Middle River Complex Sediment Remediation

Information Session
Marshy Point Nature Center
January 18, 2012

Introductions

- Tom D. Blackman, Lockheed Martin
  - Project Lead, Middle River Complex and Martin State Airport
- Gary Cambre, Lockheed Martin
  - Communications Senior Manager
- Darryl & Kay Armstrong, ARMSTRONG and Associates
  - Community Communications Support
- Ernest Ashley, CDM Smith
  - Managing Contractor assisting Tom Blackman and team
- Mike Martin, Tetra Tech
  - Program Manager for Environmental Remediation at MRC & MSA
- Gary Braun, Tetra Tech
  - Project Manager for Sediment Feasibility Study

What we will be doing this evening…

- Describing the problem
- Describing what can be done about it
- Describing the process for making a decision
- Describing the Working Group concept
- Describing the next steps and schedule
- Answering your questions

Tonight's Topics

- Topics
  - Middle River Complex site setting
  - Surface water and sediment at the Middle River Complex
  - Risk Assessment results
  - How the Feasibility Study is intended to work
  - The Working Group concept and meeting topics

This is your "backyard." We want you to understand the situation, the options and considerations, and how decisions will be made.

What we want you to take away from tonight's meeting …

- Sediments next to the Middle River Complex:
  - Are not a severe or short-term exposure problem
  - Require some action based on long-term risk assessments
- The scope and specifics of cleanup actions:
  - Have not been determined yet
  - Will be selected through a Feasibility Study process
  - Will include input from community involvement
  - Must balance many considerations
- Community involvement is important:
  - More information is available at future meetings and online
  - The Working Group will go into more detail

