

The following short form 404(b)(1) evaluation follows the format designed by the Office of the Chief of Engineers, (OCE). As a measure to avoid unnecessary paperwork and to streamline regulation procedures while fulfilling the spirit and intent of environmental statutes, New Orleans District is using this format for all proposed project elements requiring 404 evaluation, but involving no adverse significant impacts.

PROJECT TITLE. IER #13, West Bank Vicinity Hero Canal Levee and Eastern Tie-In, Plaquemines Parishes, Louisiana

PROJECT DESCRIPTION.

Reach 1 - North of the Hero Canal (alternative alignment 1, proposed action)

The proposed action for the existing levee north of the Hero Canal (Reach 1) is an earthen levee enlargement on the protected side. Only one action alternative has been considered in detail for bringing the existing levee north of the Hero Canal up to the standard of a 100-year level of risk reduction. The alternatives, flood side shift or straddle alignment, were determined to be unreasonable due to navigation and environmental impacts to the Hero Canal channel and adjacent bottomland hardwood (BLH) system on the southern side of the Hero Canal (figure 5A, 5B). This proposed action would follow the approved alignments as described in an Environmental Impact Statement (USACE 1994) (figure 5C).

For Reach 2 (figure 5B sheet 1, figure 5B sheet 2), the proposed action starts at the eastern end of the proposed Reach 1 levee enlargement on the northern side of the Hero Canal and crosses the Hero Canal via a new closure structure and follows the previously authorized levee alignment south before turning east, generally following along the Industrial Pipe Inc, southern boundary until it joins with an existing Plaquemines Parish non-Federal levee. A positive barrier system would be installed on the protected side of the levee to clearly mark a no work area in order to prevent future expansions of the landfill within the no work area. The proposed levee would again proceed south and upon reaching the point where the existing non-Federal levee turns west, the proposed levee would instead turn east towards LA 23. Floodgate structures would be constructed across LA 23 and the existing New Orleans and Gulf Coast Railway Company Railroad's (NOGCR) railroad track. These floodgate structures would transition to an earthen levee that would then tie into the Mississippi River Levee (MRL) section. An emergency bypass road would be built to allow for authorized vehicles to bypass the LA 23 floodgates when they are closed.

The option to build a floodwall and bridge across Hwy 23 was investigated, but due to public concerns for socioeconomic impacts and safety the bridge option was not further developed. Two new pump stations along reach 2 are proposed to allow for the expected drainage of storm water confined by the levees.

The 100-year elevation for all levees, floodwalls, and floodgates would be approximately 14 NAVD88 in reach 1 and 14 - 16 feet NAVD88 in Reach 2. The proposed action for Reaches 1 and 2 are described in greater detail below. These reaches are arranged spatially from north to south as the alternative runs from the GIWW toward Oakville to the existing MRL.

The proposed action for Reach 1 is a protected-side shift, with all toe-to-toe growth occurring on the protected side of the existing levee (figure 5B sheet 1)(diagram 1). This approach would utilize undeveloped land on the protected side and construction would incur only minor environmental impact. Additional actions to meet the newest design criteria would currently require the relocation of one residential structure.

The existing Hero Canal levee consists of a 10-foot wide crown with 1V:3H side slopes on the flood side, 1V:4H on protected side, and is below the currently authorized elevation of 10.5 feet NGVD. The proposed action consists of raising the top of the levee elevation to a 100-year elevation (+14 NAVD88), with a 10-foot wide crown, 1V:3H side slopes on flood side and 1V:4H on the protected side, and landside stability berms at varying elevations and slopes. All improvements would be constructed on the protected side. Approximately 12,000 LF of levee would be improved in this reach of the project (see diagram 1).

Access for construction of Reach 1 of the proposed action would be provided via staging areas and access roads in between the existing levee and Walker Road. These staging areas and access roads would be located in previously disturbed and cleared lands or existing public roads. Improvements to gravel or dirt roads may be necessary.

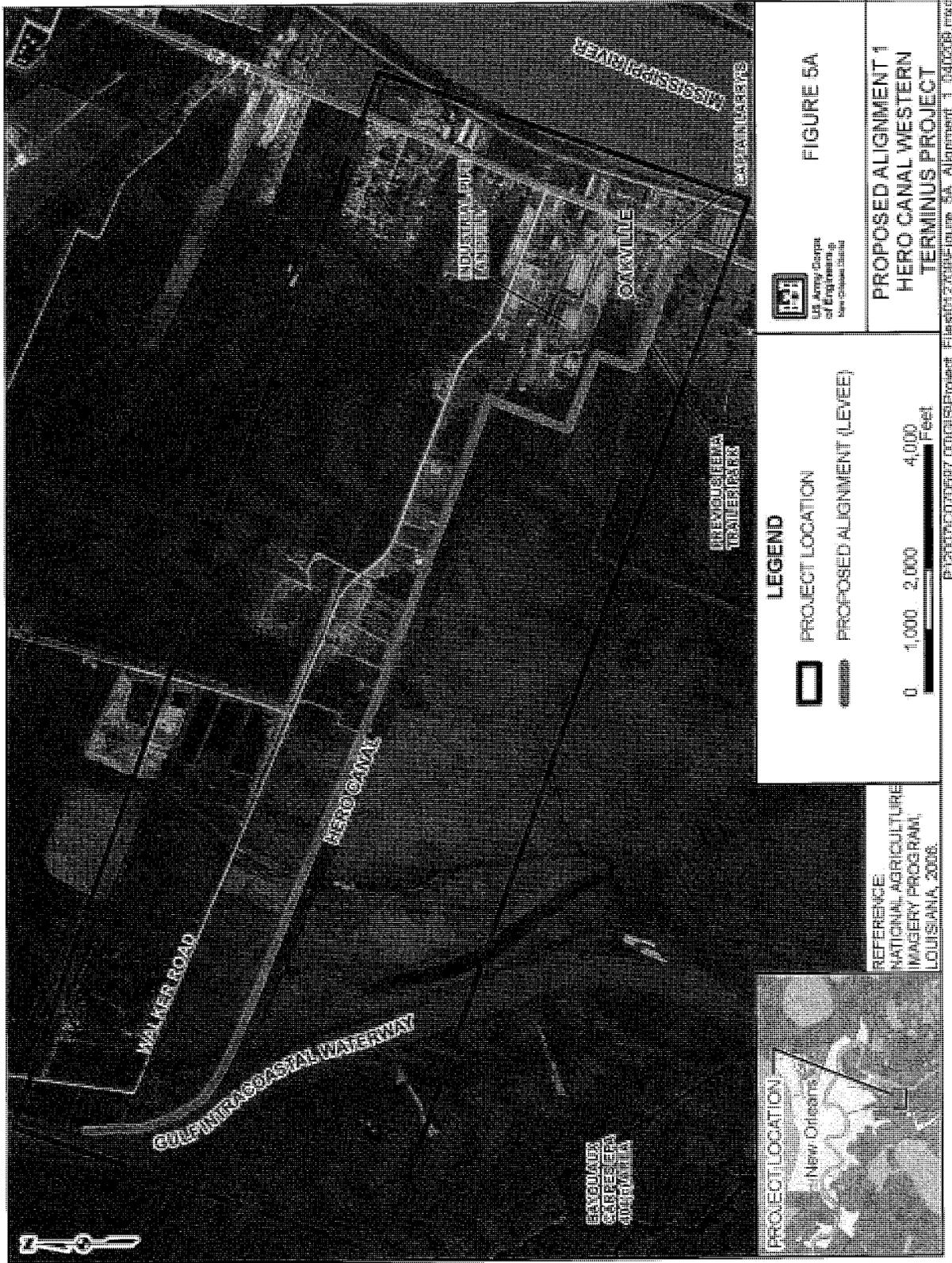


Figure 5A: Proposed alternative alignment 1

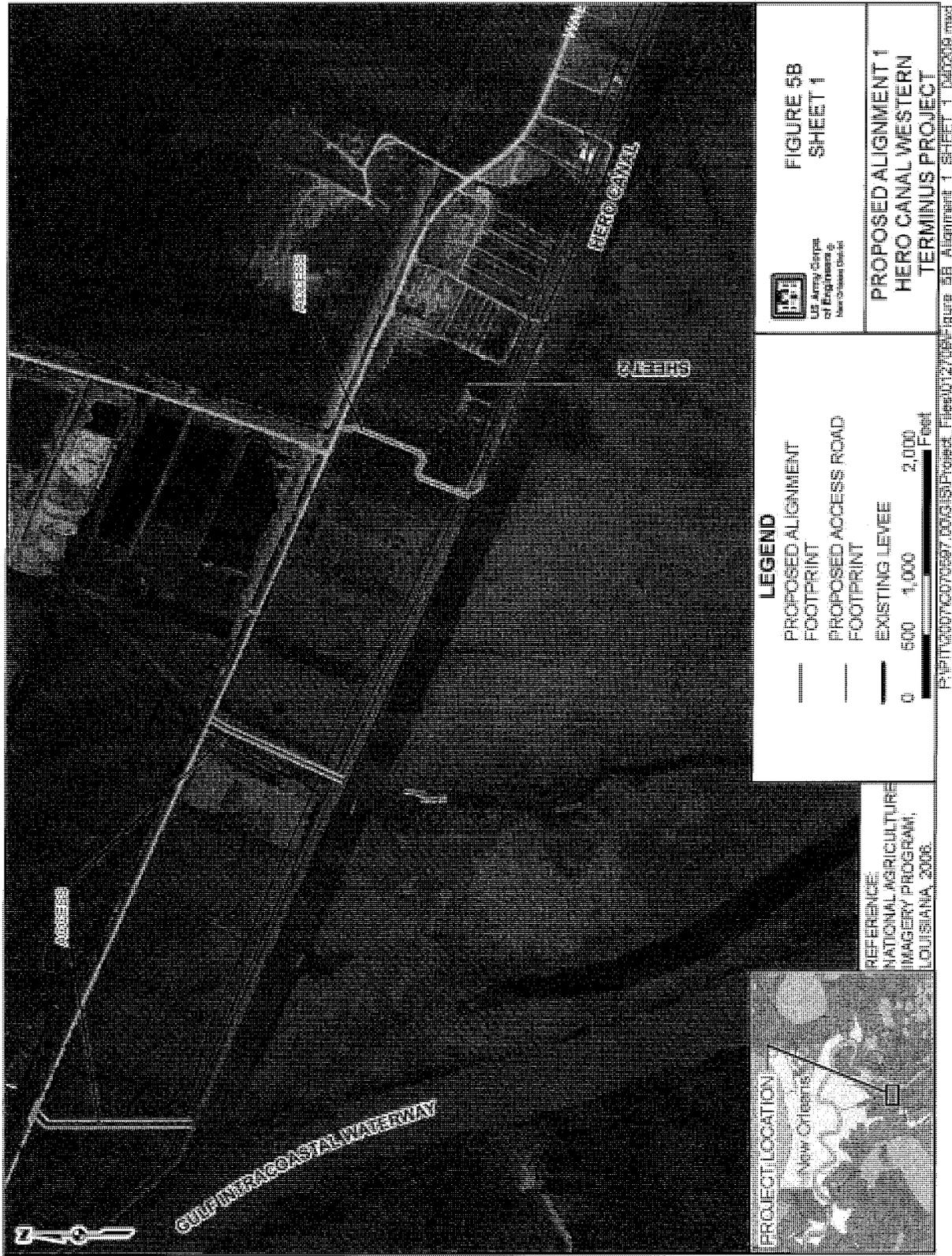


Figure 5B Sheet 1: Proposed alternative alignment 1



Figure 5B Sheet 2: Proposed alternative alignment 1

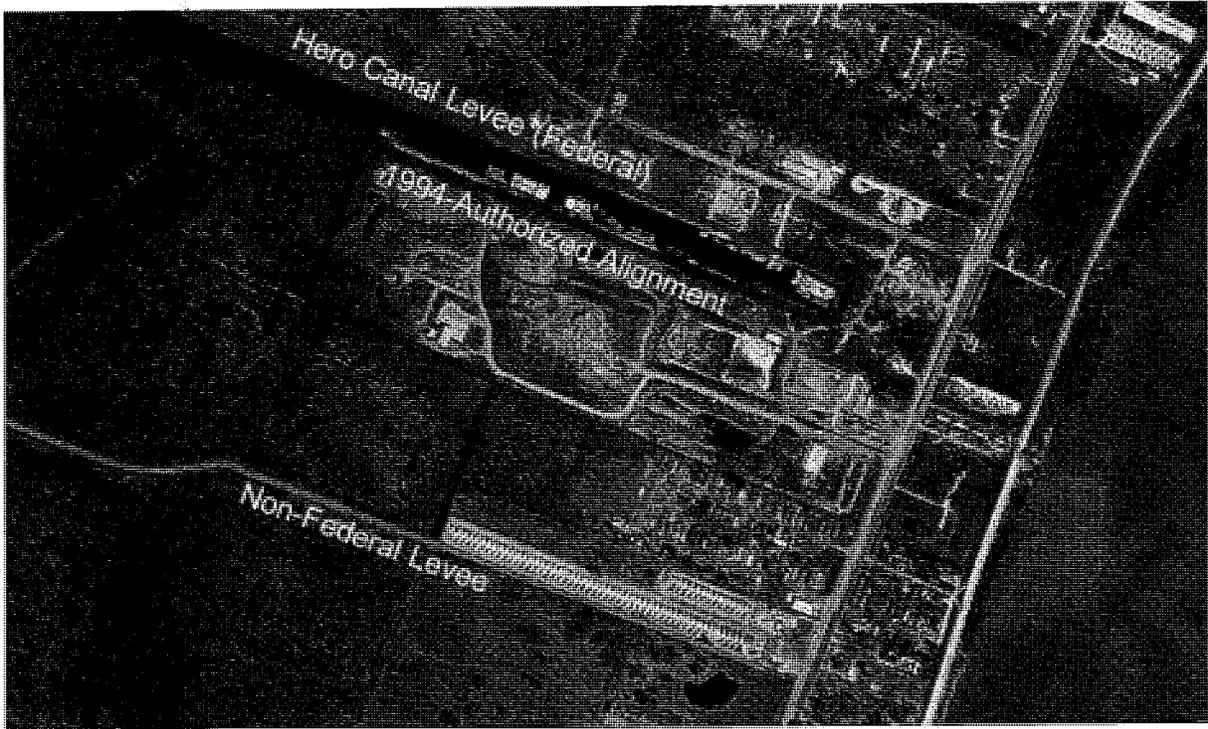


Figure 5C: 1994 previously authorized alignment

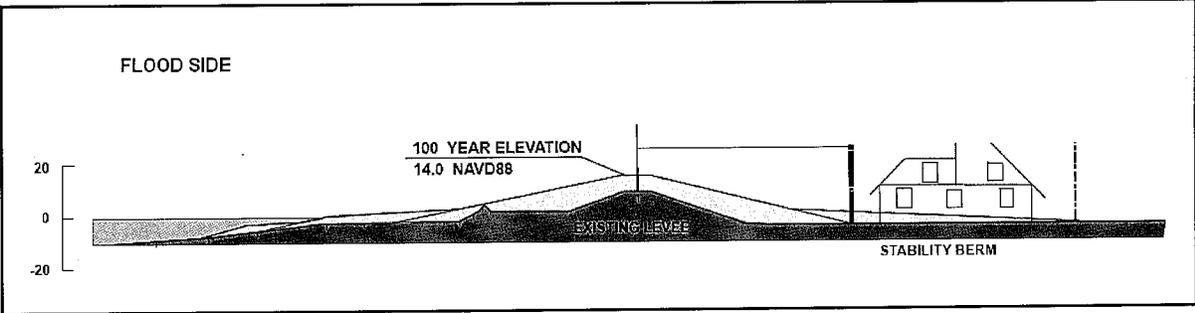


Diagram 1: Earthen levee construction diagram

### Reach 2 - Crossing the Hero Canal (alternative 1, proposed action)

For Reach 2 near Oakville (figure 5B sheet 2), the proposed action begins at the Hero Canal levee just west of the Industrial Pipe Inc. landfill and proceeds southward across the Hero Canal. A new 56-foot wide stoplog closure structure with T-wall transitions would connect the existing Hero Canal levee on the north side to a new levee on the south side of the canal. A new 70 cfs pump station would be constructed at the closure structure location to evacuate storm water intercepted by the levees and closure structure. The top of the proposed closure structure would be at an elevation of 15 feet to 16 feet, with the bottom at an elevation of -10 feet to -12 feet. The structure would be a stoplog gate with a crane mounted in place to allow for installing the stoplogs and needles as needed for maintenance and or during a storm event.

During construction the stoplog closure would be built in phases, allowing continuous passage of vessels in the canal. It may be necessary to dredge reaches of the Hero Canal in the vicinity of the proposed gate to establish the designed depth for vessel passage. Dredged materials would be used, if suitable, as borrow or, if not, disposed of in the designated disposal areas identified for the WBV HSDRRS projects. This activity would increase the potential for the release of suspended sediments into the water column.

The stoplog closure would allow for navigation throughout the canal; however, vessels exceeding 52 feet in width would not be able to pass through the stoplog closure. The enclosed area behind the stoplog closure would have a small pump station without any valves to allow water levels to equalize. The stoplog closure would be opened only when flood waters recede and the water level is approximately equal on both sides of the gate.

The structure foundations would be slabs founded on steel H-piles due to the very weak soil in the project area. Both vertical and battered piles would be used to resist the water pressure from either the direct (flooded) side or the reverse side. The surrounding walls would be cantilevered. There would be a walkway on top of the walls.

Two abandoned barges are located in Hero Canal in the vicinity of the project footprint (figure 5B). In order for construction of the proposed action to proceed, the barges would have to be removed.

