

# Comparing CDF 10B and Dike 14 Dredged Material Assessments

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# Is CDF 10B different from Dike 14?

- CDF 10B evaluation was conducted to determine if the dredged material could be safely used for fill at an upland commercial/industrial property.
- Dike 14 was evaluated to determine if the area could be safely used as a nature preserve.

**Different end uses:** How the land will be used and the receptors that will be at that location are important considerations when assessing protection of health and safety.

# Assessing Dredged Material at CDF 10B for Reuse at Alternate Upland Placement Areas



# Completed CDF 10B Materials Management Plan (MMP)

- Dredged Material Characterization
- Human Health Risk Evaluation
- Evaluation of Surface Water Impacts from Placement of CDF 10B Materials at CVIC/Pershing Site
- Source Material Observation and Documentation Protocol
- Material Placement Observation and Documentation Protocol

# CDF 10B Assessment

- 12 borings installed in 2009, 20 samples collected; 10 samples from 0-4 feet and 10 samples from 4-8 feet horizon
- Analyzed for VOCs, SVOCs, metals, PCBs and pesticides
- Compared the data to U.S. EPA Regional Screening Levels (RSLs) for soil
  - Apply cleanup levels that are more applicable in a variety of settings
  - Avoids applying Voluntary Action Program (VAP) incompletely



# CDF 10B Assessment

- Assessed:
  - Residential human health direct contact with dredged material
  - Commercial/industrial human health direct contact with dredged material
  - Comparison to leach-based soil screening levels for protection of ground water
  - Evaluate surface water impacts from placement of 10B materials at CVIC site

# Results of the CDF 10B Assessment

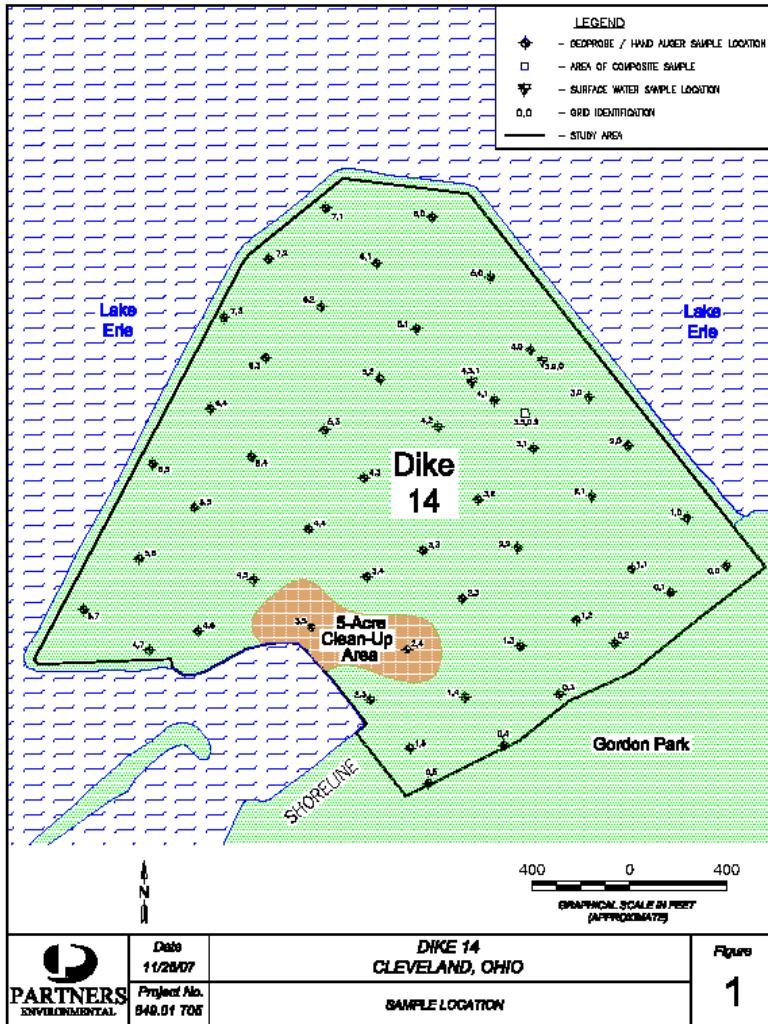
- Cumulative non-cancer hazard index of 1 and cancer risk goal of 1 in 100,000 ( $1 \times 10^{-5}$ ) are met for commercial/industrial land use
- Residential levels exceeded
- Land Use restriction needed
- The dredged material will not cause adverse impacts from leaching to the Cuyahoga River.