Local Area Surface Water Bodies

Middle River Complex (MRC) Setting

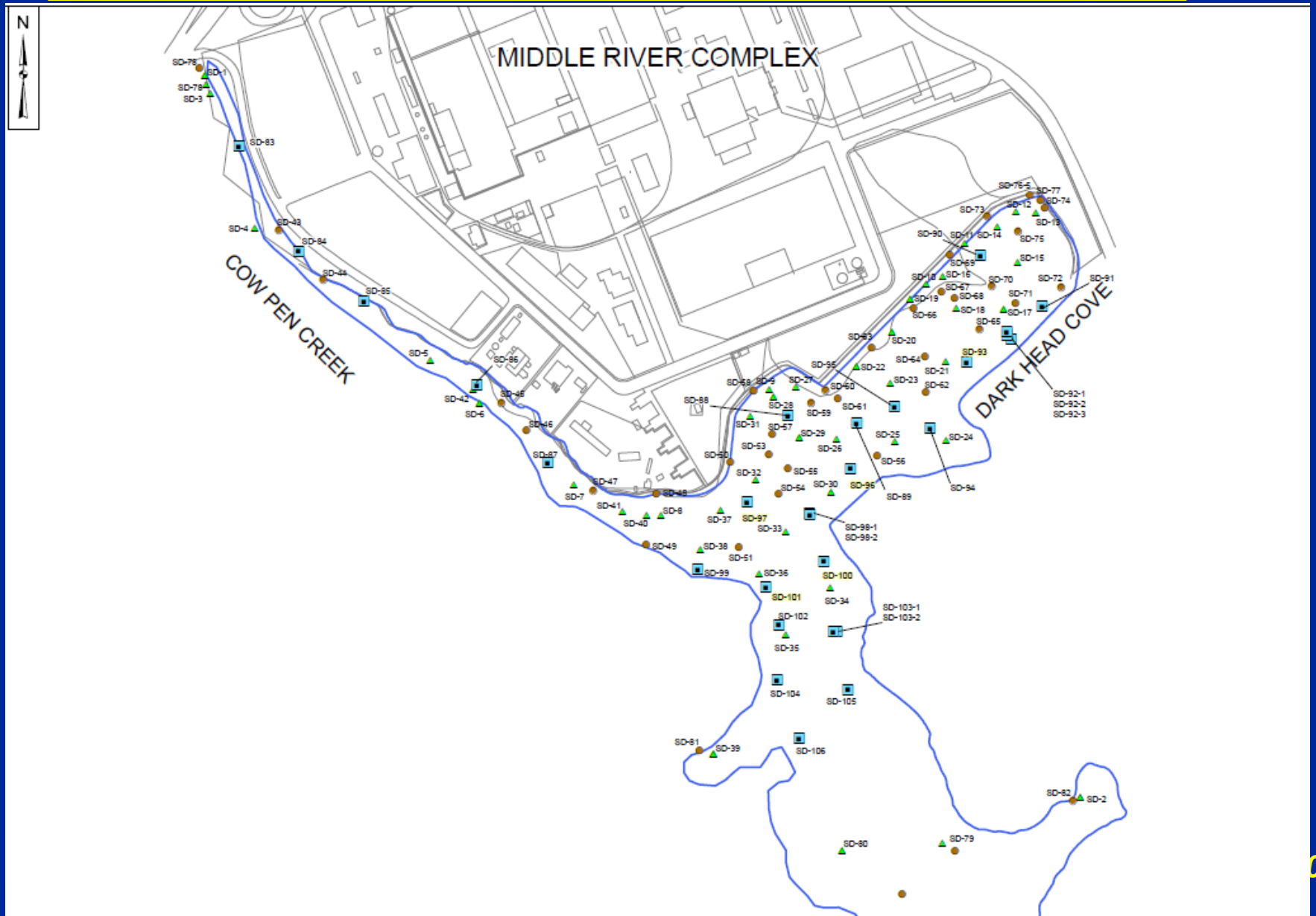
Environmental Setting & Reference Areas

Recent Sediment Data Collection

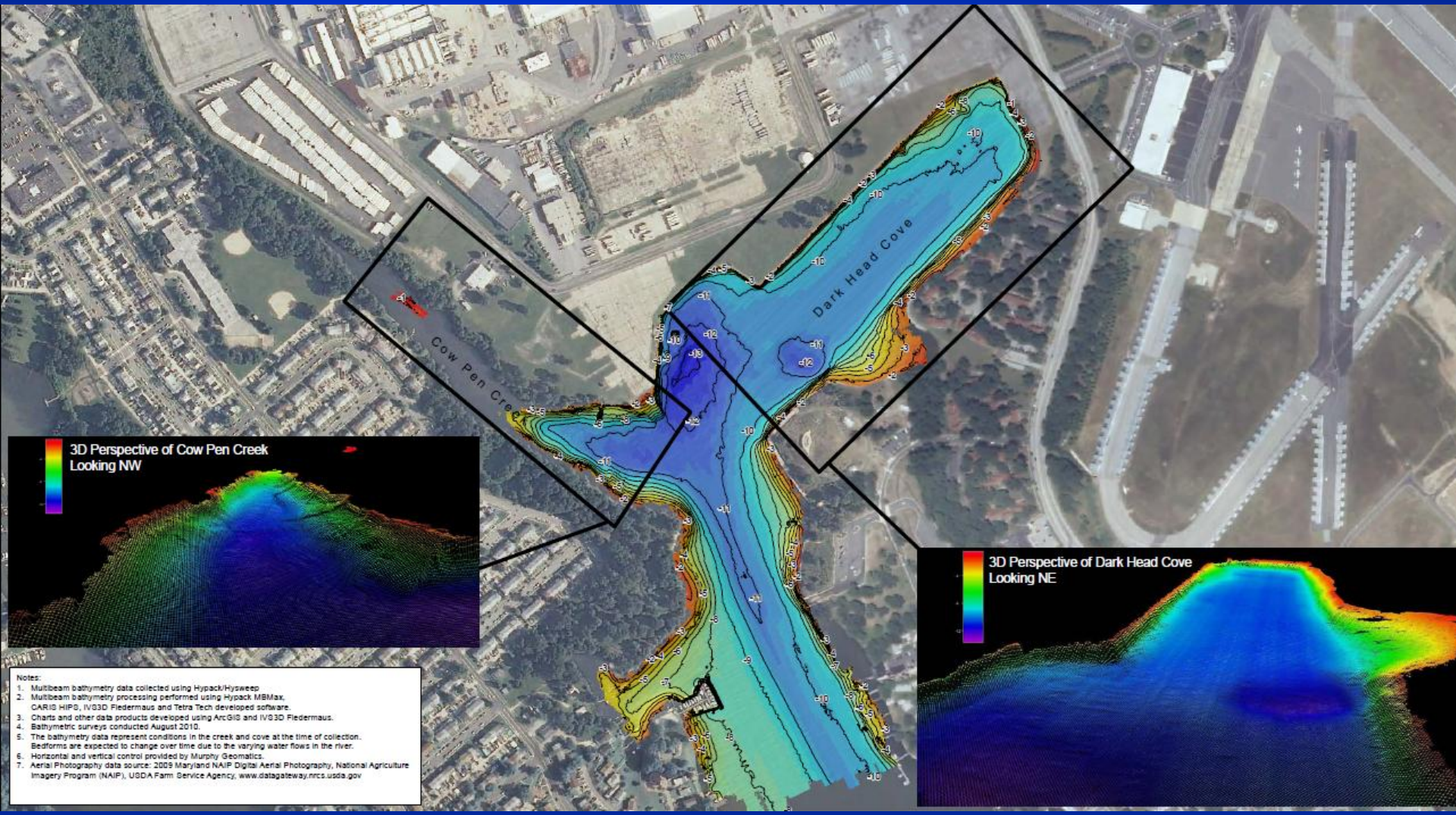
- Samples
  - Sediment samples for chemical testing & risk assessment
  - Samples for bioavailability testing (what organisms get exposed to)
  - Bulk sediment for sediment dewatering tests
  - Fish tissue sampling