### Reach 2 - South of the Hero Canal Crossing (alternative 1, proposed action)

In 1994, the USACE approved the construction of a Federal levee south of the Hero Canal (figure 5C). The majority of the levee alignment for the proposed action follows the previously approved alignment, but due to improved post Hurricane Katrina design standards the levee footprint and elevation is wider and higher than what is discussed in the 1994 EIS. A new earthen levee to elevation 14 feet would continue south approximately 1,400 LF from the Hero Canal closure structure, and then turn east along the south side of the landfill for a distance of approximately 1,360 LF where it would intersect with a non-Federal parish levee.

For levee designs south of the Hero Canal, various construction methods were considered to address levee stability, including unreinforced levees with and without stability berms, levees using deep soil mixing, and levees with geotextile-reinforcement and stability berms. Generally the proposed levee section would have a crown approximately 10 feet wide with slopes of 1V:4H. If stability berms were added, they would extend outward on 1V:20H or shallower slopes in order to meet the required design safety factors. Geotextile reinforced earthen levee would be used when possible to reduce the environmental impact.

### Reach 2 - Non-Federal Levee Improvements (alternative 1, proposed action)

Beginning at the intersection of the non-Federal levee with the portion of Reach 2, the proposed action continues south along the non-Federal levee alignment for approximately 400 feet. Improvements to the non-Federal levee in this area would impact surrounding BLH. Any existing portions of the non-Federal levee would be razed to the surrounding grade, with initial federal levee construction straddling the non-Federal levee centerline. The Federal levee would be constructed to the HSDRRS authorized design elevation of 14 feet.

Reach 2 - Pump Station, South Levee, and LA 23 Crossing (alternative 1, proposed action)

In this portion of Reach 2 under the proposed action, the levee alignment continues south from the landfill for approximately 400 LF then turns eastward. At this location, a new 150 cfs pump station would be required to discharge intercepted storm water. This pump station would discharge into the marsh. A sluice gate at this location would allow rain to drain during non-hurricane events and would be closed during storm events. The Reach 2, proposed action levee alignment in this area proceeds for a distance of approximately 1,773 LF running through an area previously utilized as a FEMA trailer park. From the site of the former FEMA trailer park, a T-wall (diagram 2) alignment runs south and east for approximately 485 feet. The T-wall alignment connects with new vehicular gate(s) across Highway 23 then ties into a railroad gate across the New Orleans and Gulf Coast Railway Company railroad tracks. The T-wall along the Reach 2, proposed action alignment would transition to an earthen levee for approximately 551 LF and tie into the Mississippi River Levee. The T-wall, vehicular floodgate(s), and railroad floodgate would be constructed to elevation 14 feet, which includes 1.5 feet of structural superiority.

During a storm event, the vehicular and railroad gates would be closed. Vehicular traffic would be detoured to an emergency bypass roadway. Such measures are necessary since Highway 23 is the primary vehicular access to and from lower Plaquemines Parish, and is a designated hurricane evacuation route. The emergency bypass roadway would begin just south of the proposed vehicular gate location, proceed east along an existing private road, and ramp up the Mississippi River Levee. The bypass road is approximately 640 feet long and the ramp height would be approximately 15 feet to 20 feet. At this point, the bypass road would continue north on top of the Mississippi River Levee for approximately 915 LF. The bypass road continues down a ramp off of the Mississippi River Levee to East Oakville St. East Oakville Street connects to Highway 23. The bypass road would be hardened and designed for emergency and other authorized vehicular traffic.

Reach 2 - Levee from the Railroad to the MRL (alternative alignment 1, proposed action)

New earthen levee would be built from the railroad crossing to the MRL, a distance of approximately 580 LF. This portion of reach 2, the proposed action would be built to elevation 14 feet.

See table 1 for an overall summary of the project features required by the proposed action.

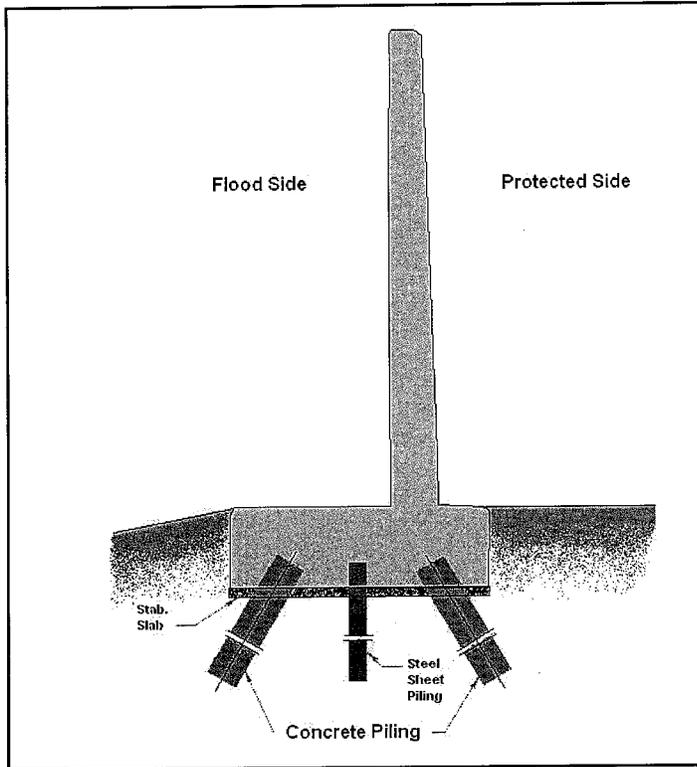
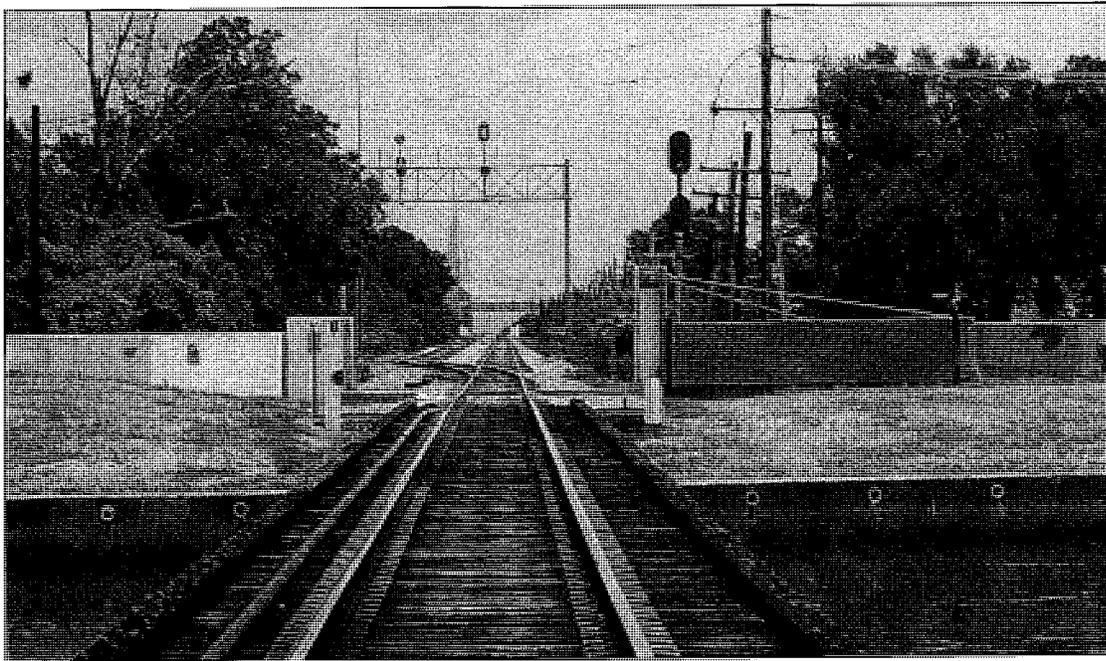


Diagram 2: Typical T-wall diagram



Photograph 3: Typical railroad gate (shown open)

Table 1: Summary of Project Features

Alternative 1 – Proposed Action	2057 Design Elevations* (ft)	Approximate Length (LF)	Estimated New ROW Needed (acres)	Estimated Existing ROW Utilized (acres)	Descriptions
Hero Canal levee (Reach 1)	14	12,250 LF Levee	41	49	Existing Levee Enlargement
Hero Canal Crossing (Reach 2)	16	56-foot wide Stoplog Closure Structure (70 cfs Pump Station), 400 – 500 LF Floodwall	2.5	0	Stoplog Closure Structure, Pump Station Floodwalls, Crane Platform
Levee (Reach 2)	14	3,200 LF Levee	54.9	0	New Levee in BLHs
Pump Station and Levee (Reach 2)	14	1750-1850 LF Levee, (150 cfs Pump Station)	6.7	0	New Levee along non-Federal Levee alignment, Tie-ins, New Pump Station
Highway 23 Crossing (Reach 2)	14	400-800 LF Vehicular Gate(s) with T-wall and Levee tie ins	1	0	New T-wall/Levee/ Vehicular Gate(s)
NOGCR Crossing (Reach 2)	14	T-wall transitions and Railroad Gate	0.5	0	Railroad Gate/Transition T-wall
RR to MRL Levee	14	500-600 LF Levee	1.8	0	New Levee
Bypass Road	N/A	2,250 LF	0.22	N/A	For Emergency and Authorized Vehicles

\* Includes initial HSDRRS elevation plus likely settlement to the 2057 design year.

#### The Proposed Action Design and Construction Considerations

Overview of Design Consideration: For the proposed action, all flood protection structures would be built to the HSDRRS elevation with a design year of 2057 (calculated to provide a 100-year level of risk reduction). Levees would be constructed in lifts plus some overbuild for initial settlement. Floodwalls would be constructed to 2057 elevation and some hardened structures (like floodgates) would be constructed to the 2057 elevation plus 1.5 feet of structural superiority.

Construction Duration and Materials: Construction durations for the proposed action are estimated as follows: approximately 0.8 years for Highway 23/NOGCR crossing, 1.4 years for levee construction, and 1.4 years for Hero Canal closure structure. These estimates include construction based on initial build (2011), secondary lift and final lift construction to the 2057 design year (providing 100-year level of risk reduction).

Table 2 lists estimated construction material data for the proposed action. Over one million cubic yards of fill material would be needed for the levee work alone.

Table 2: Proposed Action Estimated Construction Materials

Reach 1 North of the Hero Canal		Reach 2 South of the Hero Canal	
Material	Quantity	Material	Quantity
Fill	665,000 cy	Soil	28,000 cy
Surfacing, Crushed Stone	525 cy	Sand	92,000 cy
		Fill	600,000 cy
Reinforced Geotextile	19,675 sy	Reinforced Concrete	5,000 cy
Silt Fence	20,000 LF	Sheet Pile	59,000 sf

Note: (cy – cubic yard, sf – square feet, sy – square yard, LF – linear feet).

\*Approximations subject to change as engineering designs progress.

#### Other Necessary Actions

##### Armoring

Armoring may be required at a number of locations throughout the HSDRRS. These locations may include: transition points (where levees transition into any hardened features such as other capped levees, floodwalls, and pump stations), floodwall protected side slopes, pipeline crossings, and earthen levees that are exposed to excessive wave overtopping during a 500-year hurricane event. The specific locations have not yet been determined. Armoring types vary, but the following materials are commonly used, and listed below in order of hardness:

- ACB – Articulated concrete blocks.
- ACB/TRM – Articulated concrete blocks/turf reinforced mattress.
- TRM – Turf reinforcement mattress.
- TRM/Grass - Turf reinforcement mattress which could allow a reduction to grass.
- Well maintained grass cover.

##### Relocations

As needed, utilities would be relocated to cross the project area in accordance with existing standards. Disruptions of service would be kept to a minimum.

##### Operation and Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R)

In addition to initial construction activity, the proposed action includes all of the routine Operation and Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) activities required to keep this element of the HSDRRS at full operational capability. OMRR&R activities include mowing, re-paving, repairs to the structures, in-kind replacement, etc., to be provided by Coastal Protection and Restoration Authority of Louisiana (CPRA).

OMRR&R of the HSDRRS would have minimal impact on the significant resources in the area. Levees would be periodically mowed and herbicides might be used (on a very limited basis) around control structures. The floodwalls and levees would be annually inspected and repaired, as needed, to maintain design standards. This includes adding subsequent lifts of earthen material to levees in order to address subsidence. The stoplog closure would require periodic equipment maintenance and the crane would be replaced after 25 years. All activities would be conducted within the

established ROW and within previously disturbed areas. Temporary and localized maintenance-related effects (e.g., noise, air emissions, increased traffic, temporary erosion and sedimentation, etc.) might occur during OMRR&R work.

Temporary Flood Risk Reduction Contractually Required During Construction

As part of the construction process, temporary flood risk reduction measures would be required whenever a reach of the existing floodwall or levee is degraded until the replacement floodwall or levee was sufficiently completed to withstand floodwaters. Sufficiently completed is defined as the time when the concrete in the replacement floodwall reaches a compressive strength of 4,000 pounds per square inch (psi) and all earthwork for the floodwall/levee replacement has been completed. Typically, the contractor would provide temporary flood risk reduction through installation of a cofferdam that would not diminish the flood protection of the existing facility or the facility under construction. The contractor would maintain all temporary flood control measures, including maintaining and operating drainage facilities. The contractor would provide, maintain, and operate pumps of adequate capacities, for the removal of the water that could accumulate in excavations within the areas protected by the temporary flood risk reduction facilities during construction. All temporary pumps would discharge to the project's flood side. The contractor would remove all temporary flood control structures and incidental features when no longer required. All material used in providing temporary flood control structures, and any debris generated during their removal would be removed from the job site prior to completion.

Prior to beginning work, the contractor would submit for approval his proposed plan to accomplish the specified temporary flood risk reduction. The submittal would be in accordance with Section 01330, "Submittal Procedures" and would include, but not necessarily be limited to the following:

1. Design and layout of temporary flood risk reduction works,
2. Methods and duration of maintenance of temporary flood risk reduction,
3. Methods, sequence, equipment and materials to be used for draining of excavations for floodwall demolition and floodwall replacement, and
4. Method and sequence of removal, including disposal of materials.

These measures provide assurance that risk reduction would be maintained during the construction process even in the event of significant flooding.

Typical equipment utilized to accomplish the work outlined above would include water trucks, dump trucks, hole cleaners/trenchers, bore/drill rigs, cement and mortar mixers, cranes, graders, tractors/loaders/backhoes, bull dozers, front end loaders, aerial lifts, pile drivers, fork lift, generators and, marine vessels and barges.

1. Review of Compliance (§230.10 (a)-(d)).

Preliminary<sup>1</sup>

Final<sup>2</sup>

A review of this project indicates that:

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative);

YES  NO\*

YES  NO

b. The activity does not appear to: (1) violate applicable state water quality standards or effluent

standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and (3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);

YES    NO\*            YES    NO

c. The activity would not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2);

YES    NO\*     YES    NO

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).

YES    NO\*     YES    NO

2. Technical Evaluation Factors (Subparts C-F).

N/A      Not Significant      Significant\*

a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).

- (1) Substrate impacts.
- (2) Suspended particulates/turbidity impacts.
- (3) Water column impacts.
- (4) Alteration of current patterns and water circulation.
- (5) Alteration of normal water fluctuations/hydroperiod.
- (6) Alteration of salinity gradients.

		X
	X	
	X	
	X	
	X	
	X	

b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).

- (1) Effect on threatened/endangered species and their habitat.
- (2) Effect on the aquatic food web.
- (3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).

X		
	X	
	X	

c. Special Aquatic Sites (Subpart E).

- (1) Sanctuaries and refuges.
- (2) Wetlands.
- (3) Mud flats.
- (4) Vegetated shallows.
- (5) Coral reefs.
- (6) Riffle and pool complexes.

X		
		X
X		
X		
X		
X		

d. Human Use Characteristics (Subpart F).

- (1) Effects on municipal and private water supplies.
- (2) Recreational and commercial fisheries impacts.
- (3) Effects on water-related recreation.
- (4) Esthetic impacts.
- (5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.

X		
	X	
X		
	X	
X		

Remarks. Where a check is placed under the significant category, the preparer has attached explanation. Implementation of the preferred alternative would directly impact 19 and 13 acres of wet and hydrologically-altered (i.e., non-wet) bottomland hardwood habitat, respectively. Approximately 39 acres of swamp habitat would also be directly impacted. According to the USFWS Habitat Assessment Methodology (HAM) and Wetland Value Assessment (WVA) analyses, the preferred alternative would result in the direct loss of 18.39 and 28.27 average annual habitat units (AAHUs), of bottomland hardwood forest and swamp, respectively. Mitigation for unavoidable losses of wet and non-wet bottomland hardwood and swamp habitat caused by project features will be evaluated through a complementary comprehensive mitigation IER.

3. Evaluation of Dredged or Fill Material (Subpart G).<sup>3</sup>

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

(1) Physical characteristics .....	<u>  X  </u>
(2) Hydrography in relation to known or anticipated sources of contaminants .....	<u>  X  </u>
(3) Results from previous testing of the material or similar material in the vicinity of the project .....	<u>  X  </u>
(4) Known, significant sources of persistent pesticides from land runoff or percolation .....	_____
(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances .....	<u>  X  </u>
(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources .....	<u>  X  </u>
(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities .....	<u>  X  </u>
(8) Other sources (specify) .....	_____

Appropriate references: See attached memo

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.

