



**Honeywell**

**PARSONS**



*de maximis, inc.*

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# **CONSTRUCTION QUALITY ASSURANCE AND QUALITY CONTROL DURING DREDGING, ONONDAGA LAKE, NEW YORK**

WODCON XXI – June 16, 2016

# Overview



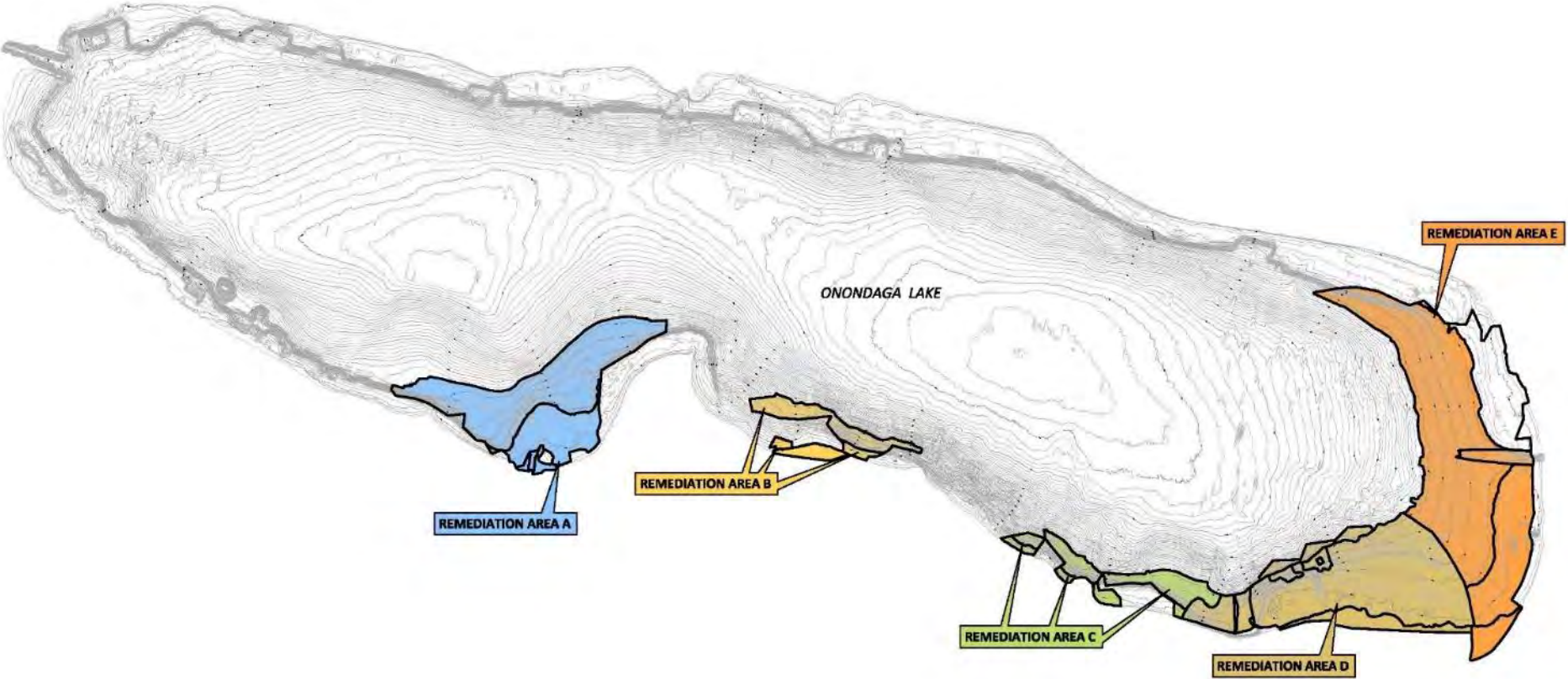
- 5-year dredging and capping restoration project
- Dredging: ~1.65 m<sup>3</sup> over 87 hectares
  - Completed November 2014
- Capping: ~2.2 m<sup>3</sup> over more than 180 hectares
  - Multi-layer cap
  - Approximately 95% complete

