E-01	MacDonald et al. (2000)	below	yes	yes
Nickel	7440-02-0	8.68E+01	2.27E+01	MacDonald et al. (2000)	above	no	yes
Zinc	7440-66-6	8.94E+02	1.21E+02	MacDonald et al. (2000)	above	yes	yes
<i>Organics-Explosives</i>							
2,4-Dinitrotoluene	121-14-2	6.40E-02	1.44E-02	ESL EPA Region 5 (2003)	above	no	yes
HMX	2691-41-0	1.20E-01	No ESV	No Source	no screening value	No Kow	yes
Nitrocellulose	9004-70-4	4.30E+00	No ESV	No Source	no screening value	No Kow	yes
3-Nitrotoluene	99-08-1	7.10E-02	No ESV	No Source	no screening value	no	yes
<i>Organics-Semivolatiles</i>							
Anthracene	78-93-3	1.80E-01	5.72E-02	MacDonald et al. (2000)	above	yes	yes
Benzo(a)anthracene	56-55-3	4.30E-01	1.08E-01	MacDonald et al. (2000)	above	yes	yes
Benzo(a)pyrene	50-32-8	3.40E-01	1.50E-01	MacDonald et al. (2000)	above	yes	yes
Benzo(b)fluoranthene	205-99-2	4.30E-01	1.04E+01	ESL EPA Region 5 (2003)	below	yes	yes
Benzo(g,h,i)perylene	191-24-2	1.70E-01	1.70E-01	ESL EPA Region 5 (2003)	below	yes	yes
Benzo(k)fluoranthene	207-08-9	1.80E-01	2.40E-01	ESL EPA Region 5 (2003)	below	yes	yes
Carbazole	86-74-8	1.30E-01	No ESV	No Source	no screening value	yes	yes
Chrysene	218-01-9	4.10E-01	1.66E-01	MacDonald et al. (2000)	above	yes	yes
Fluoranthene	206-44-0	1.00E+00	4.23E-01	MacDonald et al. (2000)	above	yes	yes
Indeno(1,2,3-cd)pyrene	193-39-5	2.00E-01	2.00E-01	ESL EPA Region 5 (2003)	below	yes	yes
Phenanthrene	85-01-8	7.00E-01	2.04E-01	MacDonald et al. (2000)	above	yes	yes

Table M-9. Ramsdell Quarry Landfill Media Screening Table for Sediment (continued)

COPECs from Data and Media Evaluation	CAS Registry Number	Sediment Maximum Concentrations (mg/kg)	Preferred ESV (mg/kg)	Reference	Is Maximum above or below the Preferred ESV?	PBT Compound?^a	COPEC Retained^b?
Pyrene	129-00-0	7.80E-01	1.95E-01	MacDonald et al. (2000)	above	yes	yes
Organics-Volatiles							
Acetone	67-64-1	3.40E-02	9.90E-03	ESL EPA Region 5 (2003)	above	no	yes
2-Butanone	78-93-3	1.00E-02	4.24E-02	ESL EPA Region 5 (2003)	below	no	no

^aYes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, "no."

^bYes = Maximum detect > preferred ecological screening value or no ecological screening value, and/or PBT compound;

no = Maximum detect < preferred ecological screening value.

CAS = Chemical Abstracts Service.

COPEC = Constituent of potential ecological concern.

EPA = U. S. Environmental Protection Agency.

ESL = Ecological screening level.

ESV = Ecological screening value.

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.

PBT = Persistent, bioaccumulative, and toxic pollutants.