YES
                 
 NO\*

4. Disposal Site Delineation (§230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

(1) Depth of water at disposal site .....	<u>  X  </u>
(2) Current velocity, direction, and variability at disposal site .....	<u>  X  </u>
(3) Degree of turbulence .....	<u>  X  </u>
(4) Water column stratification .....	<u>  X  </u>
(5) Discharge vessel speed and direction .....	_____
(6) Rate of discharge .....	_____
(7) Dredged material characteristics (constituents, amount, and type of material, settling velocities) .....	<u>  X  </u>
(8) Number of discharges per unit of time .....	_____
(9) Other factors affecting rates and patterns of mixing (specify) .....	_____

Appropriate references: See attached memo

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES
                 
 NO\*

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of the recommendations of §230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES       NO\*

Actions taken: See attached memo

6. Factual Determination (§230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

- a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above).      YES  NO\*
- b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).       YES    NO\*
- c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)       YES    NO\*
- d. Contaminant availability (review sections 2a, 3, and 4).       YES    NO\*
- e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).       YES    NO\*
- f. Disposal site (review sections 2, 4, and 5).       YES    NO\*
- g. Cumulative impact on the aquatic ecosystem.      YES  NO\*
- h. Secondary impacts on the aquatic ecosystem.       YES    NO\*

\*A negative, significant, or unknown response indicates that the project may not be in compliance with the Section 404(b)(1) Guidelines.

<sup>1</sup>Negative responses to three or more of the compliance criteria at this stage indicates that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2a-d, before completing the final review of compliance.

<sup>2</sup>Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.

<sup>3</sup>If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility.

a. This evaluation was prepared by:

Name: Eric Glisch  
Position: Environmental Engineer  
Organization: U.S. Army Corps of Engineers, New Orleans District  
Date: 2/17/09

Name: Lissa Lyncker for Getrisc Coulson  
Position: Environment Manager  
Organization: U.S. Army Corps of Engineers, New Orleans District  
Date: 12/4/2009

b. This evaluation was reviewed by:

Name: Rodney Mach  
Position: Environmental Engineer  
Organization: U.S. Army Corps of Engineers, New Orleans District  
Date: 2/17/09

Name: Joan Exnicios  
Position: Chief, Environmental Planning and Compliance Branch  
Organization: US Army Corps of Engineers, New Orleans District  
Date: 12/4/2009

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines ..... YES X

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions ..... YES   

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

- (1) There is a less damaging practicable alternative ..... NO
- (2) The proposed discharge will result in significant degradation of the aquatic ecosystem ..... NO
- (3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem ..... NO

Date: 12/4/09

  
Joan Exnicios  
Chief, Environmental Planning and Compliance Branch



**US Army Corps of Engineers,  
New Orleans District**

To: File  
 From: Eric Glisch, CEMVN-ED-HN  
 CC:  
 Date: 17 February 2009  
 Re: Individual Environmental Report #13, West Bank Vicinity Hero Canal Levee and Eastern Terminus, Plaquemines Parishes, Louisiana

A short form 404(b)(1) evaluation of the Federal actions for Individual Environmental Report (IER) #13 was performed by ED-HN for water quality impacts. The following summarizes the review process and comments noted:

**I. Subpart B – Review of Compliance**

- a. 230.10 (b) (1): After consideration of disposal site dilution and dispersion, there are no expected violations of State water quality from the proposed Federal actions.

**II. Subpart C – Physical and Chemical Characteristics of the Aquatic Ecosystem**

- a. 230.20 - *Substrate Impacts*: Placement of fill material (including sediment and soil excavated from Hero Canal during construction of the proposed gate, as well as off-site borrow material) in conjunction with the proposed action and alternatives would principally impact wetland areas, and in many cases would result in the conversion of wetlands to terrestrial habitat. Table 2 on the following page displays the impacts on wetlands as a result of each alternative alignment.

Table 2 – Wetland Impacts Delineated by Project Feature

Alternative	Tidal BLH wetland impacts (acres)	Impounded BLH wetland impacts (acres)	Swamp wetland impacts (acres)	Total wetland impacts (acres)	AAHUs*
1	19	13	39	71**	46.67
3	26	21	31	78	47.51
5	1	4	40	45	26.90

Pertinent to substrate impacts for the Proposed Action, Section 230.1(d) of the 404(b)(1) guidelines states that *“From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by these guidelines. The guiding principle should be that*

*degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources.” (USEPA 2008) According to the 404(b)(1) guidelines, then, the construction of several of the project features included in the proposed action would therefore result in the most severe environmental impacts covered by these guidelines.*

In the case that a proposed project will result in unavoidable impacts to waters of the U.S., the 404(b)(1) guidelines emphasize the development or employment of a practicable alternative that will minimize impacts. Sections 230.10(a)(1)-230.10(a)(2) of the guidelines state that:

*(a) Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse consequences.*

*(1) For the purpose of this requirement, practicable alternatives include, but are not limited to:*

*(i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States of ocean waters;*

*(ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters*

*(2) An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes.*

Additionally, section 230.10(3) emphasizes the importance of minimizing impacts to special aquatic sites (which includes wetlands):

*In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.*

The guidelines clearly emphasize that no discharge of dredged or fill material into the aquatic environment—and especially into a special aquatic site, such as a wetland—shall be permitted if there is a practicable alternative predicted to result in significantly less environmental impact, and that an alternative is practicable if it is still within reasonable cost, is considered to be technologically feasible, and is logistically plausible.

The proposed action was selected for construction because it meets these requirements. This alternative simultaneously (1) minimizes impacts to residential, commercial, and industrial properties with no low income or minority issues; (2) requires the least residential displacements along with Alternative 3; (3) has less impact to pristine Cypress swamp wetlands than Alternative 3; (4) protects the existing landfill from major flooding and possible washout; and (5) minimizes overall environmental impacts as compared to other alternatives.

The proposed action would provide the best combination of least environmental impact, adequate construction timetable, and risk reduction to Oakville and the Industrial Pipe landfill. Though this alignment would generate substantial wetland impacts, these are on the edge of a cypress swamp and would not fragment vegetation or disrupt hydrology. Construction methods minimizing wetland impacts would be utilized to the maximum extent possible.

When Alignment 3 was analyzed for environmental impacts, it did not compare favorably with the proposed action alignment. Alternative 3 was added to the project and analyzed

in detail at the landfill property owner's request in order to protect future landfill expansion. It was not selected as the proposed action because of impacts to wetlands and wildlife. This alignment would impact pristine areas and would have greater indirect effects to adjacent habitat through hydrological isolation and increased habitat fragmentation. Also, it was not selected based on engineering considerations including construction difficulty and potential settling/subsidence issues.

The Alternative 5 alignment was not selected because it would dislocate 16 or more residences along West Oakville Street in Oakville (and all residents dislocated would likely be part of low income or minority groups), and because it would impact the Oakville community park. Other negative impacts for Alignment 5 include affecting operation of the landfill during the construction period; unknown underground conditions which could present challenges for construction; placing the alignment through an active industrial facility, which incurs risks from vehicular and equipment contact; and subsurface impacts which could occur from surcharging due to landfill stockpiling.

Oakville is a community established shortly after the Civil War by freed slaves. With approximately 300 people, 100 of which are children, it is a tightly knit community, where many of its residents are related to one another. Displacement of 16 residential units would be a disruption of the fabric of this community. This consideration leads to the eliminating of Alternative 5 from contention as the proposed action.

Mitigation for unavoidable impacts to the human and natural environment will be addressed in separate mitigation IERs. Mitigation IERs will be prepared to include mitigation of impacts on a system-wide basis for all IERs in the Metropolitan New Orleans area, including IER # 13. The U.S. Army Corps of Engineers, New Orleans District, has partnered with Federal and State resource agencies to form an interagency mitigation team that is working to assess and verify these impacts, and to look for potential mitigation sites in the appropriate hydrologic basin. This effort is occurring concurrently with the IER planning process in an effort to complete mitigation work and construct mitigation projects expeditiously. As with the planning process of all other IERs, the public will have the opportunity to give input about the proposed work. These mitigation IERs will be available for a 30-day public review and comment period.

Quantitative analysis utilizing existing methodologies for water resource planning has identified the acreages and habitat type for the direct or indirect impacts of implementing the proposed action. Any mitigation needs will be detailed by the proposed action design-build project delivery contractor and will be reported in the NEPA compliance document covering all WBV IERs.

It may be necessary to excavated sediment and soil in the vicinity of the proposed gate for construction of the gate and to establish the designed depth for ship passage. Approximately 2,994 cubic yards of channel sediment, along with 7,595 cubic yards of upland soils, would be excavated for the construction of the proposed gate. Both sediment and soil would be used as fill material for levee construction.

Fill material placement activities may adversely affect bottom-dwelling organisms at the site by smothering immobile forms and forcing mobile forms to migrate. No recolonization of benthic organisms is expected for the wetland areas that will be converted to terrestrial habitat during construction activities.

As a requirement, only uncontaminated fill material will be used in conjunction with the proposed project. All materials will be certified by physical testing, chemical analysis, and/or manufacturer's certification. With the exception of the sediment and soil excavation for the proposed gate, potential fill material sources are being evaluated in separate IERs. It is not expected that the placement of fill for levee construction will result in adverse impacts to the adjacent aquatic ecosystem.

As a screening-level evaluation to determine the long-term impacts to wetlands at the foot of the proposed levee enlargement due to placement of dredged sediments for levee construction, sediments in the area of the proposed gate were sampled and analyzed. Analysis results for two (2) sediment samples extracted from within the vicinity of the proposed gate are available in the Limited Phase II Environmental Site Assessment for Algiers and Hero Canals Potential Sector Gate Locations (USACE 2009a). Samples were analyzed for 140 contaminants, including eight (8) metals, fifty-eight (58) semi-volatile organic compounds, forty (40) volatile organic compounds, seven (7) polychlorinated biphenyls, sixteen (16) pesticides, eight (8) herbicides, and three (3) total petroleum hydrocarbons. A majority of the contaminant levels measured were below the detection limit; in other words, due to the relatively minute levels of these contaminants, the laboratory equipment responsible for their measurement was unable to positively quantify a concentration. Overall, only six contaminants were detectable, including four (4) metals (barium, chromium, lead, and mercury) and two (2) total petroleum hydrocarbons (diesel and oil range organics).

For detected compounds, concentrations were compared to available sediment quality screening values to determine whether the contaminant levels correlate to levels associated with toxic effects in benthic organisms. Values were compared to freshwater screening values only (NOAA 2008), as Louisiana Department of Environmental Quality (LDEQ) surface water quality data for the nearest representative location (Harvey Canal at Lapalco Boulevard [LDEQ 2008a]) indicate that the canal is most likely exclusively a freshwater water body (see Appendix A, Table A.2).

Comparison of the detected contaminant concentrations to available freshwater sediment quality screening values indicated that the contaminant levels in the sediment do not correlate to levels associated with toxic effects in benthic organisms (see Appendix A, Table A.1 for a detailed table of comparison). Results of the comparison have led to a screening-level analysis conclusion that no long-term contaminant-related impacts would be expected due to the placement of dredged material for levee construction.

*230.21 – Suspended Particulates/Turbidity Impacts:* Release of fill material into the water column as part of these activities could temporarily decrease oxygen levels in the waters immediately surrounding the construction site by inhibiting photosynthesis or promoting solar heating. Also, some particles could contain chemically reduced substances (e.g., sulfides), which have a high chemical oxygen demand (COD), while other particles may have microorganisms attached, which could decompose organic matter and create a biological oxygen demand (BOD). Thus, a localized and temporary reduction in dissolved oxygen could occur in the immediate area of discharge. Oxygen levels would be expected to return to normal soon after construction. Excessive turbidity can also lead to water body temperature increases. Increased suspended solids produced during construction could absorb incident solar radiation and slightly increase the temperatures of water bodies, especially near the surface. However, these effects would be temporary and would occur only during construction.

- c. *230.22 – Water Column Impacts:* Because only uncontaminated fill material will be used in conjunction with the proposed project, it is not expected that the placement of these materials into wetlands or open water will result in adverse water column impacts.

A screening level evaluation was performed in order to determine short-term water-column impacts to wetlands at the foot of the proposed levee enlargement due to placement of dredged sediments. Impacts to the water column during placement of dredged material for levee construction include the introduction of contaminants carried by water associated with the mechanically placed sediments into the adjacent, or “receiving”, waters. Very little water will be included with the dredged sediments if they are mechanically placed, and the quality of any runoff from the sediments would be expected to characterize runoff from a confined placement area in the beginning drying stages (Schroeder et al (2006 and 2008)).

Because the proposed action includes mechanical placement of dredged sediments, estimation of contaminant concentrations from dredged material discharge waters was performed for this placement method. Procedures for the estimation of discharge concentrations for mechanically placed material, which is likened to that of runoff from a confined placement area in the beginning drying stages (unoxidized runoff), is available by determining unoxidized confined placement area runoff concentrations, as described in Schroeder et al (2008).

Use of screening evaluation spreadsheet (ERDC; in preparation), which utilizes the procedures described in Schroeder et al (2008) to estimate concentrations for unoxidized runoff (and, for the purpose of this project, mechanically placed material), provides a comprehensive yet user-friendly approach for utilizing the referenced procedures in determining whether discharge concentrations are in compliance with State and Federal water quality criteria at the point of discharge. A determination of compliance at the point of discharge would indicate that no mixing within the receiving water body is necessary for the discharge to meet State water quality criteria.

Spreadsheet input and results are available in Appendix B. For input parameters, a majority of the values used were recommended default values. Grain-size distribution and water content were the only in-situ sediment properties for which a default value was not used, and were derived from ERDC and USACE personnel having experience with use of the spreadsheet and familiarity with general properties of the channel sediments within the vicinity of the project (source: Trudy Estes, U.S. Army Engineer Research and Development Center Environmental Laboratory; Jeffery Corbino, U.S. Army Corps of Engineers, New Orleans District).

Because the evaluation requires the contaminant concentrations in the channel sediment and water (labeled as “carrier water” in the spreadsheet), as well as for the receiving water, and water quality criteria, very few contaminants could be utilized for the evaluation. The only detectable sediment contaminant concentrations for which water quality criteria were available were chromium (+III), lead, and mercury. Carrier and receiving water quality data were not available for Hero Canal and the wetlands adjacent to the proposed action levee footprint; therefore, water quality results for Harvey Canal was used as a surrogate for water quality of Hero Canal and the waters adjacent to the levee footprint. Water chemistry results were available for chromium and lead, but not mercury. In order to include mercury in the evaluation without available carrier and receiving water concentrations, a value less than and within approximately one percent of the water quality criteria was used as a surrogate for the missing results. The assumption behind this technique is that using concentrations close to—but not exceeding—water quality criteria for the missing values will provide an approximation of the influence that contaminants bound to sediments and within sediment pore water will have on exceeding water quality criteria for effluent concentrations at the point of discharge in a worst-case scenario (i.e., in a scenario where the carrier and receiving water is just below the criteria and the dissolution of contaminants bound to sediment and within sediment pore water will exclusively determine whether the effluent discharge will meet water quality criteria at the point of discharge).

Results for effluent contaminant concentrations and dilution requirements for mechanically placed dredged material are available in Appendix B, on page B-4. Effluent dilution ratio,

which is defined as the volume of receiving water required to dilute one unit volume of effluent, has been added into page B-4, and is determined by the equation

$$D = (C_{\text{eff}} - C_{\text{wq}})/(C_{\text{wq}} - C_{\text{B}}); \text{ where}$$

$C_{\text{eff}}$  = estimated contaminant concentration in the effluent ( $\mu\text{g/L}$ )

$C_{\text{wq}}$  = applicable water quality criteria ( $\mu\text{g/L}$ )

$C_{\text{B}}$  = contaminant concentration in the receiving water ( $\mu\text{g/L}$ )

For mechanically placed material, negative dilution ratios were achieved for all of the contaminants utilized in the evaluation. Therefore, the screening evaluation indicates that no dilution would be required for effluent to meet water quality criteria for mechanically placed material.

- d. *230.23 – Alteration of Current Patterns and Water Circulation:* For the Proposed Action and alternatives, current patterns and water circulation would not be significantly impacted. Wetland and open water areas that are converted to upland due to the placement of fill material would eliminate current pattern and water circulation for those regions. However, this would not significantly affect the overall waterbody within the project area due to the scale and location of the impacts.
- e. *230.24 – Alteration of Normal Water Fluctuations/Hydroperiod:* The impacts would not be significant. Because the relatively small footprint of the project encroachment on the adjacent wetlands, no significant effects to normal water fluctuations/hydroperiod are expected.
- f. *230.25 – Alteration of Salinity Gradients:* The proposed project, including placement of fill material for levee construction, is not expected to affect salinity gradients within the project area.

### III. Subpart F – Human Use Characteristics

- a. *230.50 – Effects on Municipal and Private Water Supplies:* N/A

### IV. Subpart G – Evaluation of Dredged or Fill Material

- a. *230.61 (a) – Considerations in Evaluating the Biological Availability of Possible Contaminants in Dredged or Fill Material:* Evaluation of biological availability of possible contaminants in fill material will be addressed in separate IERs. As a requirement, only uncontaminated fill material will be used in conjunction with the proposed project.

Initial investigation of biological availability includes historical evidence of contaminant migration into Hero Canal, which can be located at the U.S. Coast Guard National Response Center (USCG 2008), as well as several site assessments associated with the project (USACE 2006a, 2006b, 2008a, and 2008b).

A screening-level investigation of dredged material proposed use in levee construction, including comparison of Hero Canal sediment chemistry to sediment screening levels and the evaluation of water column impacts of mechanical placement of dredged material for levee construction, requires water chemistry results for site water (Hero Canal) and receiving water (wetlands adjacent to the proposed levee alignment), as well as sediment chemistry of the dredged material and an estimation of physical properties of the material (Included in Appendix

A). Tri-monthly water quality data for the carrier and receiving waters were available on the U.S. Environmental Protection Agency (EPA) Enviromapper for Water website (USEPA 2009) and the Louisiana Department of Environmental Quality (LDEQ) Ambient Surface Water Quality Monitoring Data website (LDEQ 2008a). Sediment chemistry results were available from the Limited Phase II Environmental Assessment for potential sector gate locations (USACE 2008b).

