National Dredging Quality Management (DQM) Program

Harbors & Navigation Committee Meeting

February 13, 2014

Mobile, Alabama

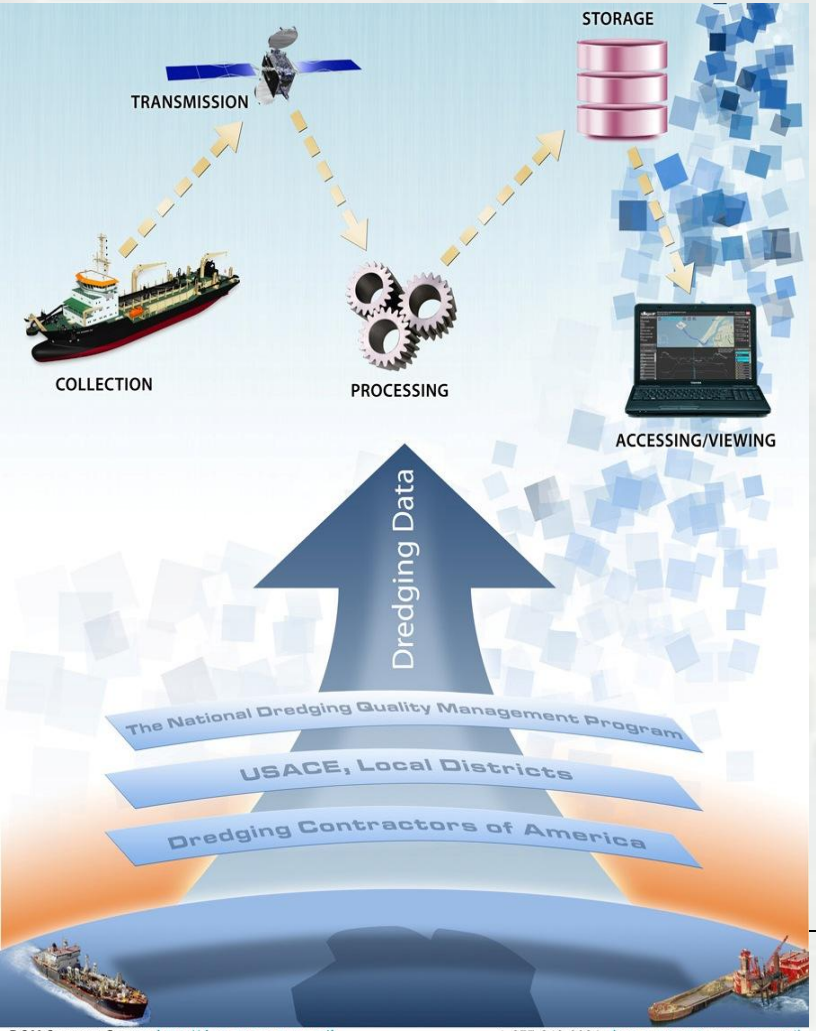
Vern Gwin, Program Director
National DQM Center

DREDGING QUALITY MANAGEMENT

Presentation Outline

- What DQM is
- History
- How it works
- Future objectives and challenges

National Dredging Quality Management Program (DQM)



Is an automated dredge contract monitoring system - a "quality assurance tool"

- Location & Movement
- Dredge State
- Quantity Estimates
- Environmental Compliance

Benefits to Government and Industry

Government

- 24x7 coverage of operations
- Valuable data for environmental monitoring compliance
- Fast response to public or environmental concerns
- Quality Reliable Certified Work Documentation
- Improves project management
- Flexible scheduling of inspectors
- Centralized National Database
- Rental Production Monitoring

Industry

- Standardized data collection and reporting
- Standard base for dispute resolution/avoidance
- Reliable digital record of operations/performance