# Construction Quality Assurance Plan (CQAP)

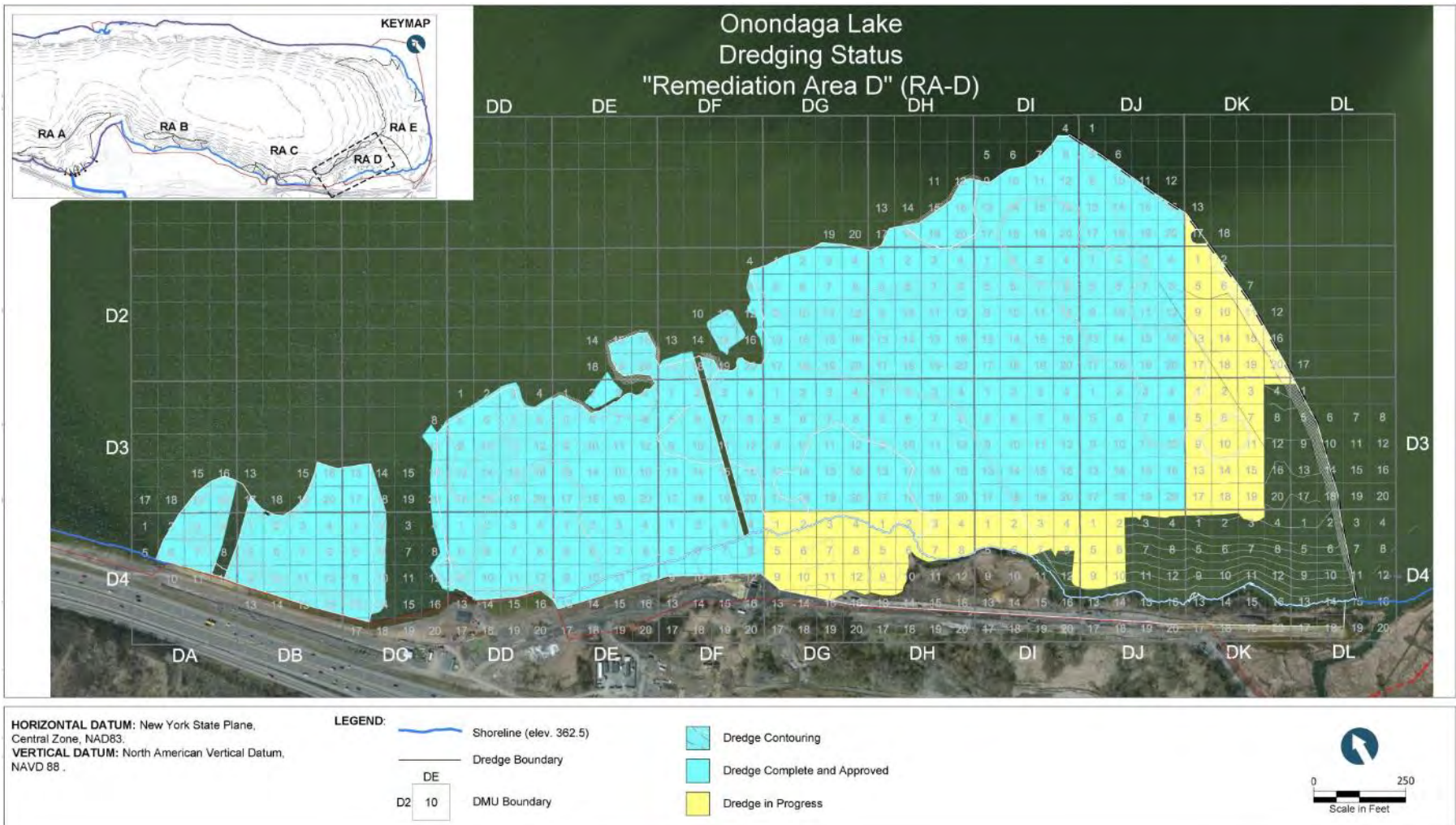
- Purpose: Establish dredging and capping sampling methodologies and completion metrics
- Quality Control (QC)
  - Contractor-performed measurements and testing
- Quality Assurance (QA)
  - Independent measurements and verification of QC measurements



