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Anacostia River Sediment Project Update Feasibility Study AWRP Steering Committee June 26, 2019

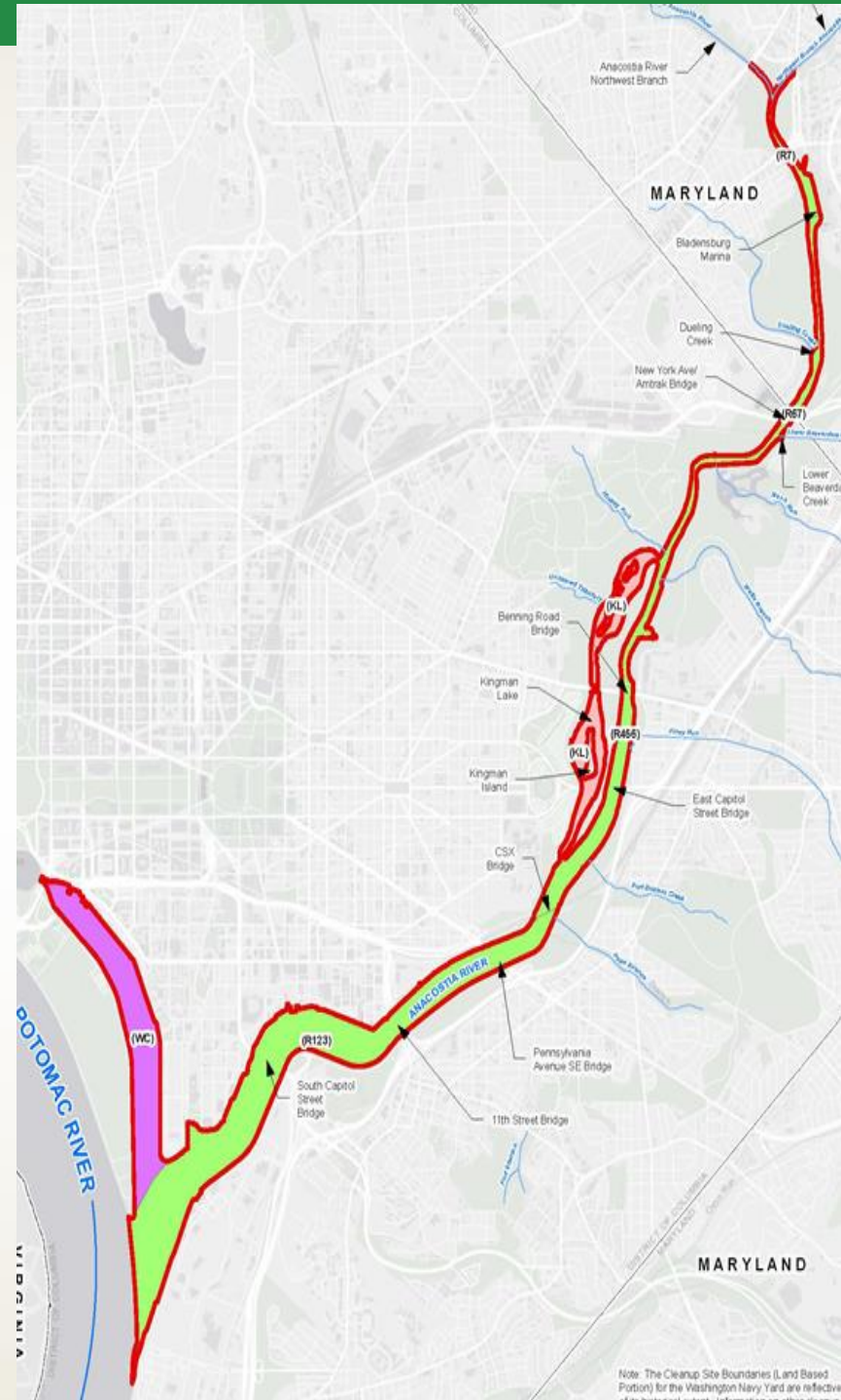
Anacostia River Sediment Project (ARSP) Study Area Operable Units (OUs)

Three Operable Units (OUs)