- b. An evaluation of the appropriate information in VI(a) above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria: Only uncontaminated fill material will be used in conjunction with the proposed project.

## V. Disposal Site Delineation

- a. *230.11 (f) – Considerations in Evaluating the Disposal Site:* Because only uncontaminated fill material will be used in conjunction with the proposed project, the discharge of such material into the aquatic environment would be expected to meet mixing zone criteria.

The screening-level evaluation used to determine whether the discharge from the dredged material being used for levee construction would meet water quality criteria indicates that no dilution of effluent is required to meet the criteria. Therefore, it is implied that the proposed discharge will meet water quality criteria at the edge of the mixing zone.

- b. An evaluation of the appropriate factors in V(a) above indicates that the disposal site and/or size of mixing zone are acceptable: Due to the expected uncontaminated nature of the fill material, it is expected that the disposal site will be acceptable in that the placement of fill material for improving levees will not result in any exceedences of water quality criteria.

The screening evaluation used to determine whether the discharge of dredged material used for levee construction would meet water quality criteria indicates that no dilution of effluent is required to meet the criteria. Therefore, it is implied that the proposed discharge will meet water quality criteria at the edge of the mixing zone.

## VI. Subpart H - Actions to Minimize Adverse Effects

All appropriate and practicable steps have been taken, through application of the recommendations of 230.70 – 230.77 to ensure minimal adverse effects of the proposed discharge:

## VII. Factual Determinations

A review of appropriate information as identified in items I - VI above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge:

- a. Physical substrate at the disposal site (review sections II, IV, V, and VI above): No
- c. Water circulation, fluctuation and salinity (review sections II, IV, V, and VI): Yes
- d. Suspended particulates (review sections II, IV, V, and VI): Yes
- e. Contaminant availability (review sections II, IV, and V): Yes

**VIII. References**

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**Table A.1 - Hero Canal Environmental Site Assessment Bulk Sediment Chemistry Results for Detected Compounds (Geomean Utilized with Tier II Screening Evaluation Spreadsheet)**

Parameter	Sediment Screening Values		Sample						Average	Geomean
	Freshwater		SG-SD-09		SG-SD-10		SG-SD-09 (Duplicate)			
	TEL	PEL	Result	Modified	Result	Modified	Result	Modified		
	mg/kg									
TPH-D			41.8	41.8	10 U	5	14.1	14.1	20.3	14.3
TPH-O			112	112	50 U	25	50 U	25	54.0	41.2
Barium			127	127	129	129	105	105	120.3	119.8
Chromium	37.3	90	8.77	8.77	6.37	6.37	6.72	6.72	7.29	7.21
Lead	35	91.3	23.9	23.9	10.1	10.1	39.7	39.7	24.6	21.2
Mercury	0.174	0.486	0.0299	0.0299	0.0221	0.0221	0.0237	0.0237	0.0252	0.0250

U - Result is below the detection limit

Result exceeds marine Threshold Effects Level (TEL) screening value

**Table A.2 - Harvey Canal Water Quality Data**

Contaminant	Sample Date	Result	Units	Geomean*	Units
Arsenic	10/17/2007	2.4	ug/L	1.934166176	ug/L
	1/22/2008	1.78	ug/L		
	4/22/2008	1.17	ug/L		
	7/22/2008	2.8	ug/L		
Cadmium	10/17/2007	Below Detection Limit		0.28	ug/L
	1/22/2008	0.28	ug/L		
	4/22/2008	Below Detection Limit			
	7/22/2008	Below Detection Limit			
Chromium	10/17/2007	Below Detection Limit		0.314960315	ug/L
	1/22/2008	0.32	ug/L		
	4/22/2008	0.31	ug/L		
	7/22/2008	Below Detection Limit			
Lead	10/17/2007	0.13	ug/L	0.226436917	ug/L
	1/22/2008	1.07	ug/L		
	4/22/2008	0.27	ug/L		
	7/22/2008	0.07	ug/L		
Salinity	10/17/2007	0.27	PPT**	0.219244725	PPT
	11/27/2007	0.33	PPT		
	12/18/2007	0.31	PPT		
	1/22/2008	0.18	PPT		
	2/26/2008	0.21	PPT		
	3/25/2008	0.24	PPT		
	4/22/2008	0.18	PPT		
	5/20/2008	0.18	PPT		
	6/17/2008	0.15	PPT		
	7/22/2008	0.21	PPT		
8/19/2008	0.22	PPT			

\* The calculated geomean excludes results which were measured as below the detection limit. Commonly, if a detection limit is available, a result which is measured as below the detection limit can be estimated based on the detection limit. Because no detection limit is available for these results, there is no way to estimate a contaminant concentration for results measured as below the detection limit.

\*\* PPT = Parts per thousand



## Tier II Screening Evaluations for Confined Disposal Facility Contaminant Pathway Migration



INSTRUCTIONS: Complete steps 1 through 4 located on sheets "Start", "Data", and "ChemData".  
Note: User input required only in areas with yellow shading.

<b>Step 1. Enter "x" in the column below to indicate those pathways where Tier I results indicated further screening was required.</b>		
	▼ Enter	
Effluent	x	Further Screening Required
Runoff	x	Further Screening Required
Leachate		No Further Screening Required
Volatilization		No Further Screening Required
Plant & Animal		No Further Screening Required

Tier II Screening Evaluations for CDF Pathway Migration  
Data Input Sheet

**STEP 2.** Enter the data requested below for sediment properties and contaminant pathway parameters. Data must be entered with the units as shown.

In Situ Sediment Properties	Symbol	Units	Value	
Total Organic Carbon	TOC	%	3	◀ Enter
Silt & Clay Fraction	SCF	%	80	◀ Enter
Clay Fraction	CF	%	50	◀ Enter
Effective Clay Fraction	CF <sub>eff</sub>	%	53	
Enrichment Factor	EF	-	1	◀ Enter ▶▶▶
Specific Gravity	SG	-	2.65	◀ Enter
Dissolved Organic Carbon	DOC	mg/L	20	◀ Enter
Water Content	w	%	100	◀ Enter ▶▶▶
Void Ratio	e	-	2.65	
Porosity	n <sub>sed</sub>	-	0.7260	
Solids Concentration	TSS <sub>sed</sub>	g/L	726.0274	

Side Bar	
<i>Selection of Enrichment Factor (EF)</i>	
Hydraulically placed dredged material,	
EF = 100/CF <sub>eff</sub> =	2
Mechanically placed dredged material, EF =	1

Side Bar	
<i>Alternative formulations to calculate w</i>	
Given e =	0
Given n <sub>sed</sub> =	0
Given TSS <sub>sed</sub> =	#DIV/0!

Hydraulic Dredging Operational Parameters	Symbol	Units	Value	
Influent Slurry Solids Concentration	TSS <sub>sl</sub>	g/L	140	◀ Enter ▶▶▶
Influent Slurry Porosity	n <sub>sl</sub>	-	0.9472	

Side Bar	
TSS <sub>sl</sub> can be estimated from the sediment grain-size distribution, if available.	
%Fines	80
%Coarse	20
TSS <sub>sl</sub> =	140 g/L
Or, assuming 1 part sediment sample is diluted with 4.5 parts carrier water (neglecting solids in the carrier water):	
TSS <sub>sl</sub> =	132 g/L

Effluent Parameters	Symbol	Units	Value	
Dilution within Mixing Zone	D	-		◀ Enter
Background Exceedance	x	%		◀ Enter

Runoff Parameters	Symbol	Units	Value	
Dilution within Mixing Zone	D	-	0	◀ Enter
Background Exceedance	x	%	0	◀ Enter
Unoxidized Runoff Solids Conc.	TSS <sub>run</sub> <sup>unox</sup>	g/L	5	◀ Enter
Unoxidized Runoff-Sediment Slurry Porosity	n <sub>run</sub> <sup>unox</sup>	-	0.9981	
Oxidized Runoff Solids Conc.	TSS <sub>run</sub> <sup>ox</sup>	g/L	0.5	◀ Enter
Oxidized Runoff-Sediment Slurry Porosity	n <sub>run</sub> <sup>ox</sup>	-	0.9998	

**Chemical Data Base**  
**Step 3.**  
 For the contaminants of concern, enter the data requested in columns B through G (and AA if desired).

Contaminants	Actual Bulk Sediment Conc q (mg/kg) Enter	Carrier Water Conc. C <sub>c</sub> (ug/l) Enter	Back-ground Conc. C <sub>B</sub> (ug/l) Enter	CHEMICAL CONSTANTS							LEACHATE PARAMETERS	
				Molecular Weight MW (g/g-mole)	Henry's Law Constant H (atm-m <sup>3</sup> /g-mole)	Unoxidized Material K <sub>d</sub> <sup>unox</sup> (L/kg)	Oxidized Material K <sub>d</sub> <sup>ox</sup> (L/kg)	Unoxidized Leachable Fraction L <sub>F</sub> <sup>unox</sup>	Oxidized Leachable Fraction L <sub>F</sub> <sup>ox</sup>	Aqueous Solubility (ug/L)	Foundation Unoxidized Distribution Coefficient K <sub>d,F</sub> (L/kg)	21 LDEQ Freshwater Acute Criteria (ug/L)
<b>Metals</b>												
Chromium III	7.21	0.314960315	0.12	52.000	--	200.0	120.6	0.006	0.010	1.00E+09	200.0	779.6231597
Lead	21.24	0.226436917	0.205546249	207.200	--	300.0	300.0	0.050	0.050	6.25E+08	300.0	36.77785769
Mercury	0.025			200.590	1.16E-02	100.0	100.0	0.020	0.080	7.00E+05	100.0	2.04

Unless otherwise specified, PCB congener data from Mackay, D., W. Y. Shiu, and K. C. Ma. 1992. Illustrated Handbook of Physical-Chemical Properties and Environmental Fa

**REFERENCES:**

1. MultiMedia-Modeling Environmental DataBase (Version 1.0), Copyrighted 1994, Battelle Memorial Inst.
2. Recovery (Version 3.0), Copyright 1999.
3. Water Quality Criteria Summary - US EPA May 1, 1991
4. Water Quality Criteria Summary Concentrations Database

Toxicological Benchmarks for Screening Potential Contaminants

23  
Minimum  
LDEQ and EPA  
Freshwater  
Acute Criteria  
(ug/L)

570  
36.77785769  
1.4

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**RUNOFF PATHWAY  
HYDRAULIC PLACEMENT**

**Screening Evaluations for Confined  
Disposal Facility  
Surface Runoff Quality**  
(See reference below)

Contaminant	Runoff	Entered by user on sheet "B-3"			Values from sheet "B-3"									Unoxidized		Ratios	Dilution
	SLRP Testing Required? <i>Unoxidized</i>	Actual Bulk Sediment Conc. q (mg/kg)	Carrier Water Conc. C <sub>c</sub> (ug/l)	Background Conc. C <sub>B</sub> (ug/l)	Runoff Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> <sup>unox</sup> (L/kg)	Oxidized Distribution Coefficient K <sub>d</sub> <sup>ox</sup> (L/kg)	Unoxidized Leachable Fraction LF <sup>unox</sup>	Oxidized Leachable Fraction LF <sup>ox</sup>	Predicted Leachable Unoxidized Sediment Conc q <sub>sed</sub> <sup>unox</sup> (mg/kg)	Predicted Leachable Oxidized Sediment Conc q <sub>sed</sub> <sup>ox</sup> (mg/kg)	Normalized Leachable Unoxidized Runoff Conc q <sup>unox</sup> <sub>run</sub> (mg/kg)	Normalized Leachable Oxidized Runoff Conc q <sup>ox</sup> <sub>run</sub> (mg/kg)	Predicted Conc at the point of runoff discharge C <sub>run</sub> <sup>unox</sup> (ug/l)	Predicted Conc at the Mixing Zone Boundary C <sub>P</sub> <sup>unox</sup> (ug/l)	Runoff at Mixing Zone Boundary to Runoff Criteria <i>Unoxidized</i>	Estimated Dilution Available at point of Discharge
<b>Metals</b>																	
Chromium III	No	7.214	0.315	0.120	570.000	200.000	120.595	0.006	0.010	0.054	0.090	0.054	0.090	0.135	0.135	0.000	-1.000
Lead	No	21.241	0.226	0.206	36.778	300.000	300.000	0.050	0.050	1.328	1.328	1.328	1.328	2.657	2.657	0.072	-0.933
Mercury	No	0.025	0.0119	0.0119	1.400	100.000	100.000	0.020	0.080	0.001	0.003	0.001	0.003	0.002	0.002	0.001	-1.007

Schroeder, P. R., S. E. Bailey T. J. Estes, and R. A. Price. 2006. "Screening evaluations for confined disposal facility surface runoff quality." DOER Technical Notes Collection (ERDC TN DOER-CXX), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

**EFFLUENT PATHWAY  
HYDRAULIC PLACEMENT**

**Screening Evaluations for Confined  
Disposal Facility  
Effluent Quality**  
(See reference below)

Contaminant	Modified Elutriate Testing Required?	Entered by user on sheet "ChemData"			Input Values from sheet "ChemData"			Effluent Computations							Dilution
		Actual Bulk Sediment Conc q (mg/kg)	Carrier Water Conc. C <sub>c</sub> (ug/l)	Back-ground Conc. C <sub>B</sub> (ug/l)	Selected Effluent Screening Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> (L/kg)	Unoxidized Leachable Fraction LF <sup>unox</sup>	Predicted Leachable Sediment Conc q* <sub>sed</sub> (mg/kg)	Predicted Slurry Conc including carrier water q* <sub>sl</sub> (mg/kg)	Predicted Conc at the point of CDF Discharge C <sub>eff 1</sub> (ug/l)	Predicted Sediment Pore Water Conc C <sub>sed</sub> (ug/l)	Predicted Conc at the point of CDF Discharge C <sub>eff 2</sub> (ug/l)	Predicted Conc at the point of CDF Discharge C <sub>eff</sub> (ug/l)	Target Screening Criteria at the Mixing Zone Boundary C <sub>T</sub> (ug/l)	Estimated Dilution Required at point of Discharge
<b>Metals</b>															
Chromium III	No	7.214	0.315	0.120	74.000	200.000	0.006	0.054	0.056	0.270	0.269	0.308	0.308	74.000	-0.997
Lead	Needed	21.241	0.226	0.206	2.500	300.000	0.050	1.328	1.329	4.332	4.410	0.845	4.332	2.500	0.833
Mercury	No	0.025	0.012	0.012	0.012	100.000	0.020	0.001	0.001	0.007	0.006	0.0111	0.0111	0.012	-9.436

Schroeder, P. R., T. J. Estes, and S. E. Bailey. (2006). *Screening Evaluations for Upland Confined Disposal Facility Effluent Quality*, DOER Technical Note (ERDC TN DOER-R11), U.S. Army Engineer Research and Development Center, Vicksburg, MS.









BZ# 195				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
BZ# 206				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
BZ# 209				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1016)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1221)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1232)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1242)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1248)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1254)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB(Aroclor-1260)				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				
PCB Total				---	---	---	---	---	---				Not Req.		Not Req.	Not Req.	NA	NA	NA				











**LEACHATE PATHWAY  
HYDRAULIC PLACEMENT**

**Screening Evaluations for Confined  
Disposal Facility  
Leachate Quality**  
(See reference below)

Contaminant	Testing Not Required based on Pore Water Tier I Results	Actual Bulk CDF Sediment Conc q (mg/kg)	Values from sheet "ChemData"				Predicted Leachable Sediment Conc q <sub>sed</sub> (mg/kg)	Predicted Sediment Pore Water Conc C <sub>sed</sub> (ug/l)	Using Calculated ADF, VDF and DAF				Predicted Groundwater Conc at Receptor (Applied) C <sub>R</sub> (ug/l)	Ratio Predicted Groundwater Conc. at Receptor to Leachate Criteria
			Leachate Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> (L/kg)	Unoxidized Leachable Fraction LF <sup>unox</sup>	Applied Dilution Attenuation Factor DAF			Peak Contam Conc Reaching Water Table C <sub>V,P</sub> (ug/l)	Contam Conc Reaching Water Table at time, t <sub>i</sub> C <sub>V,i</sub> (ug/l)	Groundwater Conc at Receptor at time, t <sub>i</sub> C <sub>R,i</sub> (ug/l)	Peak Groundwater Conc at Receptor C <sub>R,P</sub> (ug/l)		
<b>Metals</b>														
Aluminum	---		NA	1500.000	0.005	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Antimony	---		6.000	70.000	0.100	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Arsenic	---		10.000	70.000	0.200	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Barium	---		2000.000	41.000	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Beryllium	---		4.000	40.000	0.200	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Boron	---		NA	3.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Cadmium	---		5.000	40.000	0.050	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chromium III	---	7.213888624	100.000	200.000	0.006	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chromium VI	---	21.2407539	100.000	200.000	0.006	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Cobalt	---	0.025019038	NA	8.000	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Copper	---	0	1300.000	120.000	0.030	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Iron	---	0	NA	25.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Lead	---	21.2407539	15.000	300.000	0.050	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Lithium	---	0.025019038	NA	300.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Manganese	---	0	NA	65.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Mercury	---	0.025019038	2.000	100.000	0.020	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Molybdenum	---		NA	20.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Nickel	---		NA	70.000	0.020	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Selenium	---		50.000	3.000	0.500	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Silver	---		NA	150.000	0.200	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Strontium	---		NA	35.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Thallium	---		2.000	40.000	0.200	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Tin	---		NA	250.000	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Uranium	---		30.000	450.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Vanadium	---		NA	1000.000	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Zinc	---		NA	130.000	0.020	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Zirconium	---		NA	3000.000	NA	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Organometals</b>														
Dibutyltin	---		NA	0.070	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Monobutyltin	---		NA	0.048	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Tetrabutyltin	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Tributyltin	---		NA	23.683	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methylmercury	---		NA	0.048	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Inorganic/General Chemistry</b>														
Cyanide	---		200.000	9.900	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Ammonia-N	---		NA	8.700	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Nitrogen, Total Kjeldahl	---		NA	NA	0.500	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Sulfide	---		NA	NA	0.001	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>PAH's</b>														
Acenaphthene	---		NA	139.628	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Acenaphthylene	---		NA	164.768	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Anthracene	---		NA	421.038	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzo(a)anthracene	---		NA	1291.222	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzo(b)fluoranthene	---		NA	1427.034	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzo(k)fluoranthene	---		NA	1427.034	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzo(g,h,i)perylene	---		NA	1476.132	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzo(a)pyrene	---		0.200	1396.769	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzo(e)pyrene	---		NA	1457.127	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Biphenyl	---		NA	106.062	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Carbazol	---		NA	68.713	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chrysene	---		NA	1291.222	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.