# Remediation Areas



# Dredge Management Units (DMUs)



# Post-Dredging Completion Metrics

- Elevation-based removal
    - RA-A, RA-B, RA-C, RA-E
  - Achieve dredge elevation over 90 percent of the dredge surface area
  - Less than 5% may undercut the target by more than 15 cm
  - No area may undercut the target elevation by more than 30 cm
- Volume-based removal
    - RA-D (“In-Lake Waste Deposit”)
  - Goal: remove a volume equivalent to a 2-meter average across RA-D
  - Total overcut must be equal to or greater than the amount of undercut
  - No areas larger than 10 m<sup>2</sup> may undercut the target elevation by more than 30 cm

# DMU Approval Forms

- DMU summary information
  - Location
  - Area
  - Removal volume
- Signatures of all approving parties
- Isopach comparing dredged elevation compared to design elevation

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Onondaga Lake  
Dredge Management Unit (DMU) Completion Form

DMU Completion Form Number: D-007 VG  
DMU Designation: DE-D3

Originator: MPH  
Date: 8/1/2013

General DMU Information:

Remediation Area (RA): D

Size of DMU (acres): 4.0

Date dredging was initiated: Thursday, September 20, 2012

Date dredging was completed: Thursday, July 18, 2013

Dredge Volume Removed: 54,797

Comments:

The overall overcut in this ILWD area was greater than the undercut.

Attachments:

DMU Performance Summary, Isopach Map

Approval/Acceptance:

Contractor Representative

(Sevenson): Name: Tim White Signature: Tim White  
Date: 8/1/13 Time: 2:30

Project Engineer

(Parsons): Name: DAVID SMITH Signature: David Smith  
Date: 8/1/13 Time: 12:00

CQA Manager

(Anchor QEA): Name: Joseph Deter Signature: Joseph Deter  
Date: 8/7/2013 Time: 3:38 PM

Lake Program Manager

(Honeywell): Name: Rosary Rule Signature: Rosary Rule  
Date: 8/1/13 Time: 1:20 hrs

Agency Field Representative

(NYSDEC): Name: Robert Edwards Signature: Robert Edwards  
Date: 8/12/13 Time: 1:20 pm

Distribution:

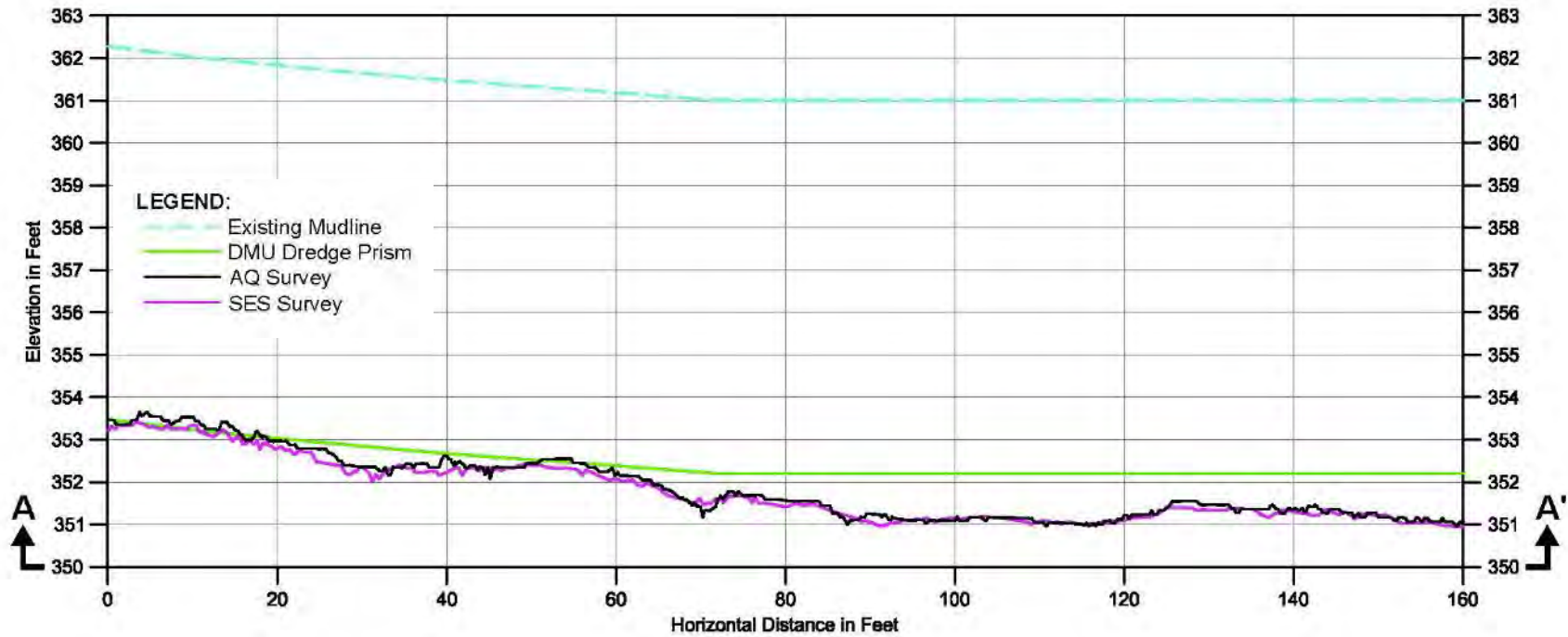
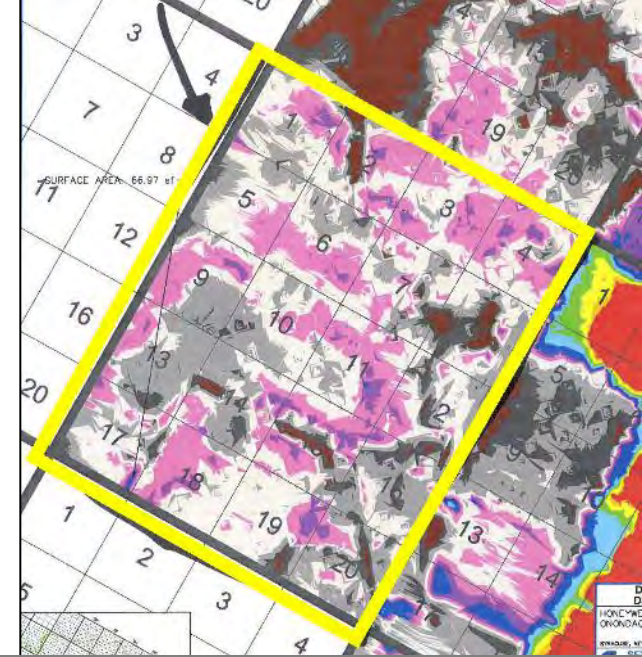
(list recipients here)

