Testing for Upland Confined Disposal

Tab U1

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Keywords: CDFs, Contaminant Pathways, Testing

USACE/ EPA Technical Framework

- Alternative Screening Based on Environmental Suitability
- Open Water
- Confined (diked)
- Beneficial Uses
- Umbrella for OTM, ITM, UTM, etc.
- Applicable to Full Range of Materials
The High Points

• UTM provides a tiered approach for contaminant pathways evaluations for CDFs
• Technically sound testing/evaluation procedures are available for all pathways
• Pathway controls are available
UTM – What does it do?

- Provides approach and methods to evaluate potential CDF contaminant effects
- Determines the need for management actions or controls for placement of material in a CDF

Material suitability is not an issue for CDFs

Purpose: Technical guidance for evaluation of potential CDF contaminant migration pathways.

Applicability: Upland, Nearshore, Island CDFs.

Does not apply to capping or beneficial uses but may be applicable for common exposure pathways.
Regulatory Considerations

- CDF Effluent is regulated as a CWA Section 404 discharge to waters of the US
- NEPA requires consideration for all pathways
- RCRA is not applicable when the dredged material that is subject to the requirements of a permit that has been issued under the Clean Water Act or section 103 of the Marine Protection, Research, and Sanctuaries Act is not a hazardous waste.
- UTM is NOT regulatory; only technical guidance.

CDF Engineering Design – EM 1110-2-5027

UTM assumes sound engineering design
**Upland CDF Contaminant Migration Pathways**

- **Dike**
- **Plant / Animal Uptake**
- **Unsaturated Infiltration**
- **Saturated Seepage**
- **Volatilization**
- **Surface Runoff**
- **Effluent**
- **Weir**
- **Leachate**

**Nearshore CDF Contaminant Migration Pathways**

- **Ground Water**
- **Unsaturated Infiltration**
- **Partially Saturated**
- **Saturated**
- **Runoff**
- **Volatilization**
- **Weir**
- **Effluent**
- **High Tide**
- **Low Tide**
- **Soluble Diffusion**
- **Seepage**
- **Existing**
- **Bottom**

**CDF Contaminant Migration Pathways**

- **Plant / Animal Uptake**
- **Unsaturated Infiltration**
- **Saturated Seepage**
- **Volatilization**
- **Surface Runoff**
- **Effluent**
- **Weir**
- **Leachate**
CDF Geochemical Environments

Upland

Wetland

Aquatic

UTM – A Tiered Approach for Evaluations

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CDF Pathway End Points

- Effluent and Runoff
  - WQ Standards and/ or WC Toxicity after Mixing
- Leachate
  - Applicable GW Standards after Attenuation
- Volatiles
  - OSHA Human Exposure Standards after Dispersion
- Plant and Animal Uptake
  - Comparison of uptake to Reference Soil

Initial Evaluations (Tier I)

- Need for Pathway Evaluations
  - “reason to believe”
  - sand/gravel; clean material; new work
- Identify Relevant Pathways
- Identify Contaminants of Concern
- Compile Existing Information

Evaluate all relevant pathways.
Test only as needed.
**Tier II - Screening**

- Plant Uptake - Diethylenetriamine-pentaacetic acid (DTPA) Extract
- Equilibrium Partitioning
  - Effluent; Runoff; Leachate; Volatiles (Henry’s Law)
- TBP Theoretical Bioaccumulation Potential
  - Animal Uptake

**Tier III**

- Effects Based Testing and Evaluations
- Chemical and Biological Tests
- Models for Mixing, Attenuation, Dispersion
- Results of all Tier III tests can be used in Risk Assessments
Tier IV

- Case or Site Specific Studies
  - Demonstrations
  - Pilot studies
- Operation Specific Testing
- Risk Assessments

Guidance Documents for CDFs

- USACE/EPA Technical Framework
  - http://www.epa.gov/OWOW/oceans/framework/
- Engineer Manual 1110-2-5027 Confined Disposal of Dredged Material
- **Upland Testing Manual**
- DOTS Website
The High Points

• CDFs are containment options
• Contaminant pathways must be appropriately evaluated
• UTM provides a tiered approach for evaluations
• Testing/evaluation procedures are available for all pathways
• Pathway controls are available

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