HYDRAULIC PLACEMENT

Screening Evaluations for Confined  
Disposal Facility  
Leachate Quality  
(See reference below)

Contaminant	Testing Not Required based on Pore Water Tier I Results	Actual Bulk CDF Sediment Conc q (mg/kg)	Values from sheet "ChemData"				Predicted Leachable Sediment Conc q <sub>sed</sub> (mg/kg)	Predicted Sediment Pore Water Conc C <sub>sed</sub> (ug/l)	Using Calculated ADF, VDF and DAF				Predicted Groundwater Conc at Receptor (Applied) C <sub>R</sub> (ug/l)	Ratio Predicted Groundwater Conc. at Receptor to Leachate Criteria
			Leachate Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> (L/kg)	Unoxidized Leachable Fraction L <sub>F</sub> <sup>UNOX</sup>	Applied Dilution Attenuation Factor DAF			Peak Contam Conc Reaching Water Table C <sub>V,P</sub> (ug/l)	Contam Conc Reaching Water Table at time, t <sub>i</sub> C <sub>V,i</sub> (ug/l)	Groundwater Conc at Receptor at time, t <sub>i</sub> C <sub>R,i</sub> (ug/l)	Peak Groundwater Conc at Receptor C <sub>R,P</sub> (ug/l)		
Dibenzo(a,h)anthracene	---		NA	1476.132	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dibenzo-p-dioxin	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dibenzofuran	---		NA	209.869	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dibenzo(a,e)pyrene	---		NA	1493.648	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dibenzothiophene	---		NA	342.607	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
7,12 Dimethyl-benz(a)anthracene	---		NA	1387.556	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2 Dimethyl-naphthalene	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,4 Dimethyl-naphthalene	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,6 Dimethyl-naphthalene	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,7 Dimethyl-naphthalene	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
3,6-Dimethyl-phenanthrene	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Fluoranthene	---		NA	1007.863	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Fluorene	---		NA	245.374	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Indeno(1,2,3-c,d)pyrene	---		NA	1473.272	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
3-Methylcholanthrene	---		NA	1455.167	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1-Methylnaphthalene	---		NA	125.716	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Methylnaphthalene	---		NA	123.089	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Naphthalene	---		NA	39.431	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Perylene	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Phenanthrene	---		NA	393.715	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Pyrene	---		NA	912.574	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Semi-Volatile Organic Compounds</b>														
Acetophenone	---		NA	0.720	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzaldehyde	---		NA	0.559	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzidine	---		NA	0.405	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzoic acid	---		NA	1.371	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzyl alcohol	---		NA	0.233	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzyl butyl phthalate	---		NA	690.816	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Bromophenyl phenyl ether	---		NA	828.559	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bis(2-chloroethoxy) methane	---		NA	0.198	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bis(2-chloroethyl) ether	---		NA	0.300	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bis(2-chloroisopropyl) ether	---		NA	7.004	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bis(2-ethylhexyl) phthalate	---		6.000	1493.932	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Caprolactam	---		NA	0.012	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Chloro-3-methylphenol	---		NA	22.946	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Chloroaniline	---		NA	1.309	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Chloronaphthalene	---		NA	164.768	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Chlorophenol	---		NA	2.671	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Chlorophenyl phenyl ether	---		NA	828.559	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Cyclohexane	---		NA	49.305	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Di-n-butyl phthalate	---		NA	589.592	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Di-n-octyl phthalate	---		NA	1499.035	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2-Dichlorobenzene	---		600.000	45.097	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,3-Dichlorobenzene	---		NA	45.097	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,4-Dichlorobenzene	---		75.000	47.156	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
3,3'-Dichlorobenzidine	---		NA	57.597	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4-Dichlorophenol	---		NA	21.929	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Diethyl phthalate	---		NA	5.443	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dimethyl phthalate	---		NA	0.672	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4-Dimethylphenol	---		NA	4.132	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4,6-Dinitro-2-methylphenol	---		NA	9.220	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4-Dinitrophenol	---		NA	0.656	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4-Dinitrotoluene	---		NA	1.892	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,6-Dinitrotoluene	---		NA	3.519	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.

HYDRAULIC PLACEMENT

Screening Evaluations for Confined Disposal Facility Leachate Quality (See reference below)

Contaminant	Testing Not Required based on Pore Water Tier I Results	Actual Bulk CDF Sediment Conc q (mg/kg)	Values from sheet "ChemData"				Predicted Leachable Sediment Conc q <sub>sed</sub> (mg/kg)	Predicted Sediment Pore Water Conc C <sub>sed</sub> (ug/l)	Using Calculated ADF, VDF and DAF				Predicted Groundwater Conc at Receptor (Applied) C <sub>R</sub> (ug/l)	Ratio Predicted Groundwater Conc. at Receptor to Leachate Criteria
			Leachate Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> (L/kg)	Unoxidized Leachable Fraction L <sup>F</sup> <sub>UNOX</sub>	Applied Dilution Attenuation Factor DAF			Peak Contam Conc Reaching Water Table C <sub>V,P</sub> (ug/l)	Contam Conc Reaching Water Table at time, t <sub>i</sub> C <sub>V,i</sub> (ug/l)	Groundwater Conc at Receptor at time, t <sub>i</sub> C <sub>R,i</sub> (ug/l)	Peak Groundwater Conc at Receptor C <sub>R,P</sub> (ug/l)		
1,2-Diphenylhydrazine	---		NA	15.950	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Hexachlorobenzene	---		1.000	1358.208	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Hexachlorobutadiene	---		NA	665.153	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Hexachlorocyclopentadiene	---		50.000	828.559	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Hexachloroethane	---		NA	164.768	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Isophorone	---		NA	0.927	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methylcyclohexane	---		NA	128.394	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Methyl-4,6-dinitrophenol	---		NA	2.436	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Methylphenol	---		NA	1.766	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Methylphenol	---		NA	1.725	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Nitroaniline	---		NA	1.115	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
3-Nitroaniline	---		NA	0.434	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Nitroaniline	---		NA	0.454	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Nitrophenol	---		NA	1.167	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Nitrophenol	---		NA	1.725	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
N-Nitrosodi-n-propylamine	---		NA	0.465	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
N-Nitrosodimethylamine	---		NA	0.021	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
N-Nitrosodiphenylamine	---		NA	24.560	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Nitrobenzene	---		NA	1.309	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Pentachlorobenzene	---		NA	1293.282	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Pentachlorophenol	---		1.000	887.711	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Phenol	---		NA	0.534	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,4-Trichlorobenzene	---		70.000	168.175	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4,5-Trichlorophenol	---		NA	133.905	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4,6-Trichlorophenol	---		NA	70.239	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Volatile Organic Compounds</b>														
Acetone	---		NA	0.011	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Acrolein	---		NA	0.018	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Acrylonitrile	---		NA	0.033	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Benzene	---		5.000	2.493	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bromodichloromethane	---		80.000	2.327	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bromoform	---		80.000	4.427	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Bromomethane	---		NA	0.287	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Butanone	---		NA	0.036	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Carbon disulfide	---		NA	1.610	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Carbon tetrachloride	---		5.000	16.693	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chlorobenzene	---		100.000	12.697	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chloroethane	---		NA	0.498	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chloroform	---		80.000	1.538	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chloromethane	---		NA	0.150	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Decane	---		NA	1434.623	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dibromochloromethane	---		80.000	3.210	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2-Dibromo-3-chloropropane	---		0.200	3.361	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2-Dibromoethane	---		0.050	1.686	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dichlorodifluoromethane	---		NA	2.671	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,1-Dichloroethane	---		NA	1.140	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2-Dichloroethane	---		5.000	0.559	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,1-Dichloroethylene	---		7.000	2.493	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
cis-1,2-Dichloroethylene	---		70.000	1.340	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
trans-1,2-Dichloroethylene	---		100.000	1.574	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2-Dichloropropane	---		5.000	1.936	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
cis-1,3-Dichloropropene	---		NA	0.476	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
trans-1,3-Dichloropropene	---		NA	0.476	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Ethylbenzene	---		700.000	25.698	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.

HYDRAULIC PLACEMENT

Screening Evaluations for Confined Disposal Facility Leachate Quality (See reference below)

Contaminant	Testing Not Required based on Pore Water Tier I Results	Actual Bulk CDF Sediment Conc q (mg/kg)	Values from sheet "ChemData"				Predicted Leachable Sediment Conc q <sub>sed</sub> (mg/kg)	Predicted Sediment Pore Water Conc C <sub>sed</sub> (ug/l)	Using Calculated ADF, VDF and DAF				Predicted Groundwater Conc at Receptor (Applied) C <sub>R</sub> (ug/l)	Ratio Predicted Groundwater Conc. at Receptor to Leachate Criteria
			Leachate Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> (L/kg)	Unoxidized Leachable Fraction L <sub>F</sub> <sup>unox</sup>	Applied Dilution Attenuation Factor DAF			Peak Contam Conc Reaching Water Table C <sub>V,P</sub> (ug/l)	Contam Conc Reaching Water Table at time, t <sub>i</sub> C <sub>V,i</sub> (ug/l)	Groundwater Conc at Receptor at time, t <sub>i</sub> C <sub>R,i</sub> (ug/l)	Peak Groundwater Conc at Receptor C <sub>R,P</sub> (ug/l)		
Hexane	---		NA	205.747	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Hexanone	---		NA	0.454	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Isopropylbenzene	---		NA	80.090	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methyl acetate	---		NA	0.028	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methyl tert-butyl ether	---		NA	0.322	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4-Methyl-2-pentanone	---		NA	0.378	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methylene chloride	---		5.000	0.329	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Octanone	---		NA	4.327	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1-Pentanol	---		NA	0.599	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2-Propanol	---		NA	0.021	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Styrene	---		100.000	15.950	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,1,2,2-Tetrachloroethane	---		NA	4.530	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Tetrachloroethene	---		5.000	13.911	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Toluene	---		1000.000	11.327	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,1,1-Trichloroethane	---		200.000	5.698	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,1,2-Trichloroethane	---		5.000	2.172	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,1,2-Trichlor-1,2,2-trifluoroethane	---		NA	26.286	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Trichloroethene	---		5.000	6.246	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Trichlorofluoromethane	---		NA	6.104	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Vinyl acetate	---		NA	0.099	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Vinyl chloride	---		2.000	0.314	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
m,p-Xylene	---		NA	26.888	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
o-Xylene	---		NA	25.698	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Xylenes, Total	---		10000.000	24.010	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Organophosphorus Pesticides</b>														
Azinphos methyl (Guthion)	---		NA	9.220	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chlorpyrifos	---		NA	820.006	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Demeton, Total	---		NA	2.274	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Diazinon	---		NA	40.330	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dimethioate	---		NA	0.112	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Ethyl parathion	---		NA	93.226	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Malathion	---		NA	13.290	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methyl parathion	---		NA	11.589	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Phorate	---		NA	110.699	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Chlorinated Pesticides</b>														
Aldrin	---		NA	1066.744	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Atrazine	---		3.000	10.337	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
alpha-BHC	---		NA	108.354	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
beta-BHC	---		NA	108.354	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
delta-BHC	---		NA	218.321	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
gamma-BHC (Lindane)	---		0.200	87.366	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
alpha-Chlordane	---		2.000	1387.556	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
gamma-Chlordane	---		2.000	1454.155	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chlordane, Technical	---		2.000	639.959	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chlorbenside	---		NA	1241.416	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Chlorothalonil	---		NA	8.037	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4'-DDD	---		NA	1352.184	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
4,4'-DDD	---		NA	1387.556	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
o,p'-DDE (2,4)	---		NA	1487.942	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
p,p'-DDE (4,4)	---		NA	1158.992	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,4'-DDT	---		NA	1480.542	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
p,p'-DDT (4,4)	---		NA	1425.473	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dacthal	---		NA	354.933	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dichlorophenoxy acetic acid (2,4-D)	---		70.000	11.856	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.

HYDRAULIC PLACEMENT

Screening Evaluations for Confined Disposal Facility Leachate Quality (See reference below)

Contaminant	Testing Not Required based on Pore Water Tier I Results	Actual Bulk CDF Sediment Conc q (mg/kg)	Values from sheet "ChemData"				Predicted Leachable Sediment Conc (mg/kg)	Predicted Sediment Pore Water Conc (ug/l)	Using Calculated ADF, VDF and DAF				Predicted Groundwater Conc at Receptor (Applied) (ug/l)	Ratio Predicted Groundwater Conc. at Receptor to Leachate Criteria
			Leachate Criteria C <sub>wq</sub> (ug/l)	Unoxidized Distribution Coefficient K <sub>d</sub> (L/kg)	Unoxidized Leachable Fraction L <sup>F</sup> <sub>unox</sub>	Applied Dilution Attenuation Factor DAF			Peak Contam Conc Reaching Water Table C <sub>v,p</sub> (ug/l)	Contam Conc Reaching Water Table at time, t <sub>i</sub> C <sub>v,i</sub> (ug/l)	Groundwater Conc at Receptor at time, t <sub>i</sub> C <sub>R,i</sub> (ug/l)	Peak Groundwater Conc at Receptor C <sub>R,p</sub> (ug/l)		
Dicofol	---		NA	845.594	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Dieldrin	---		NA	1114.671	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Endosulfan I	---		NA	73.387	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Endosulfan II	---		NA	115.506	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Endosulfan sulfate	---		NA	80.090	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Endrin	---		2.000	992.516	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Endrin aldehyde	---		NA	164.768	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Endrin ketone	---		NA	820.009	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Heptachlor	---		0.400	1045.153	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Heptachlor epoxide	---		0.200	828.559	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Isodrin	---		NA	0.008	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Kepone	---		NA	0.083	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Methoxychlor	---		40.000	896.037	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Mirex	---		NA	1484.852	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
cis-Nonachlor	---		NA	1405.279	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
trans-Nonachlor	---		NA	1447.600	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Oxychlorane	---		NA	1339.450	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
cis-Permethrin	---		NA	1409.284	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
trans-Permethrin	---		NA	1409.284	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Silvex	---		50.000	46.108	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Toxaphene	---		3.0000	1194.018	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>Dioxins</b>														
1,2,3,4,6,7,8-HPCDD	---		NA	1498.785	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,4,6,7,8-HPCDF	---		NA	1498.540	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,4,7,8,9-HPCDF	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,4,7,8-HXCDD	---		NA	1498.076	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,4,7,8-HXCDF	---		NA	1499.964	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,6,7,8-HXCDD	---		NA	1498.076	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,6,7,8-HXCDF	---		NA	1498.540	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,7,8,9-HXCDD	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,7,8,9-HXCDF	---		NA	1496.810	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,7,8-PECDD	---		NA	1472.661	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
1,2,3,7,8-PECDF	---		NA	1478.691	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,3,4,6,7,8-HXCDF	---		NA	1498.540	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,3,4,7,8-PECDF	---		NA	1485.527	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,3,7,8-TCDD	---		0.000	1480.979	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
2,3,7,8-TCDF	---		NA	1464.964	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
OCDD	---		NA	1499.233	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
OCDF	---		NA	1498.785	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCDD/FS	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
TEQ(ND=0)	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
TEQ(ND=1/2)	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
TEQ EMPC(ND=0)	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
TEQ EMPC(ND=1/2)	---		NA	NA	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total HPCDDS	---		NA	1497.985	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total HPCDFS	---		NA	1499.285	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total HXCDDS	---		NA	1499.251	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total HXCDFS	---		NA	1496.810	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total PECDDS	---		NA	1462.521	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total PECDFS	---		NA	1486.172	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total TCDDS	---		NA	1453.120	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
Total TCDFS	---		NA	1440.146	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
<b>PCB Congeners</b>														
BZ# 008	---		NA	912.574	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.