DMU Completion Form No. X

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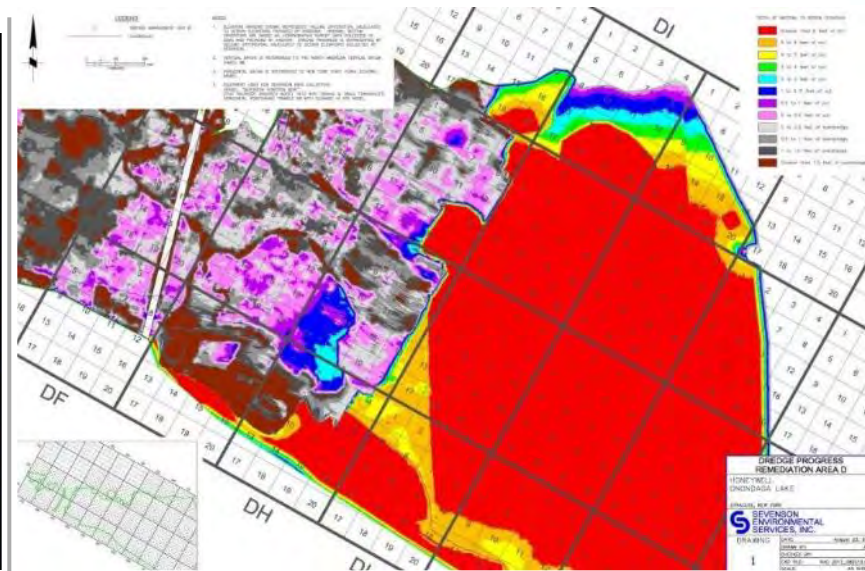
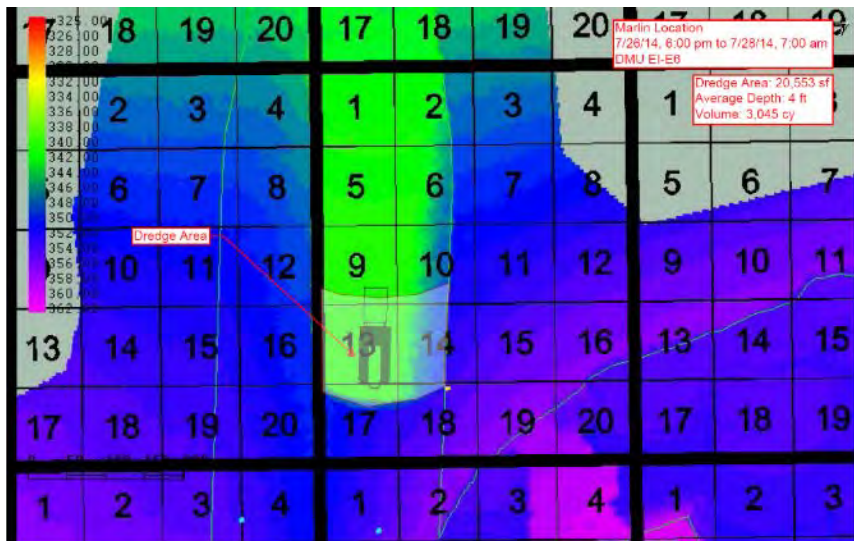
# DMU Survey Verification

- Contractor-supplied QC survey
- QA comparison survey to verify the Contractor's QC survey





# Daily Production Tracking



- Information direct from dredge
  - Location
  - Elevation
  - Volume (approximate)

- Bathymetric survey isopachs
  - Location
  - Elevation
  - Volume
  - Comparison to target elevations