 Washington Channel




 Kingman Lake

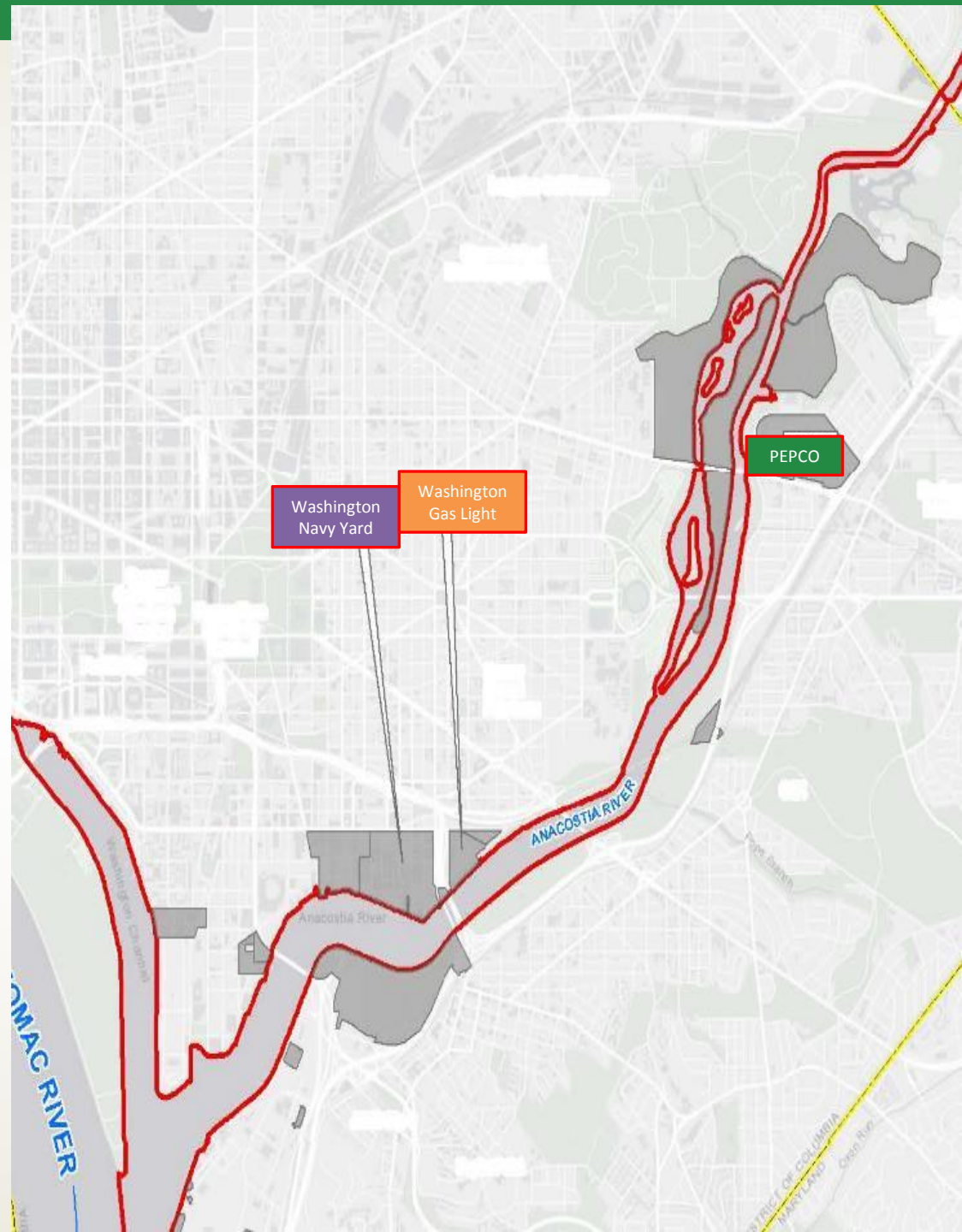
 Main Stem



ARSP Study Area Sub-Operable Units

Three Sub-Operable Units

-  Pepco
-  Washington Gas Light
-  Washington Navy Yard



National Contingency Plan (NCP) Evaluation Criteria

Threshold Criteria

- Overall protection of human health and the environment
- Compliance with ARARs (applicable or relevant and appropriate standards)

Primary Balancing Criteria

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria

- State Acceptance
- Community Acceptance

RAOs (Remedial Action Objectives) and PRGs (Preliminary Remedial Goals)

Remedial Action Objectives (RAOs)