HYDRAULIC PLACEMENT

Screening Evaluations for Confined Disposal Facility Leachate Quality (See reference below)

Contaminant	Testing Not Required based on Pore Water Tier I Results	Actual Bulk CDF Sediment Conc q (mg/kg)	Values from sheet "ChemData"				Predicted Leachable Sediment Conc $\bar{q}_{sed}$ (mg/kg)	Predicted Sediment Pore Water Conc $C_{sed}$ (ug/l)	Using Calculated ADF, VDF and DAF				Predicted Groundwater Conc at Receptor (Applied) $C_R$ (ug/l)	Ratio Predicted Groundwater Conc. at Receptor to Leachate Criteria
			Leachate Criteria $C_{wq}$ (ug/l)	Unoxidized Distribution Coefficient $K_d$ (L/kg)	Unoxidized Leachable Fraction $L_F^{unox}$	Applied Dilution Attenuation Factor DAF			Peak Contam Conc Reaching Water Table $C_{V,P}$ (ug/l)	Contam Conc Reaching Water Table at time, $t_i$ $C_{V,i}$ (ug/l)	Groundwater Conc at Receptor at time, $t_i$ $C_{R,i}$ (ug/l)	Peak Groundwater Conc at Receptor $C_{R,P}$ (ug/l)		
BZ# 018	---		NA	1246.306	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 028	---		NA	1329.274	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 044	---		NA	1387.556	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 049	---		NA	1409.284	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 052	---		NA	1409.284	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 066	---		NA	1329.274	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 077	---		NA	1462.521	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 087	---		NA	1462.521	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 101	---		NA	1453.120	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 105	---		NA	1480.542	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 118	---		NA	1459.004	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 126	---		NA	1470.076	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 128	---		NA	1494.070	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 138	---		NA	1476.667	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 153	---		NA	1484.852	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 156	---		NA	1482.633	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 169	---		NA	1489.487	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 170	---		NA	1490.184	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 180	---		NA	1491.827	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 183	---		NA	1488.741	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 184	---		NA	1477.702	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 187	---		NA	1488.214	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 195	---		NA	1494.464	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 206	---		NA	1492.369	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
BZ# 209	---		NA	1499.332	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1016)	---		NA	1236.451	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1221)	---		NA	193.789	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1232)	---		NA	28.774	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1242)	---		NA	205.747	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1248)	---		NA	1314.836	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1254)	---		NA	1396.769	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB(Aroclor-1260)	---		NA	1490.406	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.
PCB Total	---		0.500	1396.769	1.000	#DIV/0!	---	---	---	---	---	---	---	Not Req.

Myers, T. E., T. J. Estes, P. R. Schroeder and S. E. Bailey. 2006. Screening evaluations for confined disposal facility leachate quality. DOER Technical Notes Collection (ERDC TN DOER-CXX). Vicksburg, MS: U.S. Army Engineer Research and Development Center.



**PATHWAY**  
**HYDRAULIC PLACEMENT**  
**Screening Evaluations for Confined**  
**Disposal Facility**  
**Volatile Losses**  
(See reference below)

Contaminant	Volatilization				Enter by user on sheet "ChemData"			Values from sheet "ChemData"						Volatilization Computations for Ponded Conditions																	
	Ponded Conditions		Drying Conditions		Actual Bulk CDF Sediment Conc q (mg/kg)	Carrier Water Conc. C <sub>c</sub> (ug/l)	Back-ground Conc. C <sub>B</sub> (ug/l)	Volatilization Criteria IRD C <sub>Dose</sub> (mg/kg/day)	Molecular Weight MW (g/g-mole)	Henry's Law Constant H (atm-m <sup>3</sup> /g-mole)	Diffusivity in Air D <sub>A1</sub> (cm <sup>2</sup> /s)	Unoxidized Material K <sub>u</sub> <sup>unox</sup> (L/kg)	Oxidized Material K <sub>o</sub> <sup>ox</sup> (L/kg)	Unoxidized Leachable Fraction L <sub>F</sub> <sup>unox</sup>	Oxidized Leachable Fraction L <sub>F</sub> <sup>ox</sup>	Dimensionless Henry's Law Constant H'	Gas-side Mass Transfer Coefficient K <sub>G</sub> (cm/s)	Liquid-side Mass Transfer Coefficient K <sub>L</sub> (cm/s)	Overall Mass Transfer Coefficient K <sub>OL</sub> (cm/s)	Predicted Leachable Sediment Conc q <sub>sed</sub> <sup>*</sup> (mg/kg)	Predicted Sediment Pore Water Conc C <sub>sed</sub> (ug/l)	Predicted Slurry Conc including carrier water q <sub>sl</sub> <sup>*</sup> (mg/kg)	Predicted Ponded Water Conc (Mixing BC) C <sub>w1</sub> (ug/L)	Predicted Ponded Water Conc (Equilibrium BC) C <sub>w2</sub> (ug/L)	Predicted Ponded Water Conc C <sub>w</sub> (ug/L)	Predicted Flux for N (g cm <sup>-2</sup> s <sup>-1</sup> )	Predicted Emission for N E (g/sec)	Off-site, Ponded		On-site,	
	Testing Not Required. based on Tier I Results Off site	Testing Not Required. based on Tier I Results On site	Testing Not Required. based on Tier I Results Off site	Testing Not Required. based on Tier I Results On site																								Predicted Air Conc C <sub>a,off</sub> (mg/m <sup>3</sup> )	Predicted Inhalation Dose ID <sub>P,off</sub> (mg/kg/day)	Predicted Air Conc C <sub>a,on</sub> (mg/m <sup>3</sup> )	
	Off site	On site	Off site	On site																											
4-Chlorophenyl phenyl ether	---	---	---	---			NA	204.700	0.000	#VALUE!	828.559	828.559	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Cyclohexane	---	---	---	---			NA	84.160	0.195	0.084	49.305	49.305	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Di-n-butyl phthalate	---	---	---	---			9.40E+01	278.000	0.000	0.044	589.592	589.592	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Di-n-octyl phthalate	---	---	---	---			NA	391.000	0.000	0.015	1499.035	1499.035	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
1,2-Dichlorobenzene	---	---	---	---			1.58E+02	147.000	0.002	0.069	45.097	45.097	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
1,3-Dichlorobenzene	---	---	---	---			5.02E+02	147.000	0.003	0.069	45.097	45.097	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
1,4-Dichlorobenzene	---	---	---	---			1.12E+02	147.000	0.002	0.069	47.156	47.156	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
3,3'-Dichlorobenzidine	---	---	---	---			NA	253.100	0.000	0.019	57.597	57.597	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,4-Dichlorophenol	---	---	---	---			2.02E+02	163.000	0.000	0.035	21.929	21.929	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Diethyl phthalate	---	---	---	---			5.21E+03	222.200	0.000	0.026	5.443	5.443	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Dimethyl phthalate	---	---	---	---			3.30E+03	194.200	0.000	0.057	0.672	0.672	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,4-Dimethylphenol	---	---	---	---			2.12E+02	122.200	0.000	0.058	4.132	4.132	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	---	---	---	---			2.30E+01	198.100	0.000	0.029	9.220	9.220	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,4-Dinitrophenol	---	---	---	---			6.20E+01	184.100	0.000	0.027	0.656	0.656	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,4-Dinitrotoluene	---	---	---	---			3.10E+03	182.100	0.000	0.203	1.892	1.892	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,6-Dinitrotoluene	---	---	---	---			NA	182.100	0.000	0.033	3.519	3.519	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
1,2-Diphenylhydrazine	---	---	---	---			2.70E+01	184.200	0.000	0.032	15.950	15.950	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Hexachlorobenzene	---	---	---	---			NA	284.800	0.001	0.054	1358.208	1358.208	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Hexachlorobutadiene	---	---	---	---			9.00E+00	260.800	0.010	0.056	665.153	665.153	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Hexachlorocyclopentadiene	---	---	---	---			7.00E-01	272.800	0.028	0.016	828.559	828.559	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Hexachloroethane	---	---	---	---			9.80E+01	236.700	0.004	0.003	164.768	164.768	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Isophorone	---	---	---	---			1.17E+04	138.200	0.000	0.062	0.927	0.927	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Methylcyclohexane	---	---	---	---			NA	98.190	0.427	0.099	128.394	128.394	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2-Methyl-4,6-dinitrophenol	---	---	---	---			NA	198.130	0.000	0.029	2.436	2.436	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2-Methylphenol	---	---	---	---			NA	108.200	0.000	0.074	1.766	1.766	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4-Methylphenol	---	---	---	---			NA	108.200	0.000	0.074	1.725	1.725	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2-Nitroaniline	---	---	---	---			NA	138.130	0.000	0.047	1.115	1.115	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
3-Nitroaniline	---	---	---	---			NA	138.130	0.000	#VALUE!	0.434	0.434	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4-Nitroaniline	---	---	---	---			NA	138.130	0.000	0.047	0.454	0.454	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2-Nitrophenol	---	---	---	---			NA	139.100	0.000	0.047	1.167	1.167	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
4-Nitrophenol	---	---	---	---			8.28E+02	139.100	0.000	0.043	1.725	1.725	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
N-Nitrosodi-n-propylamine	---	---	---	---			NA	130.200	0.000	0.055	0.465	0.465	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
N-Nitrosodimethylamine	---	---	---	---			NA	74.080	0.000	0.113	0.021	0.021	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
N-Nitrosodiphenylamine	---	---	---	---			5.85E+02	198.200	0.001	0.031	24.560	24.560	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Nitrobenzene	---	---	---	---			2.70E+03	123.100	0.000	0.076	1.309	1.309	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Pentachlorobenzene	---	---	---	---			2.50E+02	250.300	0.001	0.057	1293.282	1293.282	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Pentachlorophenol	---	---	---	---			1.90E+01	266.000	0.000	0.056	887.711	887.711	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Phenol	---	---	---	---			1.02E+03	94.110	0.000	0.082	0.534	0.534	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	---	---	---	---			1.50E+02	181.400	0.002	0.030	168.175	168.175	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,4,5-Trichlorophenol	---	---	---	---			NA	197.450	0.000	0.029	133.905	133.905	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2,4,6-Trichlorophenol	---	---	---	---			3.20E+01	197.400	0.000	0.032	70.239	70.239	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
<b>Volatile Organic Compounds</b>																															
Acetone	---	---	---	---			NA	58.080	0.000	0.124	0.011	0.011	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Acrolein	---	---	---	---			6.80E+00	56.100	0.000	0.110	0.018	0.018	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Acrylonitrile	---	---	---	---			7.55E+02	53.100	0.000	0.122	0.033	0.033	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Benzene	---	---	---	---			5.30E+02	78.110	0.006	0.088	2.493	2.493	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Bromodichloromethane	---	---	---	---			NA	163.830	0.002	0.030	2.327	2.327	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Bromoform	---	---	---	---			2.93E+03	252.750	0.001	0.015	4.427	4.427	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Bromomethane	---	---	---	---			1.10E+03	94.940	0.006	0.073	0.287	0.287	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
2-Butanone	---	---	---	---			NA	72.110	0.000	0.081	0.036	0.036	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Carbon disulfide	---	---	---	---			NA	76.140	0.030	0.104	1.610	1.610	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Carbon tetrachloride	---	---	---	---			3.52E+03	153.820	0.030	0.078	16.693	16.693	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Chlorobenzene	---	---	---	---			1.95E+03	112.560	0.004	0.073	12.697	12.697	1.000	1.000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Chloroethane	---	---	---	---																											





**VOLATILIZATION  
PATHWAY**  
HYDRAULIC PLACEMENT  
Screening Evaluations for Confined  
Disposal Facility  
Volatile Losses  
(See reference below)

Contaminant	Volatilization Computations for Drying Conditions															Ratios				
	Ponded	Off-Site						On-site								Ponded Conditions		Drying Conditions		
	Predicted Inhalation Dose ID <sup>P</sup> <sub>P,off</sub> (mg/kg/day)	Effective Diffusivity in Air D <sub>A3</sub> (cm <sup>2</sup> /s)	Leachable Sediment Conc q <sup>sed</sup> (mg/kg)	Volatile Emission Equation Part A (cm <sup>3</sup> /kg)	Volatile Emission Equation Part B <sub>off</sub> (sec/cm)	Volatile Emission Equation Part C (mg/cm <sup>3</sup> )	Predicted Flux for Air Conc for N <sup>P</sup> <sub>off</sub> (g/cm <sup>2</sup> /sec)	Predicted Emission for E <sup>P</sup> <sub>off</sub> (g/sec)	Predicted Air Conc C <sup>A</sup> <sub>A,off</sub> (mg/m <sup>3</sup> )	Predicted Inhalation Dose ID <sup>P</sup> <sub>P,off</sub> (mg/kg/day)	Volatile Emission Equation Part B <sub>on</sub> (sec/cm)	Volatile Emission Equation Part C (mg/cm <sup>3</sup> )	Predicted Flux for Air Conc for N <sup>P</sup> <sub>on</sub> (g/cm <sup>2</sup> /sec)	Predicted Emission for E <sup>P</sup> <sub>on</sub> (g/sec)	Predicted Air Conc C <sup>A</sup> <sub>A,on</sub> (mg/m <sup>3</sup> )	Predicted Inhalation Dose ID <sup>P</sup> <sub>P,on</sub> (mg/kg/day)	Inhalation Dose to Volatilization Criteria Off Site	Inhalation Dose to Volatilization Criteria On Site	Inhalation Dose to Volatilization Criteria Off Site	Inhalation Dose to Volatilization Criteria On Site
<b>Metals</b>																				
Aluminum	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Antimony	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Arsenic	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Barium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Beryllium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Boron	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Cadmium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Chromium VI	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Cobalt	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Copper	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Iron	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Lead	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Lithium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Manganese	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Mercury	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Molybdenum	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Nickel	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Selenium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Silver	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Strontium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Thallium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Tin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Uranium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Vanadium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Zinc	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Zirconium	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
<b>Organometals</b>																				
Dibutyltin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Monobutyltin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Tetrabutyltin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Tributyltin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Methylmercury	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
<b>Inorganic/General Chemistry</b>																				
Cyanide	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Ammonia-N	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Nitrogen, Total Kjeldahl	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Sulfide	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
<b>PAH's</b>																				
Acenaphthene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Acenaphthylene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Anthracene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzo(a)anthracene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzo(a)pyrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzo(e)pyrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Biphenyl	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Carbazol	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Chrysene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Dibenzo(a,h)anthracene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Dibenzo-p-dioxin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Dibenzofuran	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Dibenzo(a,e)pyrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Dibenzothiophene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
7,12 Dimethyl-benz(a)anthracene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
1,2 Dimethyl-naphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
1,4 Dimethyl-naphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
2,6 Dimethyl-naphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
2,7 Dimethyl-naphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
3,6-Dimethyl-phenanthrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Fluoranthene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Fluorene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Indeno(1,2,3-c,d)pyrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
3-Methylcholanthrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
1-Methylnaphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
2-Methylnaphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Naphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Perylene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Phenanthrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Pyrene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
<b>Semi-Volatile Organic Compounds</b>																				
Acetophenone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzaldehyde	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzidine	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzoic acid	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzyl alcohol	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Benzyl butyl phthalate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
4-Bromophenyl phenyl ether	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Bis(2-chloroethoxy) methane	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Bis(2-chloroethyl) ether	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Bis(2-chloroisopropyl) ether	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Bis(2-ethylhexyl) phthalate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
Caprolactam	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
4-Chloro-3-methylphenol	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
4-Chloroaniline	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
2-Chloronaphthalene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	
2-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.	



**PATHWAY**  
**HYDRAULIC PLACEMENT**  
**Screening Evaluations for Confined**  
**Disposal Facility**  
**Volatile Losses**  
(See reference below)

Contaminant	Volatilization Computations for Drying Conditions																Ratios			
	Ponded	Off-Site								On-site							Ponded Conditions		Drying Conditions	
	Predicted Inhalation Dose ID <sub>P, off</sub> <sup>1</sup> (mg/kg/day)	Effective Diffusivity in Air D <sub>A3</sub> (cm <sup>2</sup> /s)	Leachable Sediment Conc q <sup>sed</sup> (mg)	Volatile Emission Equation Part A (cm <sup>3</sup> /kg)	Volatile Emission Equation Part B <sub>off</sub> (sec/cm)	Volatile Emission Equation Part C (mg/cm <sup>3</sup> )	Predicted Flux for Air Conc N <sub>off</sub> <sup>1</sup> (g/cm <sup>2</sup> /sec)	Predicted Emission Conc E <sub>off</sub> <sup>1</sup> (g/sec)	Predicted Air Conc C <sub>A, off</sub> <sup>1</sup> (mg/m <sup>3</sup> )	Predicted Inhalation Dose ID <sub>P, off</sub> <sup>1</sup> (mg/kg/day)	Volatile Emission Equation Part B <sub>on</sub> (sec/cm)	Volatile Emission Equation Part C (mg/cm <sup>3</sup> )	Predicted Flux for Air Conc N <sub>on</sub> <sup>1</sup> (g/cm <sup>2</sup> /sec)	Predicted Emission Conc E <sub>on</sub> <sup>1</sup> (g/sec)	Predicted Air Conc C <sub>A, on</sub> <sup>1</sup> (mg/m <sup>3</sup> )	Predicted Inhalation Dose ID <sub>P, on</sub> <sup>1</sup> (mg/kg/day)	Inhalation Dose to Volatilization Criteria Off Site	Inhalation Dose to Volatilization Criteria On Site	Inhalation Dose to Volatilization Criteria Off Site	Inhalation Dose to Volatilization Criteria On Site
Xylenes, Total	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
<b>Organophosphorus Pesticides</b>																				
Azinphos methyl (Guthion)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Chlorpyrifos	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Demeton, Total	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Diazinon	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Dimethoate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Ethyl parathion	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Malathion	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Methyl parathion	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Phorate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
<b>Chlorinated Pesticides</b>																				
Aldrin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Atrazine	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
alpha-BHC	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
beta-BHC	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
delta-BHC	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
gamma-BHC (Lindane)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
alpha-Chlordane	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
gamma-Chlordane	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Chlordane, Technical	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Chlorbenseide	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Chlorothalonil	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
2,4'-DDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
4,4'-DDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
o,p'-DDE (2,4)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
p,p'-DDE (4,4)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
2,4'-DDT	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
p,p'-DDT (4,4)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Dacthal	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Dichlorophenoxy acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Dicofol	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Dieldrin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Endosulfan I	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Endosulfan II	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Endosulfan sulfate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Endrin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Endrin aldehyde	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Endrin ketone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Heptachlor	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Heptachlor epoxide	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Isodrin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Kepone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Methoxychlor	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Mirex	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
cis-Nonachlor	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
trans-Nonachlor	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Oxychlorane	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
cis-Permethrin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
trans-Permethrin	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Silvex	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Toxaphene	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
<b>Dioxins</b>																				
1,2,3,4,6,7,8-HPCDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,4,6,7,8-HPCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,4,7,8,9-HPCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,4,7,8-HXCDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,4,7,8-HXCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,6,7,8-HXCDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,6,7,8-HXCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,7,8,9-HXCDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,7,8,9-HXCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,7,8-PECDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
1,2,3,7,8-PECDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
2,3,4,6,7,8-HXCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
2,3,4,7,8-PECDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
2,3,7,8-TCDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
2,3,7,8-TCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
OCDD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
OCDF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCDD/FS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
TEQ(ND=0)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
TEQ(ND=1/2)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
TEQ EMPC(ND=0)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
TEQ EMPC(ND=1/2)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total HPCDDs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total HPCDFs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total HXCDDs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total HXCDFs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total PECDDs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total PECDFs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
Total TCDDs	---	---	---</																	