- Additional Analyses
  - Sediment Community Assessment - (what kind and how many critters)
  - Sediment Core Age Dating - (how old and how much new)
  - Bathymetric Survey - (water depth and shape of the bottom)
  - Hydraulic Analyses - (modeling effects of a big storm)

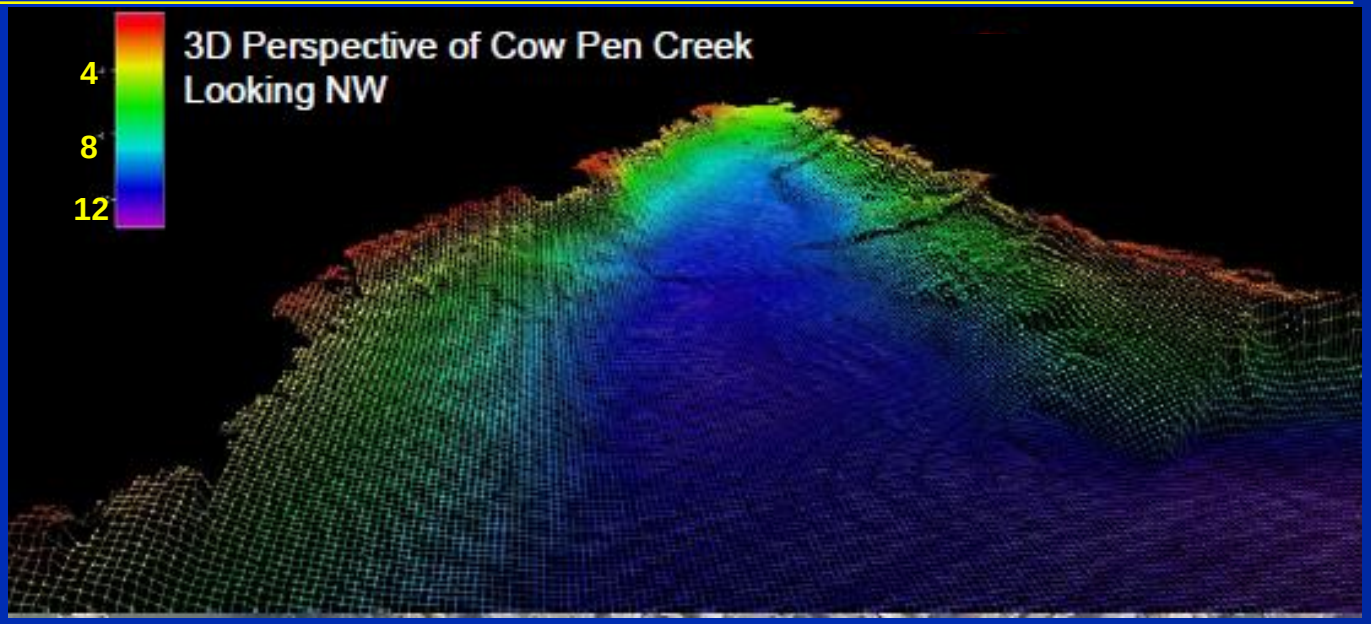
Sample Locations

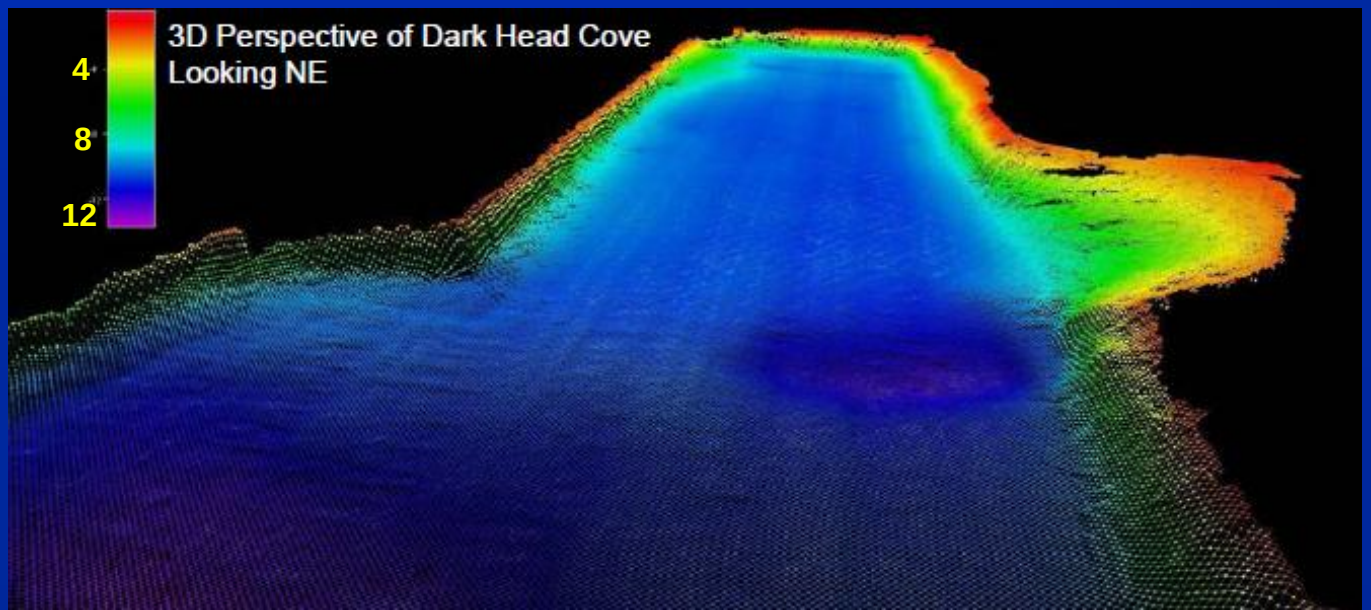


Dark Head Cove and Creek

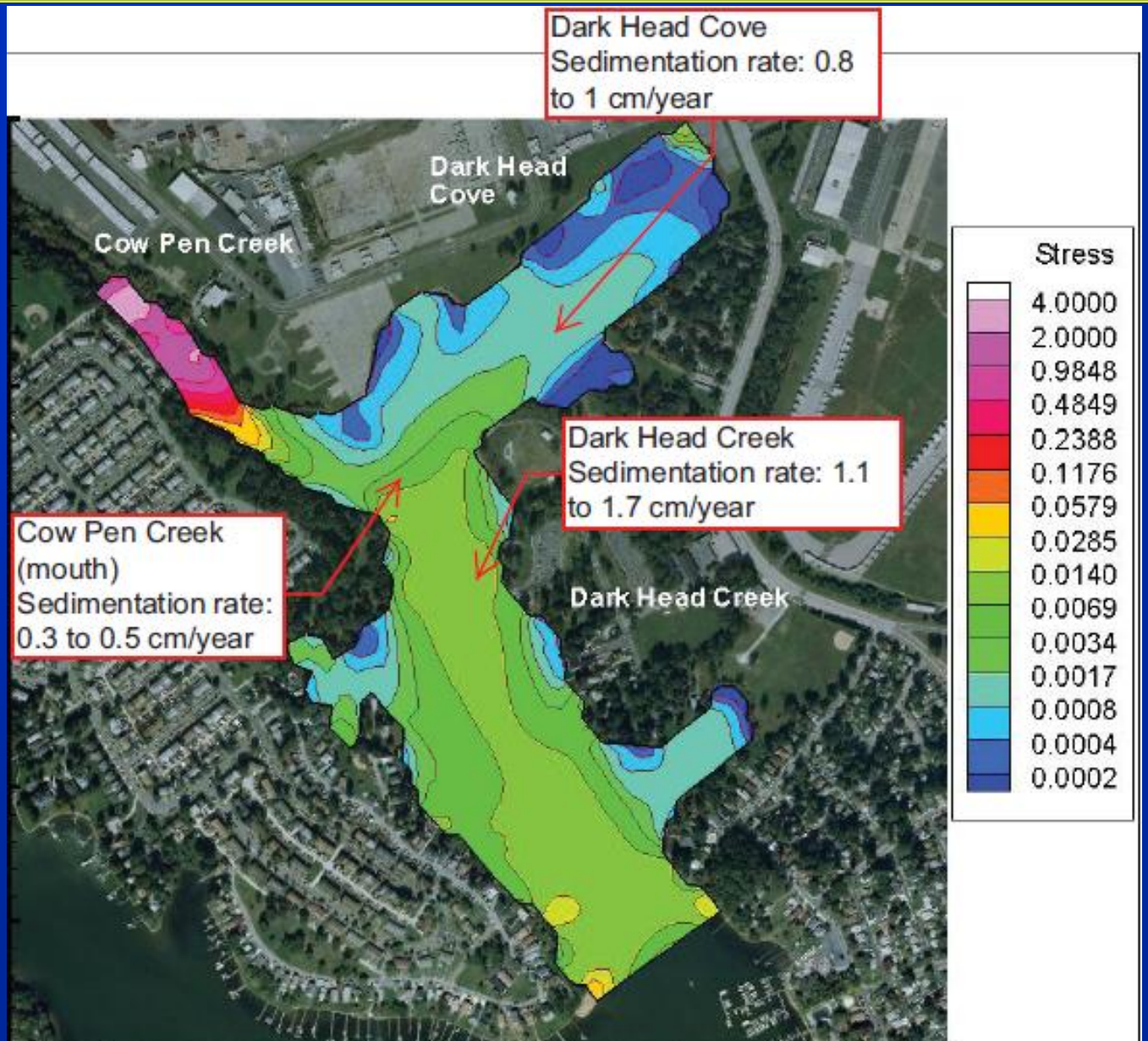


Cow Pen Creek & Dark Head Cove





Hydraulic & Sedimentation Analysis



1 cm = ~0.4 inches

Surface Water & Sediment Quality

- Surface Water - No chemicals detected above water quality standards
- PCBs (Polychlorinated Biphenyls)
  - Are located in shallow sediments near the bulkhead
  - Represent human health and ecological risks
  - Are bioaccumulative (will build up in the food chain)
- PAHs (Polycyclic Aromatic Hydrocarbons)
  - Are located near the bulkhead and close to Martin State Airport
  - Are less of a risk driver than PCBs
- Metals (e.g., cadmium, copper, chromium)
  - Are present in Cow Pen Creek and Dark Head Cove
  - Are potentially toxic to benthic macroinvertebrates (i.e., worms)
  - Levels are more elevated in deep sediments

Human Health Risk Assessment Conclusions

- No acute (short-term exposure) risks identified or anticipated
- Direct contact risks are considered “acceptable” by regulatory standards, except under the most conservative assumptions
- Some risks posed by excessive fish consumption
- Site fish tissue concentrations are similar to local area-wide conditions
- State fish consumption advisories listing specific species and waterways are in place