- RAO1: Reduce Human Fish Consumption Risk
- RAO2: Reduce Human Exposure to Sediment Risk
- RAO3: Protect Benthic and Aquatic Invertebrates
- RAO4: Protect Fish

Preliminary Remediation Goals (PRGs)

Contaminants	Units	PRG
Dioxin-like PCB TEQ	µg/kg	0.0012
Total PCB Congeners	µg/kg	65
Dioxin TEQ	ng/kg	45

µg/kg micrograms per kilogram
ng/g nanograms per gram

General Response Actions and Technology Types

No Action

- None

Institutional Controls

- Non-engineered instruments
- Administrative and legal controls
- Land use controls

Monitored Natural Recovery (MNR)

- **Physical-burial processes**
- Biological degradation
- Chemical/Physical transport and degradation

Enhanced Monitored Natural Recovery (EMNR)

- **Thin layer placement (sand and/or carbon)**

Containment

- **Capping**

Removal

- **Dredging**
- Excavation

In Situ Treatment

- **Biological, Chemical, or Physical**

Ex Situ Treatment

- Biological, Chemical, or Physical

Disposal

- On-site (CAD or CDF)
- Off-site

Dredged Material Management (Beneficial Use)

- **On-site (meeting reuse criteria)**
- **Create fringe wetlands**
- Off-site (structural fill, agricultural, cap material)

Ancillary Treatment

- Sediment Control and Dewatering Technologies and BMPs
- Wastewater Treatment Technologies
- Transportation
- Odor and Emission Controls and Monitoring
- Restoration

Technology Considered for Field Implementation

- ▶ No Action
- ▶ Institutional Controls
- ▶ Monitored Natural Recovery (Physical Burial Processes)
- ▶ Enhanced Monitored Natural Recovery (Thin cap – sand and/or carbon)
- ▶ Containment – Capping
- ▶ Removal – Dredging
- ▶ In-Situ Treatment – Biological, Chemical, or Physical
- ▶ Disposal – Onsite/Offsite
- ▶ Dredged Material Management (Beneficial Use) – Create Wetlands

Concept of Adaptive Management (Early Actions)

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5) Measure and Adapt

- Monitor data during site cleanup
- Measure, adapt, and make necessary changes for 5-year monitoring period (fish, sediment and passive samplers)
- Continue if the goals are being met and show improvement
- If not, recommend changes to meet goals based on evidence

4) Take Action

- Implement cleanup by field actions- hot spot remediation
- Manage site logistics, site complexities and challenges and communication channels