# Dike 14 Assessment: Can the area be used safely as a nature preserve?



# Dike 14 Brownfield Assessment



Brownfield Assessment included:

- VAP Phase I Property Assessment
- Wetlands Delineation
- VAP Phase II Property Assessment
- Property Specific Human Health Risk Assessment
- Level 1, 2, and 3 Ecological Risk Assessment
- Background Soil Determination

# Dike 14 VAP Phase II Property Assessment

- **Dike 14 is 88 acres - Soil investigation focused on depths <4 feet (0-2 feet & 2-4 feet intervals)**
- **Limited sediment & surface water sampling**
- **Analyzed for VOCs, SVOCs, PCBs, pesticides, TPH (oil & grease), metals**



# VAP Human Health Risk Assessment

- Assessed exposures to both adults & children as frequent **recreational visitors** (90 days/year)
- Assessed exposures to construction & excavation workers
- Evaluated direct contact exposures to soil in 2 exposure areas



# Ecological Risk Assessment

- **Level 1** Determine important ecological resources & habitat
- **Level 2** Soil screening found metals, PCBs and PAHs exceeded screening levels in localized areas
- **Level 3** Evaluated exposures to most susceptible wildlife species



# Background Soil Determination

- **Dike 14 is Confined Disposal Facility**
  - No native soil, not possible to find appropriate on-property sampling locations
- **Off-property soil background** investigation:
  - Forest Hills Park
  - Bratenahl
- Used for direct comparison purposes
- Determining acceptable criteria for fill
- Used as comparison standard for background metals concentrations for other properties in region

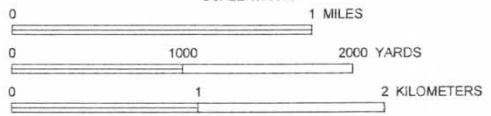


Dike 14

Bratenahl Site

Forest Hills Park Site

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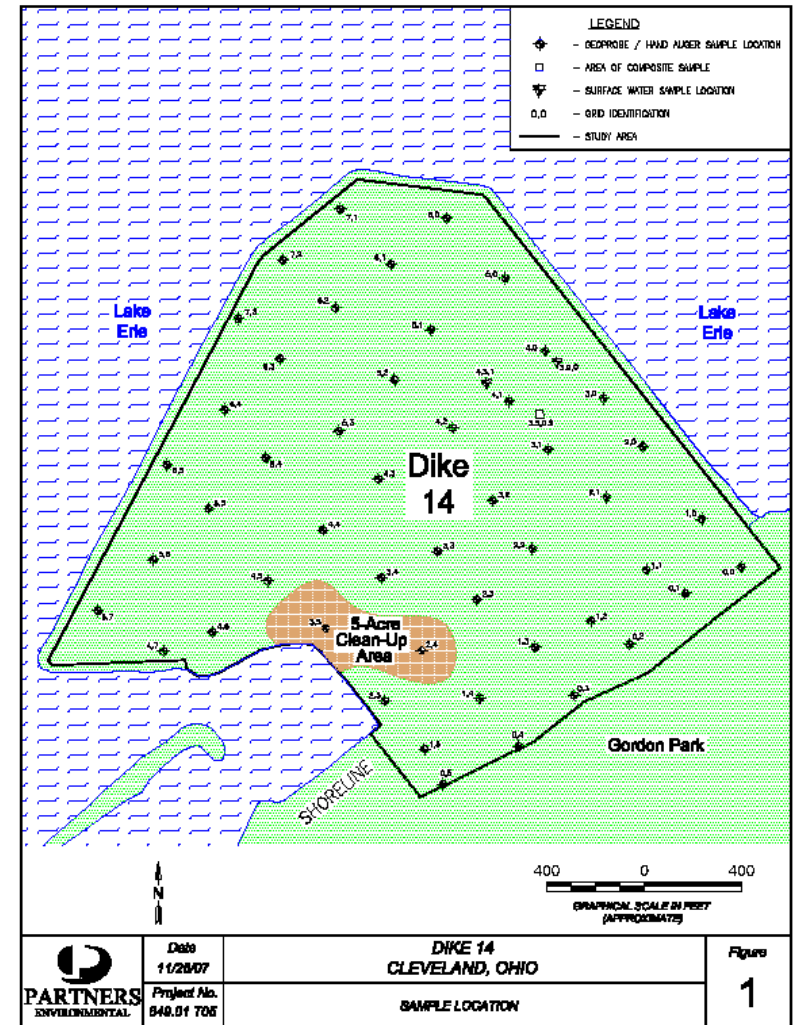
8° W