No immediate risks in Dark Head Cove;

long term perspective drives need for cleanup

Safe to recreate in Dark Head Cove*

***www.marylandhealthybeaches.org**

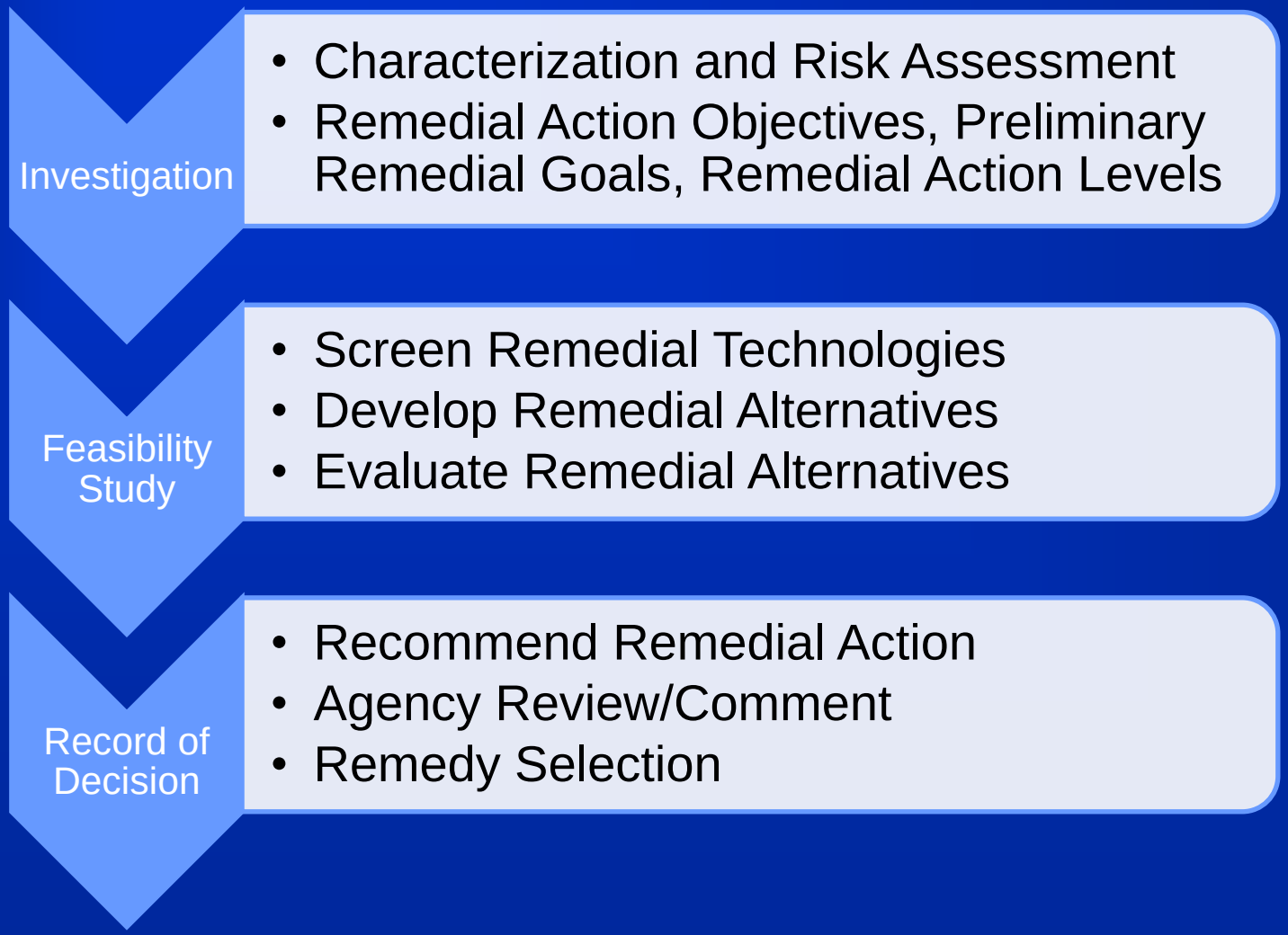
Please observe state-issued fish consumption advisories

2011 Ecological Risk Assessment Findings

- No predicted impacts to fish, birds or mammals
- Potential impacts to benthic macroinvertebrates (e.g., worms)
- Local area sediment community assessment indicates
  - More pollution tolerant species present near MRC than at Marshy Point (a less developed reference area)
  - Similar to other developed areas (Bowleys Quarters)
  - Benthic macroinvertebrates (worms) more abundant near MRC

Sediment in this area shows some stress, similar to other developed areas; it does NOT appear to be severely stressed