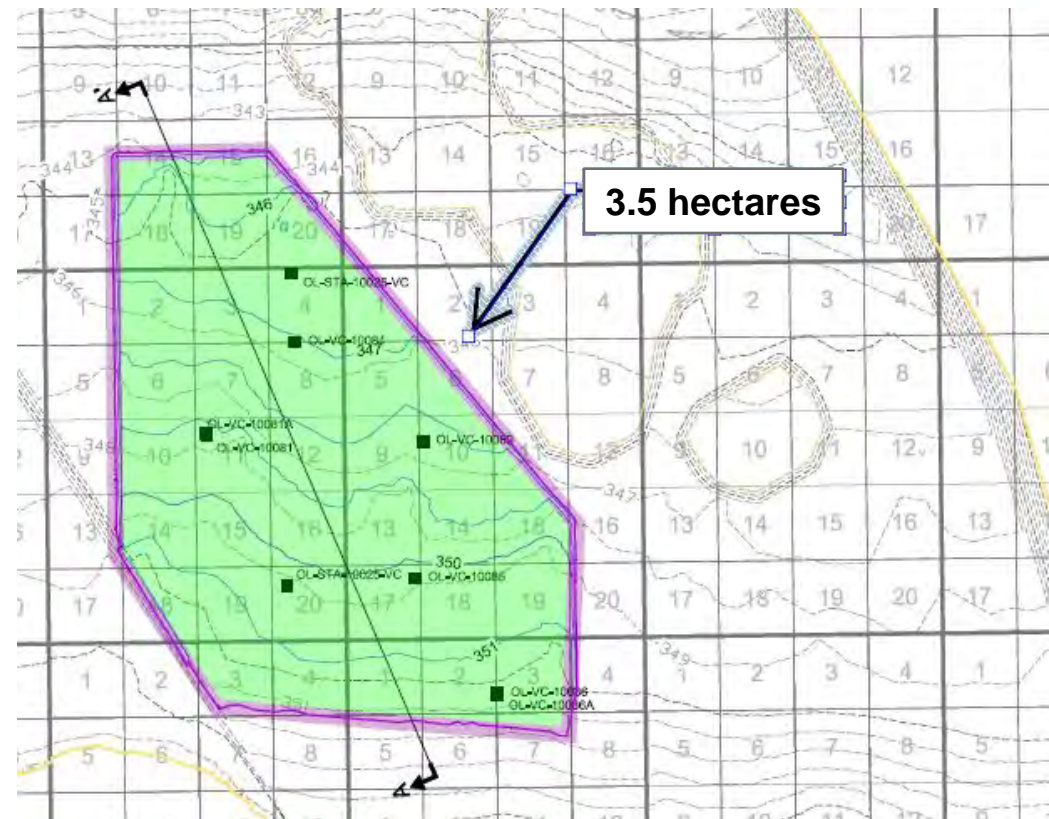
# Adjust Sediment Dewatering Operations

- Polymer for sediment conditioning
- Activated carbon tank changeouts
- Odor mitigation systems



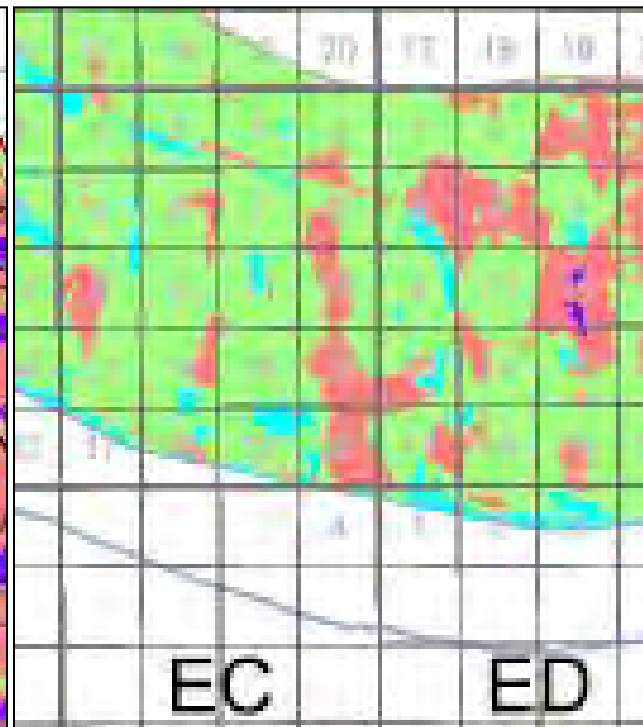
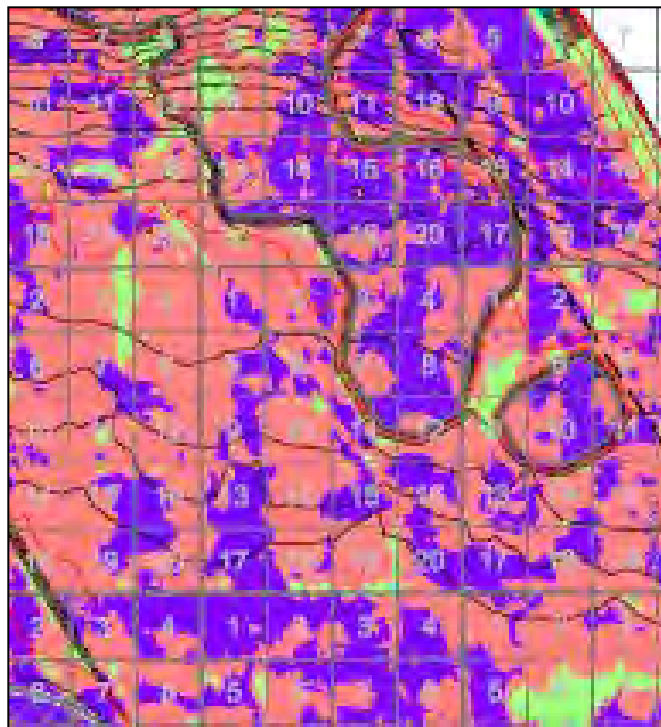
# Receive Dredge Volume Credit