**PATHWAY**  
**HYDRAULIC PLACEMENT**  
**Screening Evaluations for Confined Disposal Facility**  
**Volatle Losses**  
(See reference below)

Contaminant	Volatilization Computations for Drying Conditions															Ratios				
	Ponded	Off-Site						On-site								Ponded Conditions		Drying Conditions		
	Predicted Inhalation Dose $ID_{P,off}^i$ (mg/kg/day)	Effective Diffusivity in Air $D_{A3}$ [ $cm^2/s$ ]	Leachable Sediment Conc $q^{sed}$ (mg/kg)	Volatle Emission Equation Part A (cm <sup>3</sup> /kg)	Volatle Emission Equation Part B (sec/cm)	Volatle Emission Equation Part C (mg/cm <sup>3</sup> )	Predicted Flux for Air Conc $N_{off}^i$ (g/cm <sup>2</sup> /sec)	Predicted Emission for $N_{off}^i$ $E_{off}^i$ (g/sec)	Predicted Air Conc $C_{A,off}^i$ (mg/m <sup>3</sup> )	Predicted Inhalation Dose $ID_{P,off}^i$ (mg/kg/day)	Volatle Emission Equation Part B (sec/cm)	Volatle Emission Equation Part C (mg/cm <sup>3</sup> )	Predicted Flux for Air Conc $N_{on}^i$ (g/cm <sup>2</sup> /sec)	Predicted Emission for $N_{on}^i$ $E_{on}^i$ (g/sec)	Predicted Air Conc $C_{A,on}^i$ (mg/m <sup>3</sup> )	Predicted Inhalation Dose $ID_{P,on}^i$ (mg/kg/day)	Inhalation Dose to Volatilization Criteria $Off Site$	Inhalation Dose to Volatilization Criteria $On Site$	Inhalation Dose to Volatilization Criteria $Off Site$	Inhalation Dose to Volatilization Criteria $On Site$
BZ# 087	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 101	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 105	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 118	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 126	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 128	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 138	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 153	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 156	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 169	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 170	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 180	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 183	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 184	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 187	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 195	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 206	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
BZ# 209	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1016)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1221)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1232)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1242)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1248)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1254)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB(Aroclor-1260)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.
PCB Total	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Not Req.	Not Req.	Not Req.	Not Req.

Myers, T. E., Estes, T. J., Schroeder, P. R. and Bailey, S. E. (2005). "Screening evaluations for confined disposal facility volatile losses." DOER Technical Notes Collection (ERDC TN DOER-CXX), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

**PLANT & ANIMAL  
UPTAKE PATHWAY  
HYDRAULIC PLACEMENT  
Screening Evaluations for Confined  
Disposal Facility  
Volatile Losses ??????????  
(See reference below)**

Contaminant	Testing Not Required based on Tier I Results	Actual Bulk Sediment Conc q (mg/kg)	Sediment DTPA Extract Conc q <sub>DTPA</sub> -Metals Only- (ug/L)	Reference Soil DTPA Extract Conc q <sup>R</sup> <sub>DTPA</sub> -Metals Only- (ug/L)	Reference Material Conc q <sub>RM</sub> (mg/kg)	Applicable Screening Criteria q <sub>sc</sub> (mg/kg)	Plant and Animal Uptake Calculations			Ratios		
							DTPA Comparison -Metals Only-	Reference Comparison	Screen Comparison	DPTA Extract Sediment to Reference Soil -Metals Only-	Bulk Sediment to Reference Material	Bulk Sediment to Screening Criteria
<b>Metals</b>												
Aluminum	---					87.000	---	---	---	Not Req.	Not Req.	Not Req.
Antimony	---					160.000	---	---	---	Not Req.	Not Req.	Not Req.
Arsenic	---					150.000	---	---	---	Not Req.	Not Req.	Not Req.
Barium	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Beryllium	---					0.530	---	---	---	Not Req.	Not Req.	Not Req.
Boron	---					750.000	---	---	---	Not Req.	Not Req.	Not Req.
Cadmium	---					0.250	---	---	---	Not Req.	Not Req.	Not Req.
Chromium III	---	7.214				74.000	---	---	---	Not Req.	Not Req.	Not Req.
Chromium VI	---	21.241				11.000	---	---	---	Not Req.	Not Req.	Not Req.
Cobalt	---	0.025				NA	---	---	---	Not Req.	Not Req.	Not Req.
Copper	---	0.000				9.000	---	---	---	Not Req.	Not Req.	Not Req.
Iron	---	0.000				1000.000	---	---	---	Not Req.	Not Req.	Not Req.
Lead	---	21.241				2.500	---	---	---	Not Req.	Not Req.	Not Req.
Lithium	---	0.025				NA	---	---	---	Not Req.	Not Req.	Not Req.
Manganese	---	0.000				NA	---	---	---	Not Req.	Not Req.	Not Req.
Mercury	---	0.025				0.770	---	---	---	Not Req.	Not Req.	Not Req.
Molybdenum	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Nickel	---					52.000	---	---	---	Not Req.	Not Req.	Not Req.
Selenium	---					5.000	---	---	---	Not Req.	Not Req.	Not Req.
Silver	---					0.012	---	---	---	Not Req.	Not Req.	Not Req.
Strontium	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Thallium	---					4.000	---	---	---	Not Req.	Not Req.	Not Req.
Tin	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Uranium	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Vandium	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Zinc	---					120.000	---	---	---	Not Req.	Not Req.	Not Req.
Zirconium	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
<b>Organometals</b>												
Dibutyltin	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Monobutyltin	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Tetrabutyltin	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Tributyltin	---					0.026	---	---	---	Not Req.	Not Req.	Not Req.
Methylmercury	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
<b>Inorganic/General Chemistry</b>												
Cyanide	---					5.200	---	---	---	Not Req.	Not Req.	Not Req.
Ammonia-N	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Nitrogen, Total Kjeldahl	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Sulfide	---					2.000	---	---	---	Not Req.	Not Req.	Not Req.
<b>PAH's</b>												
Acenaphthene	---					17.000	---	---	---	Not Req.	Not Req.	Not Req.
Acenaphthylene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Anthracene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Benzo(a)anthracene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Benzo(b)fluoranthene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Benzo(k)fluoranthene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Benzo(g,h,i)perylene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.
Benzo(a)pyrene	---					NA	---	---	---	Not Req.	Not Req.	Not Req.

Benzo(e)pyrene	---			NA		---	---		Not Req.	Not Req.
Biphenyl	---			NA		---	---		Not Req.	Not Req.
Carbazol	---			NA		---	---		Not Req.	Not Req.
Chrysene	---			NA		---	---		Not Req.	Not Req.
Dibenzo(a,h)anthracene	---			NA		---	---		Not Req.	Not Req.
Dibenzo-p-dioxin	---			NA		---	---		Not Req.	Not Req.
Dibenzofuran	---			NA		---	---		Not Req.	Not Req.
Dibenzo(a,e)pyrene	---			NA		---	---		Not Req.	Not Req.
Dibenzothiophene	---			NA		---	---		Not Req.	Not Req.
7,12 Dimethyl-benz(a)anthracene	---			NA		---	---		Not Req.	Not Req.
1,2 Dimethyl-naphthalene	---		3.000	NA		---	---		Not Req.	Not Req.
1,4 Dimethyl-naphthalene	---			NA		---	---		Not Req.	Not Req.
2,6 Dimethyl-naphthalene	---			NA		---	---		Not Req.	Not Req.
2,7 Dimethyl-naphthalene	---			NA		---	---		Not Req.	Not Req.
3,6-Dimethyl-phenanthrene	---			NA		---	---		Not Req.	Not Req.
Fluoranthene	---			39.800		---	---		Not Req.	Not Req.
Fluorene	---			NA		---	---		Not Req.	Not Req.
Indeno(1,2,3-c,d)pyrene	---			NA		---	---		Not Req.	Not Req.
3-Methylcholanthrene	---			NA		---	---		Not Req.	Not Req.
1-Methylnaphthalene	---			NA		---	---		Not Req.	Not Req.
2-Methylnaphthalene	---			NA		---	---		Not Req.	Not Req.
Naphthalene	---			62.000		---	---		Not Req.	Not Req.
Perylene	---			NA		---	---		Not Req.	Not Req.
Phenanthrene	---			NA		---	---		Not Req.	Not Req.
Pyrene	---			NA		---	---		Not Req.	Not Req.
<b>Semi-Volatile Organic Compounds</b>										
Acetophenone	---			NA		---	---		Not Req.	Not Req.
Benzaldehyde	---			NA		---	---		Not Req.	Not Req.
Benzidine	---			25.000		---	---		Not Req.	Not Req.
Benzoic acid	---			NA		---	---		Not Req.	Not Req.
Benzyl alcohol	---			NA		---	---		Not Req.	Not Req.
Benzyl butyl phthalate	---			22.000		---	---		Not Req.	Not Req.
4-Bromophenyl phenyl ether	---			12.200		---	---		Not Req.	Not Req.
Bis(2-chloroethoxy) methane	---			NA		---	---		Not Req.	Not Req.
Bis(2-chloroethyl) ether	---			2380.000		---	---		Not Req.	Not Req.
Bis(2-chloroisopropyl) ether	---			NA		---	---		Not Req.	Not Req.
Bis(2-ethylhexyl) phthalate	---			0.300		---	---		Not Req.	Not Req.
Caprolactam	---			NA		---	---		Not Req.	Not Req.
4-Chloro-3-methylphenol	---			0.300		---	---		Not Req.	Not Req.
4-Chloroaniline	---			NA		---	---		Not Req.	Not Req.
2-Chloronaphthalene	---			NA		---	---		Not Req.	Not Req.
2-Chlorophenol	---			43.800		---	---		Not Req.	Not Req.
4-Chlorophenyl phenyl ether	---			NA		---	---		Not Req.	Not Req.
Cyclohexane	---			NA		---	---		Not Req.	Not Req.
Di-n-butyl phthalate	---			9.400		---	---		Not Req.	Not Req.
Di-n-octyl phthalate	---			NA		---	---		Not Req.	Not Req.
1,2-Dichlorobenzene	---			15.800		---	---		Not Req.	Not Req.
1,3-Dichlorobenzene	---			50.200		---	---		Not Req.	Not Req.
1,4-Dichlorobenzene	---			11.200		---	---		Not Req.	Not Req.
3,3'-Dichlorobenzidine	---			NA		---	---		Not Req.	Not Req.
2,4-Dichlorophenol	---			36.500		---	---		Not Req.	Not Req.
Diethyl phthalate	---			521.000		---	---		Not Req.	Not Req.
Dimethyl phthalate	---			330.000		---	---		Not Req.	Not Req.
2,4-Dimethylphenol	---			21.200		---	---		Not Req.	Not Req.
4,6-Dinitro-2-methylphenol	---			2.300		---	---		Not Req.	Not Req.
2,4-Dinitrophenol	---			6.200		---	---		Not Req.	Not Req.
2,4-Dinitrotoluene	---			310.000		---	---		Not Req.	Not Req.
2,6-Dinitrotoluene	---			NA		---	---		Not Req.	Not Req.

1,2-Diphenylhydrazine	---			2.700		---	---		Not Req.	Not Req.
Hexachlorobenzene	---			NA		---	---		Not Req.	Not Req.
Hexachlorobutadiene	---			0.930		---	---		Not Req.	Not Req.
Hexachlorocyclopentadiene	---			0.070		---	---		Not Req.	Not Req.
Hexachloroethane	---			9.800		---	---		Not Req.	Not Req.
Isophorone	---			1170.000		---	---		Not Req.	Not Req.
Methylcyclohexane	---			NA		---	---		Not Req.	Not Req.
2-Methyl-4,6-dinitrophenol	---			NA		---	---		Not Req.	Not Req.
2-Methylphenol	---			NA		---	---		Not Req.	Not Req.
4-Methylphenol	---			NA		---	---		Not Req.	Not Req.
2-Nitroaniline	---			NA		---	---		Not Req.	Not Req.
3-Nitroaniline	---			NA		---	---		Not Req.	Not Req.
4-Nitroaniline	---			NA		---	---		Not Req.	Not Req.
2-Nitrophenol	---			3500.000		---	---		Not Req.	Not Req.
4-Nitrophenol	---			82.800		---	---		Not Req.	Not Req.
N-Nitrosodi-n-propylamine	---			NA		---	---		Not Req.	Not Req.
N-Nitrosodimethylamine	---			NA		---	---		Not Req.	Not Req.
N-Nitrosodiphenylamine	---			58.500		---	---		Not Req.	Not Req.
Nitrobenzene	---			270.000		---	---		Not Req.	Not Req.
Pentachlorobenzene	---			50.000		---	---		Not Req.	Not Req.
Pentachlorophenol	---			15.000		---	---		Not Req.	Not Req.
Phenol	---			256.000		---	---		Not Req.	Not Req.
1,2,4-Trichlorobenzene	---			44.900		---	---		Not Req.	Not Req.
2,4,5-Trichlorophenol	---			NA		---	---		Not Req.	Not Req.
2,4,6-Trichlorophenol	---			3.200		---	---		Not Req.	Not Req.
<b>Volatile Organic Compounds</b>										
Acetone	---			NA		---	---		Not Req.	Not Req.
Acrolein	---			2.100		---	---		Not Req.	Not Req.
Acrylonitrile	---			75.500		---	---		Not Req.	Not Req.
Benzene	---			53.000		---	---		Not Req.	Not Req.
Bromodichloromethane	---			NA		---	---		Not Req.	Not Req.
Bromoform	---			293.000		---	---		Not Req.	Not Req.
Bromomethane	---			110.000		---	---		Not Req.	Not Req.
2-Butanone	---			NA		---	---		Not Req.	Not Req.
Carbon disulfide	---			NA		---	---		Not Req.	Not Req.
Carbon tetrachloride	---			352.000		---	---		Not Req.	Not Req.
Chlorobenzene	---			195.000		---	---		Not Req.	Not Req.
Chloroethane	---			NA		---	---		Not Req.	Not Req.
Chloroform	---			289.000		---	---		Not Req.	Not Req.
Chloromethane	---			5500.000		---	---		Not Req.	Not Req.
Decane	---			NA		---	---		Not Req.	Not Req.
Dibromochloromethane	---			NA		---	---		Not Req.	Not Req.
1,2-Dibromo-3-chloropropane	---			NA		---	---		Not Req.	Not Req.
1,2-Dibromoethane	---			NA		---	---		Not Req.	Not Req.
Dichlorodifluoromethane	---			NA		---	---		Not Req.	Not Req.
1,1-Dichloroethane	---			NA		---	---		Not Req.	Not Req.
1,2-Dichloroethane	---			2000.000		---	---		Not Req.	Not Req.
1,1-Dichloroethylene	---			303.000		---	---		Not Req.	Not Req.
cis-1,2-Dichloroethylene	---			NA		---	---		Not Req.	Not Req.
trans-1,2-Dichloroethylene	---			1350.000		---	---		Not Req.	Not Req.
1,2-Dichloropropane	---			525.000		---	---		Not Req.	Not Req.
cis-1,3-Dichloropropene	---			24.400		---	---		Not Req.	Not Req.
trans-1,3-Dichloropropene	---			24.400		---	---		Not Req.	Not Req.
Ethylbenzene	---			453.000		---	---		Not Req.	Not Req.
Hexane	---			NA		---	---		Not Req.	Not Req.
2-Hexanone	---			NA		---	---		Not Req.	Not Req.
Isopropylbenzene	---			NA		---	---		Not Req.	Not Req.
Methyl acetate	---			NA		---	---		Not Req.	Not Req.