1) Identify Challenges and goals *Early Actions*

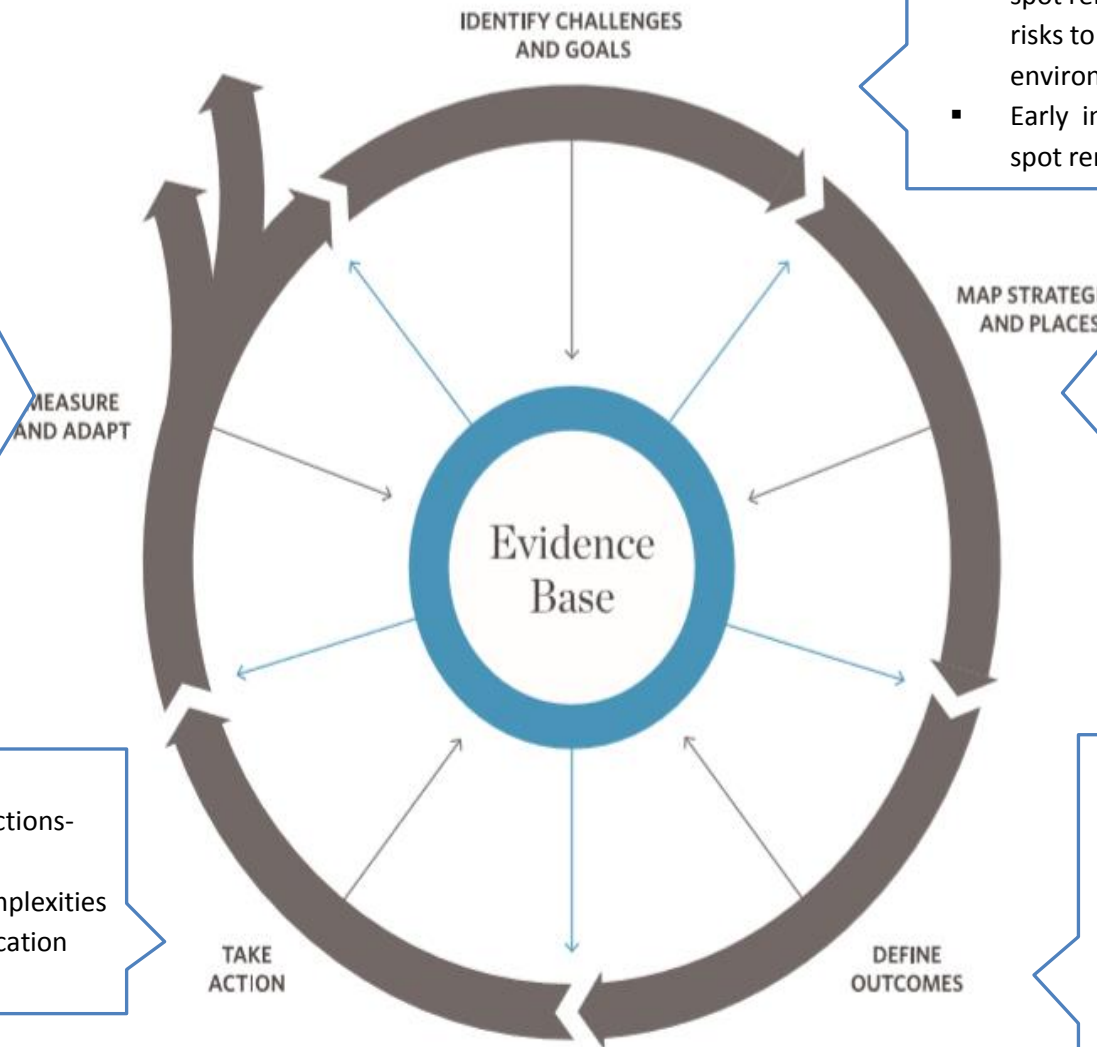
- Source control and hot spot remediation to reduce risks to human health and environment
- Early implementation -Hot spot removals/remediation

2) Map Strategies and Places

- Develop scope and prepare work plan for studies
- Conduct pilot /bench-scale testing

3) Define Outcomes

- Define goals and outcome of cleanup
- Reduce bioavailability by 80%



Analysis of Alternatives

Alternative 1 No Action	Alternative 2 Dredging & Disposal	Alternative 3 MNR, EMNR and Containment	Alternative 4 MNR, EMNR, and Containment with Selective Dredging and Disposal	Alternative 5 MNR, EMNR, and Containment with Selective Dredging and Beneficial Use
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Notes:

EMNR - Enhanced Monitored Natural Recovery

MNR - Monitored Natural Recovery

Main Stem OU Alternative MS5

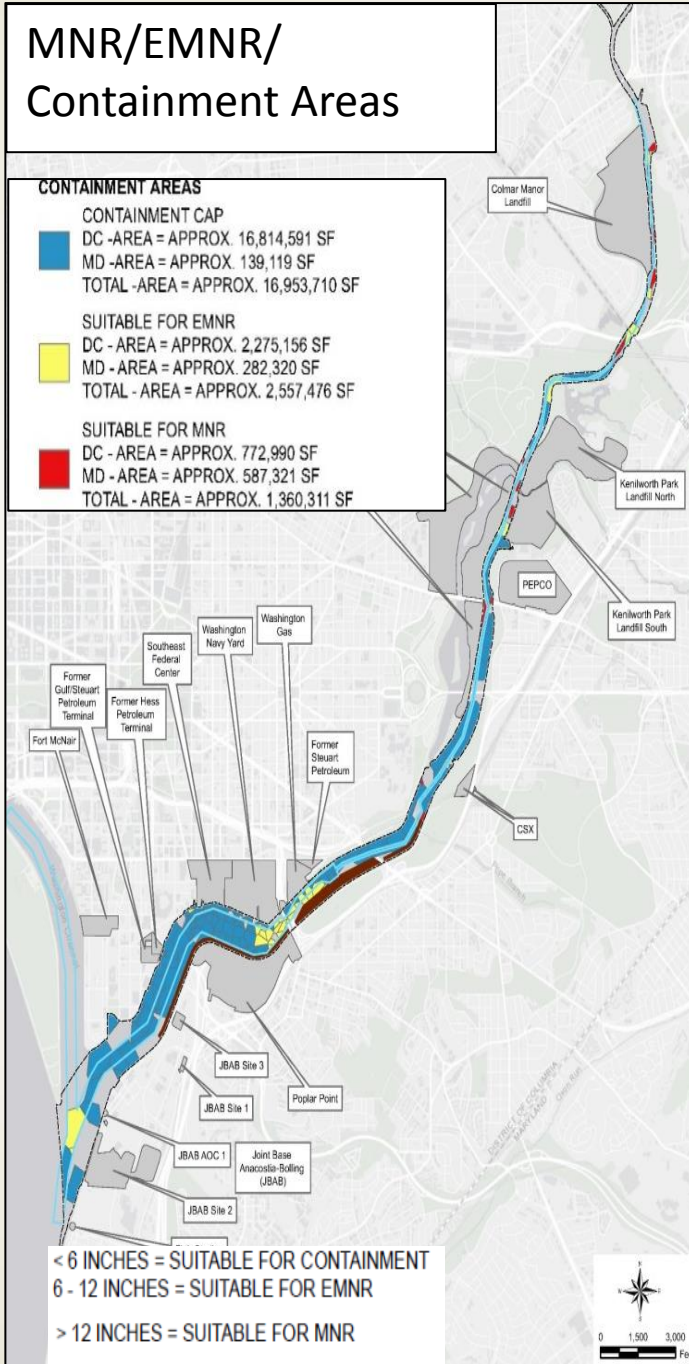
MNR/EMNR/ Containment Areas

CONTAINMENT AREAS

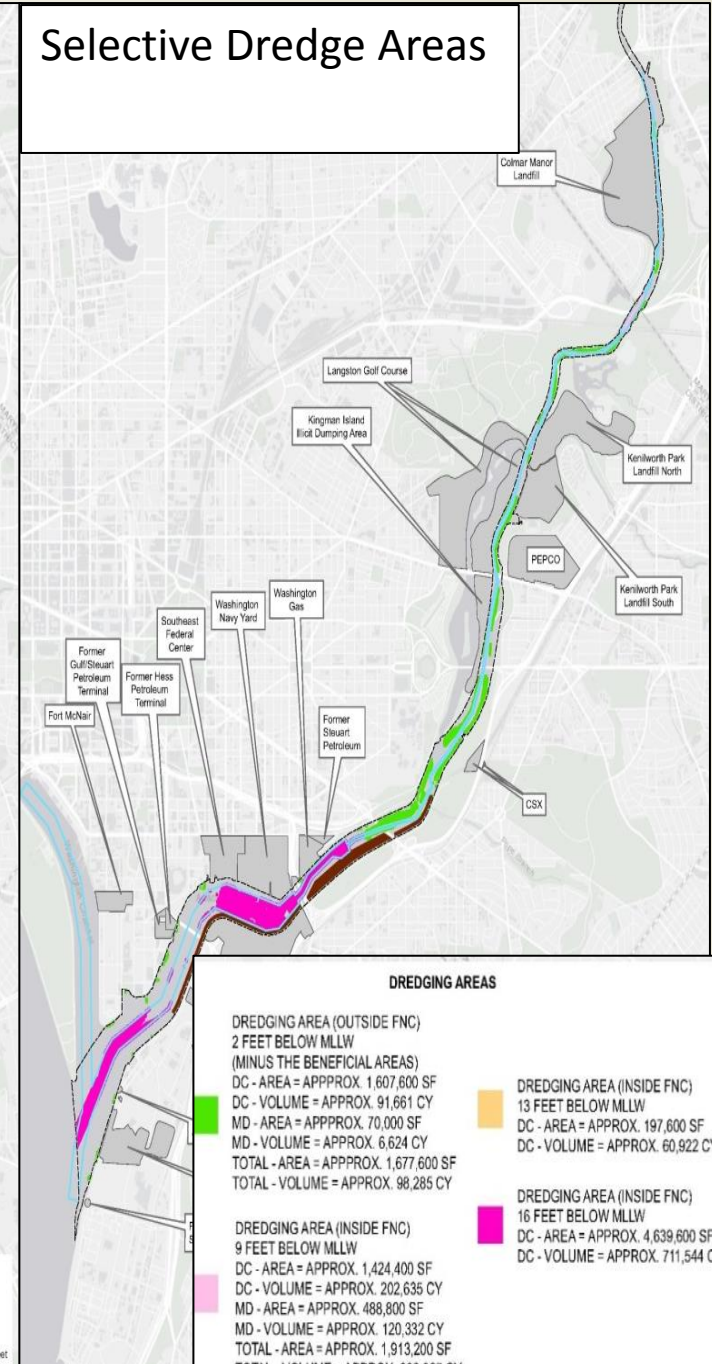
CONTAINMENT CAP
 DC - AREA = APPROX. 16,814,591 SF
 MD - AREA = APPROX. 139,119 SF
 TOTAL - AREA = APPROX. 16,953,710 SF