Table M-10. Ramsdell Quarry Landfill Media Screening Table for Surface Water

Inputted COPECs from Data Evaluation Screen	CAS Registry Number	Surface Water Average Concentrations (µg/L)	OAC WQC (µg/L)	Reference	Is Maximum above or below the OAC WQC?	PBT Compound? ^a	COPEC Retained ^b ?
<i>Inorganics</i>							
Aluminum	7429-90-5	1.11E+04	No WQC	no source	no screening value	no	yes
Arsenic	7440-38-2	1.31E+01	1.50E+02	Ohio Administrative Code	below	no	no
Barium	7440-39-3	1.33E+02	2.20E+02	Ohio Administrative Code	below	no	no
Cadmium	7440-43-9	2.34E+00	2.50E+00	Ohio Administrative Code	below	yes	yes
Calcium	7440-70-2	4.28E+04	No WQC	no source	no screening value	no	yes
Chloride	16887-00-6	1.63E+03	No WQC	no source	no screening value	no	yes
Chromium	7440-47-3	1.68E+01	8.60E+01	Ohio Administrative Code	below	no	no
Cobalt	7440-48-4	2.59E+01	2.40E+01	Ohio Administrative Code	above	no	yes
Copper	7440-50-8	3.70E+01	9.30E+00	Ohio Administrative Code	above	no	yes
Iron	7439-89-6	2.37E+04	No WQC	no source	no screening value	no	yes
Lead	7439-92-1	3.31E+01	6.40E+00	Ohio Administrative Code	above	yes	yes
Magnesium	7439-95-4	5.76E+04	No WQC	no source	no screening value	no	yes
Manganese	7439-96-5	1.61E+03	No WQC	no source	no screening value	no	yes
Mercury	7439-97-6	1.27E-01	9.10E-01	Ohio Administrative Code	below	yes	yes
Nickel	7440-02-0	3.26E+01	5.20E+01	Ohio Administrative Code	below	no	no
Nitrate/Nitrite		1.67E+02	No WQC	no source	no screening value	no	yes
Potassium	9/7/7440	4.32E+03	No WQC	no source	no screening value	no	yes
Selenium	7782-49-2	2.73E+00	5.00E+00	Ohio Administrative Code	below	no	no
Sulfate	14808-79-8	2.50E+05	No WQC	no source	no screening value	no	yes
Thallium	7440-28-0	1.20E+00	1.70E+01	Ohio Administrative Code	below	no	no
Vanadium	7440-62-2	3.49E+01	4.40E+01	Ohio Administrative Code	below	no	no
Zinc	7440-66-6	3.11E+02	1.20E+02	Ohio Administrative Code	above	yes	yes
<i>Organics-Explosives</i>							
4-Nitrotoluene	99-99-0	1.64E-01	4.60E+01	Ohio Administrative Code	below	no	no
<i>Organics-Pesticides</i>							
Aldrin	309-00-2	2.07E-02	No WQC	no source	no screening value	yes	yes

Table M-10. Ramsdell Quarry Landfill Media Screening Table for Surface Water (continued)

Inputted COPECs from Data Evaluation Screen	CAS Registry Number	Surface Water Average Concentrations (µg/L)	OAC WQC (µg/L)	Reference	Is Maximum above or below the OAC WQC?	PBT Compound? ^a	COPEC Retained ^b ?
<i>Organics-Volatiles</i>							
Acetone	67-64-1	5.14E+00	No WQC	no source	no screening value	no	yes
Methylene Chloride	75-15-0	3.56E+00	1.90E+03	Ohio Administrative Code	below	no	no
Tetrachloroethene	121-18-4	2.29E+00	5.30E+01	Ohio Administrative Code	below	no	no

^aYes = cadmium, mercury, lead, and zinc are inorganic PBTs; or log Kow is 3 or greater for organics; else, "no."

^bYes = Maximum detect > WQC or no WQC, and/or PBT compound;

no = Maximum detect < WQC.

Note: WQC for chromium and zinc are hardness-dependent and based on hardness of 100 mg/L as CaCO₃.

CAS = Chemical Abstracts Service.

COPEC = Constituent of potential ecological concern.

Kow = Octanol-water partition coefficient.

OAC = Ohio Administrative Code.

PBT = Persistent, bioaccumulative, and toxic pollutants (If PBT, analyte is retained even if concentration is below the ecological screening value).

WQC = Water quality criteria.

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