Investigations, Evaluations & Decisions



Draft Remedial Action Objectives (RAOs)

- *RAO 1: Reduce, to the extent practicable*, human health risks associated with the consumption of resident fish - by reducing bioavailable sediment concentrations of contaminants of concern (COCs).*
- *RAO 2: Reduce, to the extent practicable, human health risks associated with exposure to COCs through direct contact with sediments and incidental sediment ingestion by reducing sediment concentrations of COCs.*
- *RAO 3: Reduce, to the extent practicable, risks to benthic invertebrates by reducing bioavailable sediment concentrations of COCs.*

***** Practicable = capable of being implemented

Evaluation Criteria

Based on EPA's Feasibility Study guidance

- Threshold Criteria
  - Protection of human health and the environment
  - Compliance with regulations
- Balancing Criteria
  - Long-term effectiveness
  - Short-term effectiveness (impacts)
  - Reduction in toxicity, mobility, volume through treatment
  - Implementability
  - Cost
- Modifying Criteria
  - State and Federal regulatory acceptance
  - Community acceptance

Sediment Remedial Technologies

- Removal
  - Dredging and, in some areas, excavation in the dry
- Capping
  - Sand or clay mixtures, engineered materials
- Monitored Natural Recovery (MNR)
  - Based on sedimentation rate and time to achieve Preliminary Remediation Goals (PRGs / Cleanup levels)
- Enhanced Natural Recovery (ENR)
  - Involves the addition of clean sediment to reach the PRGs
- *In situ* (meaning: in place) Technologies
  - Typically focused on limiting bioavailability
  - Can be incorporated into existing sediment or added to material applied for enhanced natural recovery

Sediment Excavation from Shore

Example photo from Kalamazoo, MI, of what excavation from shore might look like

Removal by Excavation in the Dry

Excavation of sediments without overlying water (applicable to Cow Pen Creek shallow areas and shorelines)