# Background Study Results

<b>Compounds</b>	<b><i>Background Upper Limits, mg/kg</i></b>		
	<b>0-2'</b>	<b>2-4'</b>	<b>0-4'</b>
<b>Arsenic</b>	<b>21.55</b>	<b>21.59</b>	<b>20.73</b>
<b>Barium</b>	<b>54.15</b>	<b>65.58</b>	<b>59.27</b>
<b>Cadmium</b>	<b>0.97</b>	<b>1.06</b>	<b>1.01</b>
<b>Chromium</b>	<b>20.74</b>	<b>21.17</b>	<b>21.0</b>
<b>Lead</b>	<b>21.08</b>	<b>26.8</b>	<b>24.0</b>
<b>Selenium</b>	<b>Due to no. of censored data these compounds could not be reliably evaluated</b>		
<b>Silver</b>			
<b>Mercury</b>	<b>0.06</b>	<b>0.08</b>	<b>0.06</b>

# So...is Dike 14 safe?

- Overall, the results show that Dike 14 can be used safely as a Nature Preserve.
- Most of 88-acre property will require no cleanup.
- With the exception of an approximately 5-acre area associated with the former landfill portion of the Dike, the Property is safe for recreational uses and wildlife. Low levels of chemicals of concern in the 5-acre area include PCBs, PAHs, and lead.



# Comparison of CDF 10B and Dike 14 Dredged Materials Results

Compounds	CDF 10B Maximum	Dike 14 Exposure Unit 1	Dike 14 Maximum	Background Study (0-4')
Arsenic	18	14.51	23.9	20.7
Cadmium	6.7	10.03	115	1.0
Chromium (total)	72	29.8	62.4	21.0
Lead	110	105.4	666	24.0
Mercury	0.2	0.353	2.3	0.06
Benzo(a)pyrene	1.2	1.05	7.6	NA
Benzo(b)fluoranthene	1.8	2.20	11.0	NA
Benzo(k)fluoranthene	0.74	0.67	7.1	NA
Dibenz(a,h)anthracene	0.21	0.50	2.6	NA
PCBs	ND	0.6	6.5	NA

# Conclusions on Assessment and Use of Dredged Material

- Determine which yard stick to use to determine if dredged material can be safely used
  - Recommend U.S. EPA Regional Screening Levels for broader application and when there's uncertainty regarding the property's commitment to completing the VAP
  - VAP process and VAP standards
  - Background data
- Land use is an important factor - Consider land use and how the material will be reused
- Collect adequate data from dredge materials to determine concentrations of COCs in the materials
- Ensure property use restrictions are put in place
- Ohio EPA authorizations and restrictions may be needed prior to new use

# Questions?

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