SUITABLE FOR EMNR
 DC - AREA = APPROX. 2,275,156 SF
 MD - AREA = APPROX. 282,320 SF
 TOTAL - AREA = APPROX. 2,557,476 SF

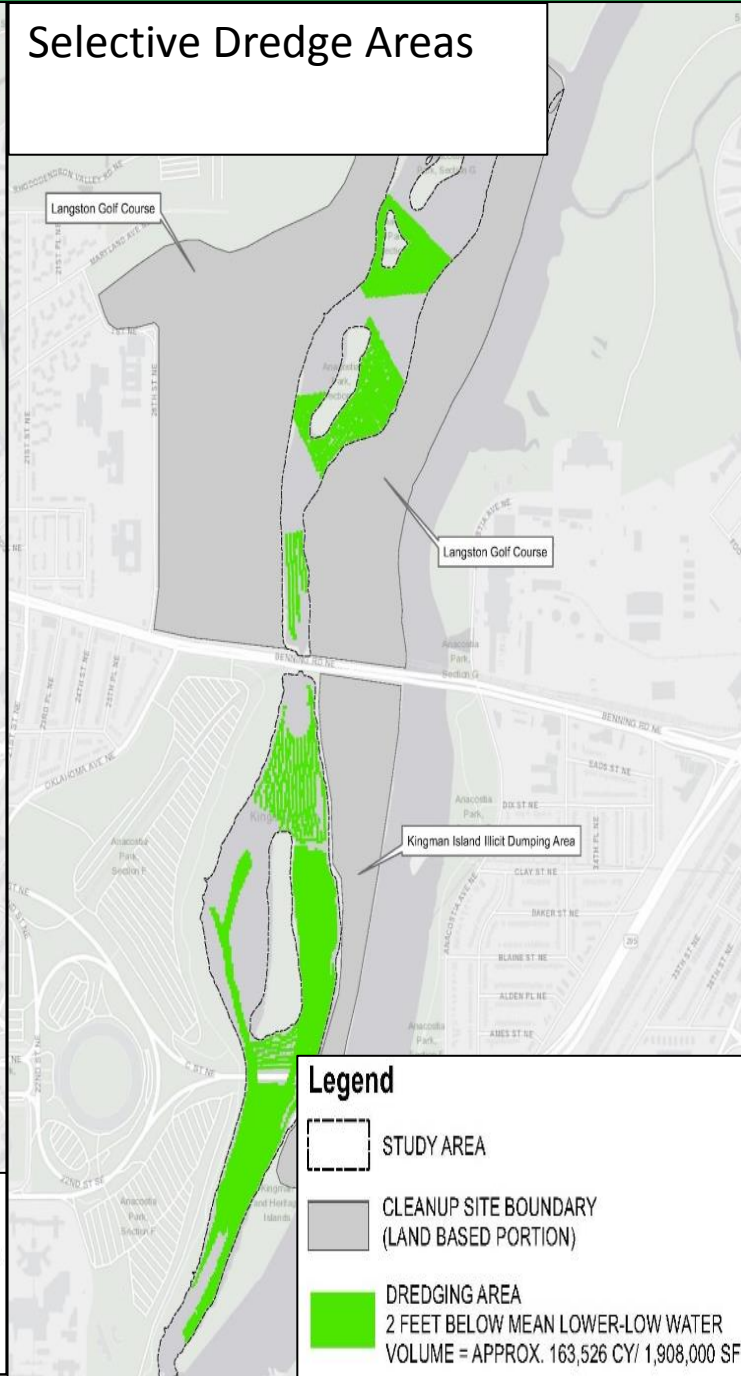
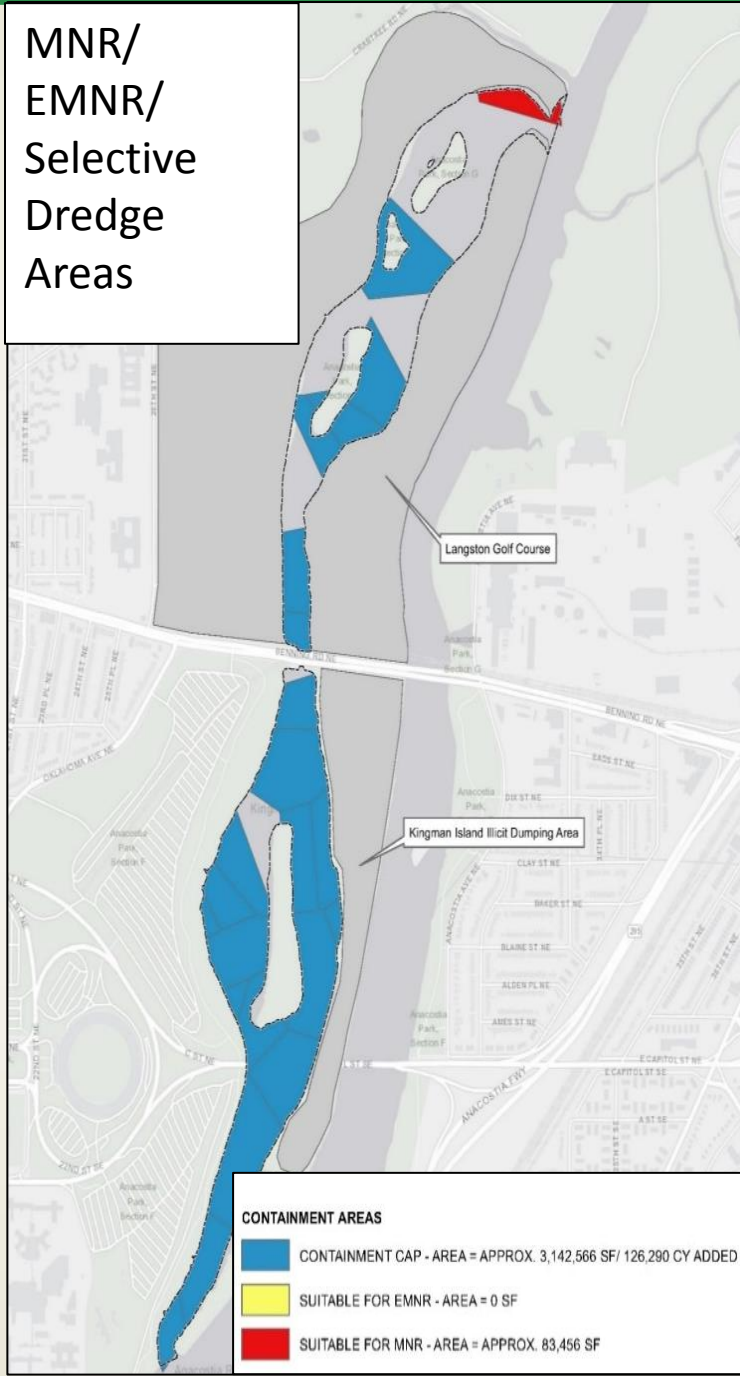
SUITABLE FOR MNR
 DC - AREA = APPROX. 772,990 SF
 MD - AREA = APPROX. 587,321 SF
 TOTAL - AREA = APPROX. 1,360,311 SF



Selective Dredge Areas



Kingman Lake OU Alternative MS5



Washington Channel OU

Alternatives MS3 and MS5



Alternative MS3



Alternative MS5

CONTAINMENT AREAS

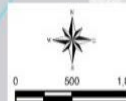
- CONTAINMENT CAP
AREA = APPROX. 5,848,383 SF / 216,607 CY ADDED
- SUITABLE FOR EMNR - AREA = 0 SF
- SUITABLE FOR MNR - AREA = 0 SF