- Volume-based removal in RA-D (2-m average)
- Approval granted from Regulatory Agency via process established in the CQAP
  - Reduce removal thickness by 0.5 m
  - Dredge volume savings of 13,800 m<sup>3</sup>



# Dredging Completed Ahead of Schedule

- Initial dredge schedule from July 2012 to July 2015
- Modified dredge target elevation to 15 cm lower
  - Cost: Increased dredge volume by 30,000 to 50,000 m<sup>3</sup>
  - Benefit: Reduced the amount of low productivity re-dredging
  - Benefit: Completed dredging by October 2014



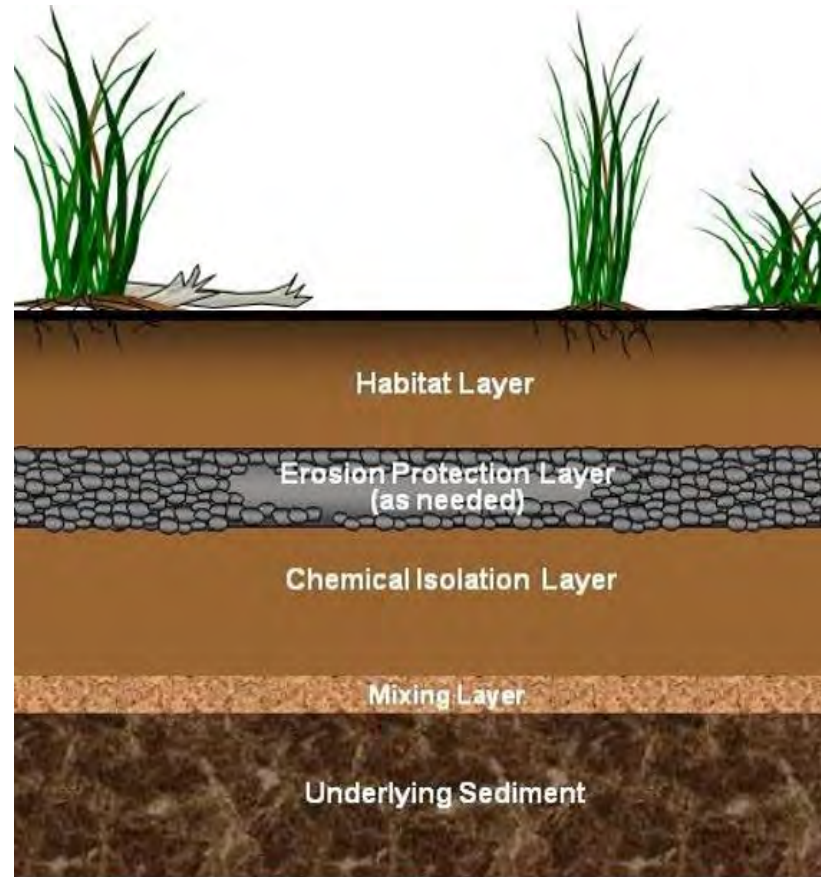
Comparison of Actual to Design Dredge Elevation	Color
>2ft of Overdredge	
1ft to 2ft of Overdredge	
0ft to 1ft of Overdredge	
0ft to 1ft of Underdredge	
>1ft of Underdredge	