Dredging Equipment

Conventional Clam

Enclosed Bucket

Articulated Fixed-Arm

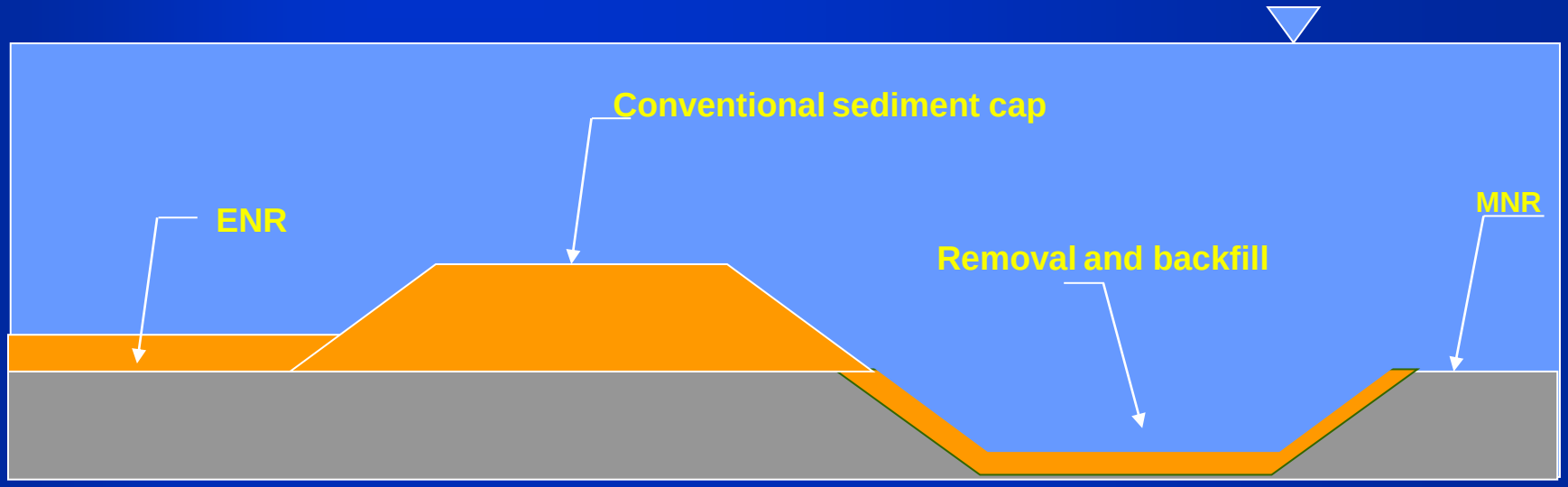
Cutterhead

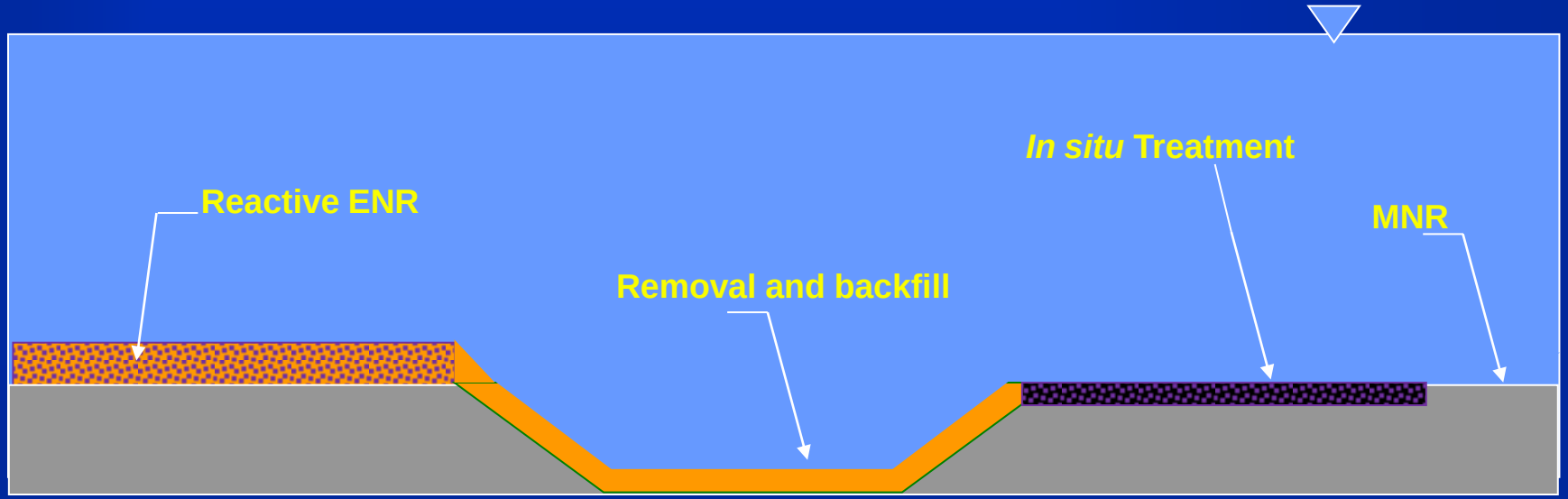
Horizontal Auger

Plain Suction

Pneumatic

Remedial Alternative Conceptual Schematics





MNR = Monitored Natural Recovery, ENR = Enhanced Natural Recovery

Public Involvement

Process for Public Involvement

- A public information & availability session (that's tonight!)
- Introduce the Working Group concept
- Hold a series of informational and educational meetings with a working group
- Assess preferences, considerations and concerns
- Obtain input and, ideally, understanding of the path forward

Working Group Concept

- Assemble a group of interested citizens to participate in a series of educational and informational meetings that go into greater detail on the factors involved in remedy selection
- Conduct a series of Working Group meetings on:
  - Sediment Characterization Data and Risk Assessment Results
  - Remedial Technologies and Approaches
  - Remedial Alternatives and Evaluations
- The community outreach process will provide input on evaluations and assist with communication efforts

The final remedial decision will be made by the Maryland Department of the Environment and USEPA in collaboration with Lockheed Martin

Schedule for Public Involvement

- January 18, 2012 – Public Information & Availability Session / Working Group Concept presented and participants invited
- January 31, Working Group formed*
- February – May 2012 – Working Group Meetings
  - February 23rd, March 22nd, April 26th, (May 24th, if needed)
- Fall 2012 – Feasibility Study submittal to MDE & USEPA

*** Signup is required for participation in the Working Group**

In Summary….

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Questions & Discussion

Thank you!

Thank you for your time, consideration and input.

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