Legend

- SEDIMENT STUDY AREA
- FEDERAL NAVIGATION CHANNEL
- CLEANUP SITE BOUNDARY (LAND BASED PORTION)
- BENEFICIAL AREA
- DREDGING AREA
8 FEET BELOW MEAN LOWER LOW WATER
EXCAVATION VOLUME MINUS THE BENEFICIAL AREA = APPROX. 5,464 CY 88,400 SF

CONTAINMENT AREAS

- CONTAINMENT CAP - AREA (MINUS THE BENEFICIAL AREA) = APPROX. 5,005,050 SF / 185,372 CY ADDED
- SUITABLE FOR EMNR - AREA = 0 SF
- SUITABLE FOR MNR - AREA = 0 SF



Analysis of Alternatives and Costs

Operable Units	Alternative 1 No Action	Alternative 3 MNR, EMNR and Containment	Alternative 4 MNR, EMNR, and Containment with Selective Dredging and Disposal	Alternative 5 MNR, EMNR, and Containment with Selective Dredging and Beneficial Use
Main Stem	Not Acceptable	Not Acceptable	\$404	\$361
Kingman Lake	Not Acceptable	Not Acceptable	\$66	\$61
Washington Channel	Not Acceptable	\$43	\$47	\$38

Notes:

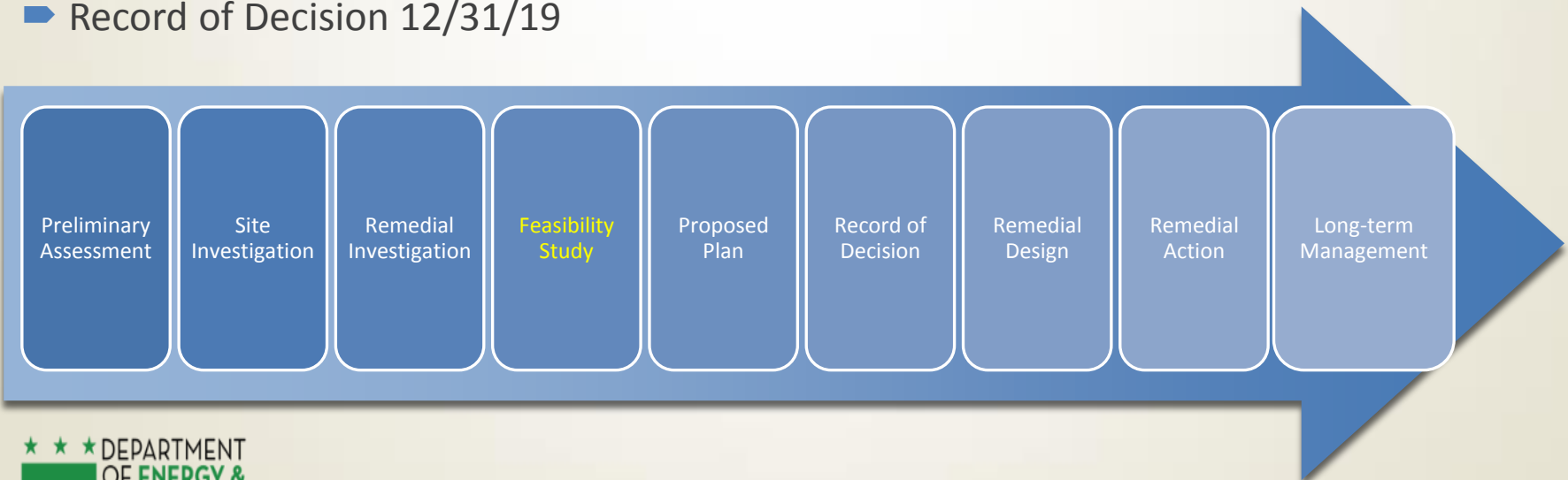
Cost in millions of dollars

EMNR - Enhanced Monitored Natural Recovery

MNR - Monitored Natural Recovery

Ongoing Activities and Next Steps

- ▶ Feasibility Report out (April 9, 2019) for comments-reviews ongoing
- ▶ Ongoing Leadership/CWG Meetings ongoing (May 21st and June 13th); July TBD
- ▶ Supporting reports to FS underway
- ▶ Ongoing Technical, Management and Legal Meetings with MDE on Source Control
- ▶ Release Draft FS for public comment in late Summer
- ▶ Release Proposed Plan in late Autumn
- ▶ Record of Decision 12/31/19



Questions?