Methyl tert-butyl ether	---			NA		---	---		Not Req.	Not Req.
4-Methyl-2-pentanone	---			NA		---	---		Not Req.	Not Req.
Methylene chloride	---			1930.000		---	---		Not Req.	Not Req.
2-Octanone	---			NA		---	---		Not Req.	Not Req.
1-Pentanol	---			NA		---	---		Not Req.	Not Req.
2-Propanol	---			NA		---	---		Not Req.	Not Req.
Styrene	---			NA		---	---		Not Req.	Not Req.
1,1,2,2-Tetrachloroethane	---			240.000		---	---		Not Req.	Not Req.
Tetrachloroethene	---			84.000		---	---		Not Req.	Not Req.
Toluene	---			175.000		---	---		Not Req.	Not Req.
1,1,1-Trichloroethane	---			528.000		---	---		Not Req.	Not Req.
1,1,2-Trichloroethane	---			940.000		---	---		Not Req.	Not Req.
1,1,2-Trichlor-1,2,2-trifluoroethane	---			NA		---	---		Not Req.	Not Req.
Trichloroethene	---			NA		---	---		Not Req.	Not Req.
Trichlorofluoromethane	---			NA		---	---		Not Req.	Not Req.
Vinyl acetate	---			NA		---	---		Not Req.	Not Req.
Vinyl chloride	---			NA		---	---		Not Req.	Not Req.
m,p-Xylene	---			NA		---	---		Not Req.	Not Req.
o-Xylene	---			NA		---	---		Not Req.	Not Req.
Xylenes, Total	---			NA		---	---		Not Req.	Not Req.
<b>Organophosphorus Pesticides</b>										
Azinphos methyl (Guthion)	---			0.010		---	---		Not Req.	Not Req.
Chlorpyrifos	---			0.041		---	---		Not Req.	Not Req.
Demeton, Total	---			0.010		---	---		Not Req.	Not Req.
Diazinon	---			NA		---	---		Not Req.	Not Req.
Dimethoate	---			NA		---	---		Not Req.	Not Req.
Ethyl parathion	---			0.013		---	---		Not Req.	Not Req.
Malathion	---			0.010		---	---		Not Req.	Not Req.
Methyl parathion	---			NA		---	---		Not Req.	Not Req.
Phorate	---			NA		---	---		Not Req.	Not Req.
<b>Chlorinated Pesticides</b>										
Aldrin	---			0.300		---	---		Not Req.	Not Req.
Atrazine	---			NA		---	---		Not Req.	Not Req.
alpha-BHC	---			500.000		---	---		Not Req.	Not Req.
beta-BHC	---			5000.000		---	---		Not Req.	Not Req.
delta-BHC	---			NA		---	---		Not Req.	Not Req.
gamma-BHC (Lindane)	---			0.080		---	---		Not Req.	Not Req.
alpha-Chlordane	---			0.004		---	---		Not Req.	Not Req.
gamma-Chlordane	---			0.004		---	---		Not Req.	Not Req.
Chlordane, Techincal	---			0.004		---	---		Not Req.	Not Req.
Chlorbenside	---			NA		---	---		Not Req.	Not Req.
Chlorothalonil	---			NA		---	---		Not Req.	Not Req.
2,4'-DDD	---			NA		---	---		Not Req.	Not Req.
4,4'-DDD	---			0.006		---	---		Not Req.	Not Req.
o,p'-DDE (2,4)	---			NA		---	---		Not Req.	Not Req.
p,p'-DDE (4,4)	---			10.500		---	---		Not Req.	Not Req.
2,4'-DDT	---			NA		---	---		Not Req.	Not Req.
p,p'-DDT (4,4)	---			0.001		---	---		Not Req.	Not Req.
Dacthal	---			NA		---	---		Not Req.	Not Req.
Dichlorophenoxy acetic acid (2,4-D)	---			NA		---	---		Not Req.	Not Req.
Dicofol	---			NA		---	---		Not Req.	Not Req.
Dieldrin	---			0.056		---	---		Not Req.	Not Req.
Endosulfan I	---			0.056		---	---		Not Req.	Not Req.
Endosulfan II	---			0.056		---	---		Not Req.	Not Req.
Endosulfan sulfate	---			NA		---	---		Not Req.	Not Req.
Endrin	---			0.036		---	---		Not Req.	Not Req.
Endrin aldehyde	---			NA		---	---		Not Req.	Not Req.
Endrin ketone	---			NA		---	---		Not Req.	Not Req.

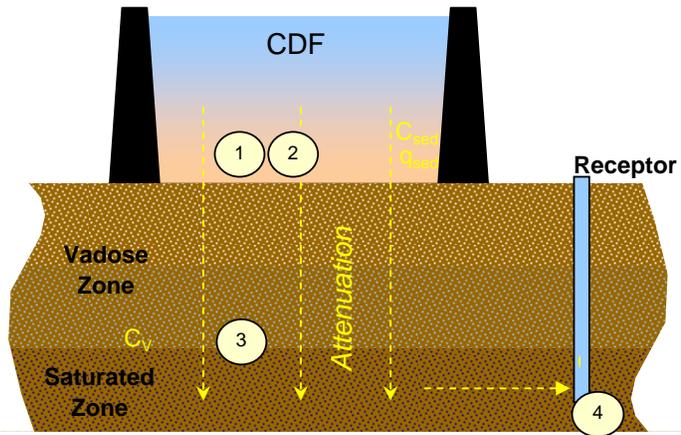
Heptachlor	---			0.004		---	---		Not Req.	Not Req.
Heptachlor epoxide	---			0.004		---	---		Not Req.	Not Req.
Isodrin	---			NA		---	---		Not Req.	Not Req.
Kepona	---			NA		---	---		Not Req.	Not Req.
Methoxychlor	---			0.030		---	---		Not Req.	Not Req.
Mirex	---			0.001		---	---		Not Req.	Not Req.
cis-Nonachlor	---			NA		---	---		Not Req.	Not Req.
trans-Nonachlor	---			NA		---	---		Not Req.	Not Req.
Oxychlorane	---			NA		---	---		Not Req.	Not Req.
cis-Permethrin	---			NA		---	---		Not Req.	Not Req.
trans-Permethrin	---			NA		---	---		Not Req.	Not Req.
Silvex	---			NA		---	---		Not Req.	Not Req.
Toxaphene	---			0.000		---	---		Not Req.	Not Req.
<b>Dioxins</b>										
1,2,3,4,6,7,8-HPCDD	---			NA		---	---		Not Req.	Not Req.
1,2,3,4,6,7,8-HPCDF	---			NA		---	---		Not Req.	Not Req.
1,2,3,4,7,8,9-HPCDF	---			NA		---	---		Not Req.	Not Req.
1,2,3,4,7,8-HXCDD	---			NA		---	---		Not Req.	Not Req.
1,2,3,4,7,8-HXCDF	---			NA		---	---		Not Req.	Not Req.
1,2,3,6,7,8-HXCDD	---			NA		---	---		Not Req.	Not Req.
1,2,3,6,7,8-HXCDF	---			NA		---	---		Not Req.	Not Req.
1,2,3,7,8,9-HXCDD	---			NA		---	---		Not Req.	Not Req.
1,2,3,7,8,9-HXCDF	---			NA		---	---		Not Req.	Not Req.
1,2,3,7,8-PECDD	---			NA		---	---		Not Req.	Not Req.
1,2,3,7,8-PECDF	---			NA		---	---		Not Req.	Not Req.
2,3,4,6,7,8-HXCDF	---			NA		---	---		Not Req.	Not Req.
2,3,4,7,8-PECDF	---			NA		---	---		Not Req.	Not Req.
2,3,7,8-TCDD	---			0.000		---	---		Not Req.	Not Req.
2,3,7,8-TCDF	---			NA		---	---		Not Req.	Not Req.
OCDD	---			NA		---	---		Not Req.	Not Req.
OCDF	---			NA		---	---		Not Req.	Not Req.
PCDD/FS	---			NA		---	---		Not Req.	Not Req.
TEQ(ND=0)	---			NA		---	---		Not Req.	Not Req.
TEQ(ND=1/2)	---			NA		---	---		Not Req.	Not Req.
TEQ EMPC(ND=0)	---			NA		---	---		Not Req.	Not Req.
TEQ EMPC(ND=1/2)	---			NA		---	---		Not Req.	Not Req.
Total HPCDDS	---			NA		---	---		Not Req.	Not Req.
Total HPCDFS	---			NA		---	---		Not Req.	Not Req.
Total HXCDDS	---			NA		---	---		Not Req.	Not Req.
Total HXCDFS	---			NA		---	---		Not Req.	Not Req.
Total PECDDS	---			NA		---	---		Not Req.	Not Req.
Total PECDFS	---			NA		---	---		Not Req.	Not Req.
Total TCDDS	---			NA		---	---		Not Req.	Not Req.
Total TCDFS	---			NA		---	---		Not Req.	Not Req.
<b>PCB Congeners</b>										
BZ# 008	---			NA		---	---		Not Req.	Not Req.
BZ# 018	---			NA		---	---		Not Req.	Not Req.
BZ# 028	---			NA		---	---		Not Req.	Not Req.
BZ# 044	---			NA		---	---		Not Req.	Not Req.
BZ# 049	---			NA		---	---		Not Req.	Not Req.
BZ# 052	---			NA		---	---		Not Req.	Not Req.
BZ# 066	---			NA		---	---		Not Req.	Not Req.
BZ# 077	---			NA		---	---		Not Req.	Not Req.
BZ# 087	---			NA		---	---		Not Req.	Not Req.
BZ# 101	---			NA		---	---		Not Req.	Not Req.
BZ# 105	---			NA		---	---		Not Req.	Not Req.
BZ# 118	---			NA		---	---		Not Req.	Not Req.
BZ# 126	---			NA		---	---		Not Req.	Not Req.

BZ# 128	---			NA		---	---		Not Req.	Not Req.
BZ# 138	---			NA		---	---		Not Req.	Not Req.
BZ# 153	---			NA		---	---		Not Req.	Not Req.
BZ# 156	---			NA		---	---		Not Req.	Not Req.
BZ# 169	---			NA		---	---		Not Req.	Not Req.
BZ# 170	---			NA		---	---		Not Req.	Not Req.
BZ# 180	---			NA		---	---		Not Req.	Not Req.
BZ# 183	---			NA		---	---		Not Req.	Not Req.
BZ# 184	---			NA		---	---		Not Req.	Not Req.
BZ# 187	---			NA		---	---		Not Req.	Not Req.
BZ# 195	---			NA		---	---		Not Req.	Not Req.
BZ# 206	---			NA		---	---		Not Req.	Not Req.
BZ# 209	---			NA		---	---		Not Req.	Not Req.
PCB(Aroclor-1016)	---			0.014		---	---		Not Req.	Not Req.
PCB(Aroclor-1221)	---			0.014		---	---		Not Req.	Not Req.
PCB(Aroclor-1232)	---			0.014		---	---		Not Req.	Not Req.
PCB(Aroclor-1242)	---			0.014		---	---		Not Req.	Not Req.
PCB(Aroclor-1248)	---			0.014		---	---		Not Req.	Not Req.
PCB(Aroclor-1254)	---			0.014		---	---		Not Req.	Not Req.
PCB(Aroclor-1260)	---			0.014		---	---		Not Req.	Not Req.
PCB Total	---			0.014		---	---		Not Req.	Not Req.

Schroeder, P. R., Estes, T. J., Bailey, S. E. and ?? (2006). "Screening evaluations for potential contamination of plants and animals at confined disposal facilities," DOER Technical Notes Collection (ERDC TN DOER-CXX), U.S. Army Engineer Research and Development Center, Vicksburg, MS.



# LEACHATE PATHWAY



1 Calculate the leachable concentration in the sediment ( $q^*_{sed}$ , defined as the total contaminant mass per unit dry solid mass).

$$\text{Metals: } q^*_{sed} = q^*LF / (SCF/100)$$

$$\text{Organics: } q^*_{sed} = q^*LF$$

2 Calculate the dissolved contaminant concentration in the pore water,  $C_{sed}$ , based on equilibrium partitioning. This is the predicted concentration leaching from the CDF and entering the vadose zone.

$$C_{sed} = q^*_{sed} / ((n_{sed} + K_d * (1 - n_{sed}) * SG * \rho_w) / (1000 * (1 - n_{sed}) * SG * \rho_w))$$

3 Calculate the dissolved concentration in the vadose zone,  $C_{v,i}$ , at the period of interest,  $t_i$ , based on the vadose zone diffusion factor, VDF, and time to reach the peak concentration,  $t_p$ .

$$C_{v,i} = C_{sed} * (t_i / t_p) / VDF$$

4 Calculate the contaminant concentration reaching the receptor,  $C_{R,i}$ , based on the aquifer dilution factor, ADF.

$$C_{R,i} = C_{v,i} / ADF$$

Appendix C - Tier II Screening Evaluations for Effluent Discharge of Marsh Creation Area

**Lake Salvador northeast of Point Chicot, Louisiana (LDEQ Data)**

Collection Date	Parameter	MDL	Result	Units
1/22/2008	ARSENIC		0.88	ug/L
4/22/2008	ARSENIC		1.38	ug/L
10/2/2007	ARSENIC		1.49	ug/L
7/22/2008	ARSENIC		2.01	ug/L
10/2/2007	CADMIUM		0.01	ug/L
1/22/2008	CADMIUM		0.01	ug/L
4/22/2008	CADMIUM		NONDETECT	
7/22/2008	CADMIUM		NONDETECT	
1/22/2008	CHROMIUM		0.12	ug/L
10/2/2007	CHROMIUM		NONDETECT	
4/22/2008	CHROMIUM		NONDETECT	
7/22/2008	CHROMIUM		NONDETECT	
5/20/2008	HARDNESS (AS CaCO3)		102	mg/L
4/22/2008	HARDNESS (AS CaCO3)		129	mg/L
2/26/2008	HARDNESS (AS CaCO3)		139	mg/L
3/25/2008	HARDNESS (AS CaCO3)		147	mg/L
1/22/2008	HARDNESS (AS CaCO3)		201	mg/L
12/18/2007	HARDNESS (AS CaCO3)		223	mg/L
11/27/2007	HARDNESS (AS CaCO3)		275	mg/L
10/2/2007	HARDNESS (AS CaCO3)		342	mg/L
6/18/2008	HARDNESS (AS CaCO3)		76.7	mg/L
8/19/2008	HARDNESS (AS CaCO3)		87.8	mg/L
7/22/2008	HARDNESS (AS CaCO3)		93.8	mg/L
10/2/2007	LEAD		0.06	ug/L
1/22/2008	LEAD		0.07	ug/L
4/22/2008	LEAD		0.1	ug/L
7/22/2008	LEAD		4.25	ug/L
8/19/2008 10:30	SALINITY		0.14	PPT
5/20/2008 8:45	SALINITY		0.15	PPT
6/17/2008 10:15	SALINITY		0.15	PPT
7/22/2008 10:15	SALINITY		0.15	PPT
3/25/2008 8:45	SALINITY		0.21	PPT
2/26/2008 9:41	SALINITY		0.22	PPT
4/22/2008 10:45	SALINITY		0.22	PPT
1/22/2008 11:00	SALINITY		0.63	PPT
12/18/2007 10:15	SALINITY		0.99	PPT
11/27/2007 8:15	SALINITY		1.28	PPT
10/2/2007 10:50	SALINITY		1.63	PPT



Appendix C - Tier II Screening Evaluations for Effluent Discharge of Marsh Creation Area

**Harvey Canal at Lapalco Blvd (LDEQ Data)**

Collection Date	Parameter	MDL	Result
4/22/2008	ARSENIC		1.17
1/22/2008	ARSENIC		1.78
10/17/2007	ARSENIC		2.4
7/22/2008	ARSENIC		2.8
1/22/2008	CADMIUM		0.28
10/17/2007	CADMIUM		NONDETECT
4/22/2008	CADMIUM		NONDETECT
7/22/2008	CADMIUM		NONDETECT
4/22/2008	CHROMIUM		0.31
1/22/2008	CHROMIUM		0.32
10/17/2007	CHROMIUM		NONDETECT
7/22/2008	CHROMIUM		NONDETECT
7/22/2008	LEAD		0.07
10/17/2007	LEAD		0.13
4/22/2008	LEAD		0.27
1/22/2008	LEAD		1.07
6/17/2008 10:45	SALINITY		0.15
1/22/2008 9:35	SALINITY		0.18
4/22/2008 10:35	SALINITY		0.18
5/20/2008 10:35	SALINITY		0.18
2/26/2008 11:15	SALINITY		0.21
7/22/2008 10:50	SALINITY		0.21
8/19/2008 10:40	SALINITY		0.22
3/25/2008 10:15	SALINITY		0.24
10/17/2007 11:30	SALINITY		0.27
12/18/2007 11:45	SALINITY		0.31
11/27/2007 10:15	SALINITY		0.33

Appendix C - Tier II Screening Evaluations for Effluent Discharge of Marsh Creation Area

Units	Filtration Method	
ppb	Filtered	
ppb	Filtered	
ppb	Filtered	<b>Arsenic Geomean:</b>
ppb	Filtered	<b>1.934166176 ug/L</b>
ppb	Filtered	
ppb	Filtered	
ppb	Filtered	<b>Cadmium Geomean:</b>
ppb	Filtered	<b>0.28 ug/L</b>
ppb	Filtered	
ppb	Filtered	
ppb	Filtered	<b>Chromium Geomean:</b>
ppb	Filtered	<b>0.314960315 ug/L</b>
ppb	Filtered	
ppb	Filtered	
ppb	Filtered	<b>Lead Geomean:</b>
ppb	Filtered	<b>0.226436917 ug/L</b>
PPT		
PPT		<b>Salinity Geomean:</b>
PPT		<b>0.219244725 PPT</b>

**TABLE 3 SEDIMENT ANALYTICAL RESULTS**

SECTOR GATE SOUTH  
PLAQUEMINES AND JEFFERSON PARISH, LOUISIANA

Parameter	Freshwater		Marine		Brackish		Freshwater		Marine		Acute Water Quality Criteria (ug/L)	Concentration in Water (ug/L)
	Acute (ug/L)	Chronic (ug/L)										
Chromium	754.2	244.6	515.00	103.00	515.00	103.00	570.00	74.00			515.0000	0.12
Lead	36.5	3.36	209	8.08	36.5	3.36	65.0	2.50	210	8.10	36.4604	0.205546249