# QC/QA Procedures for Capping Operations

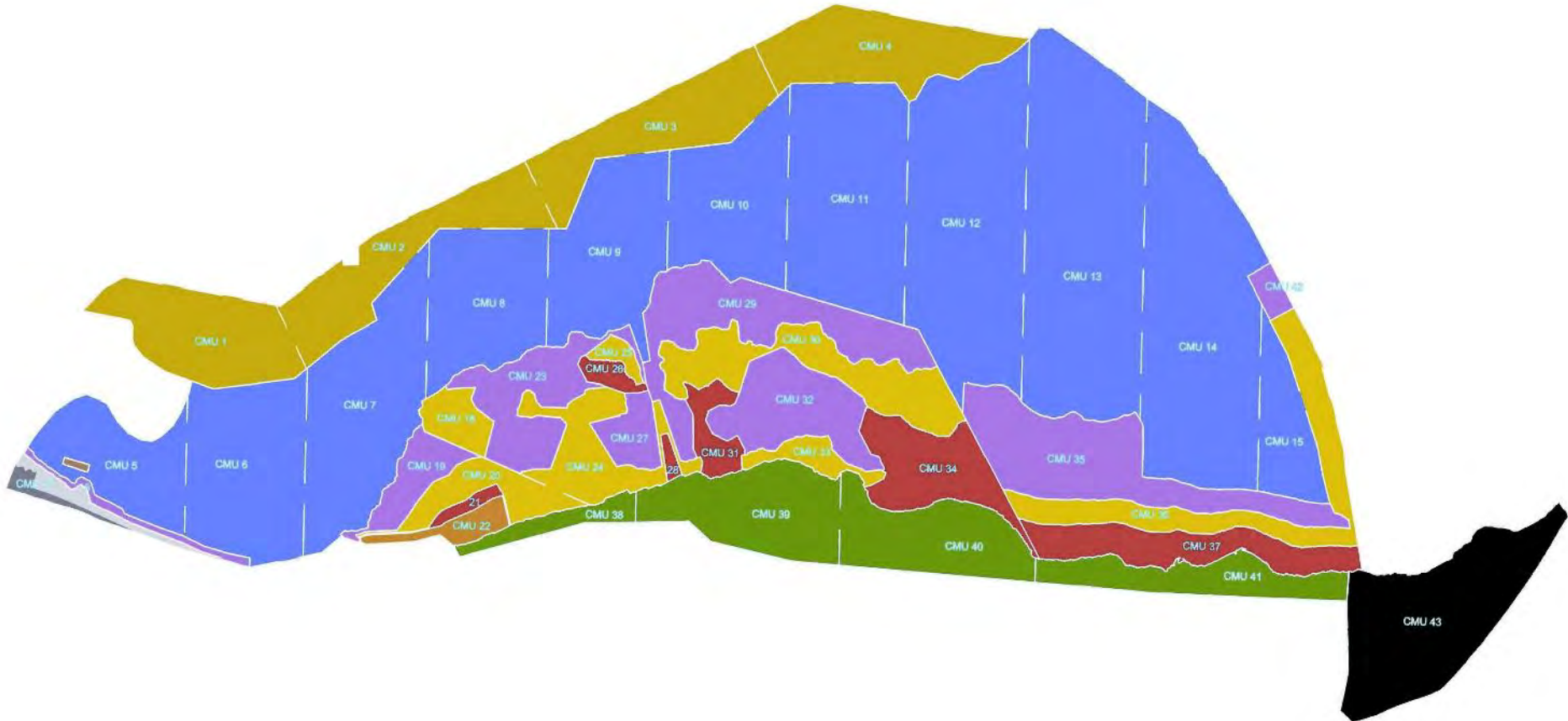


# Typical Cap Detail Section

- Chemical isolation layers
  - Sand-Siderite
  - Sand-Activated Carbon (Sand-AC)
- Erosion protection layer
  - Sand to 0.5 m armor stone
- Habitat layer
  - Sand
  - Topsoil



# Cap Management Units (CMUs)



# Cap Thickness Verification Techniques



Catch Pans



Gravity Cores



Vibracores



Survey Measurements



# Cap Amendment Verification Techniques

- Sand-Activated Carbon layer
  - Thermal process
- Sand-Siderite layer
  - Thermal process
  - Magnetic properties of siderite after heating



# Questions?