Program Evolution

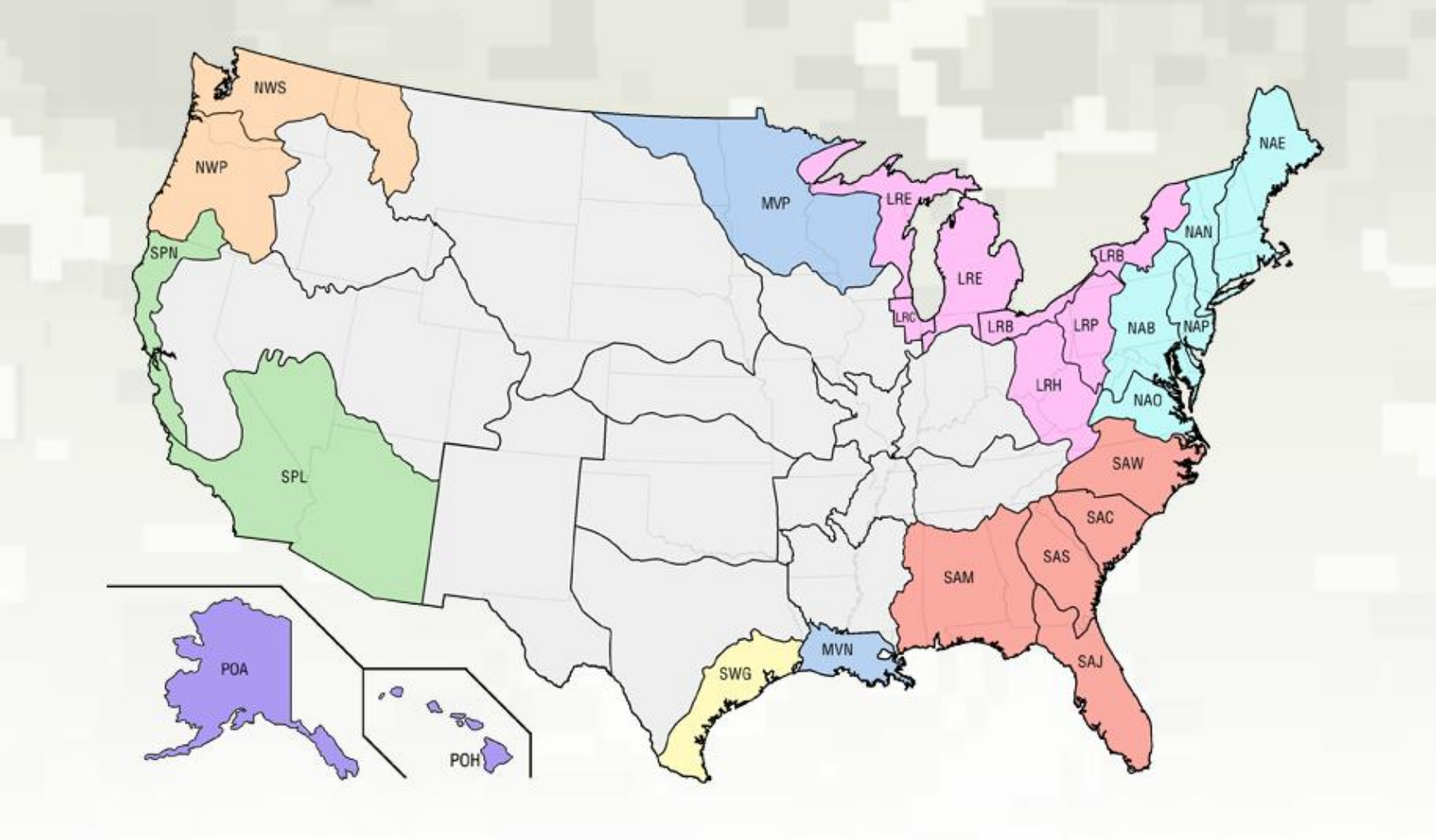
Early 1990s
Dredging Research Program
(DRP)
2006 Transitioned to Operational

DREDGING QUALITY MANAGEMENT

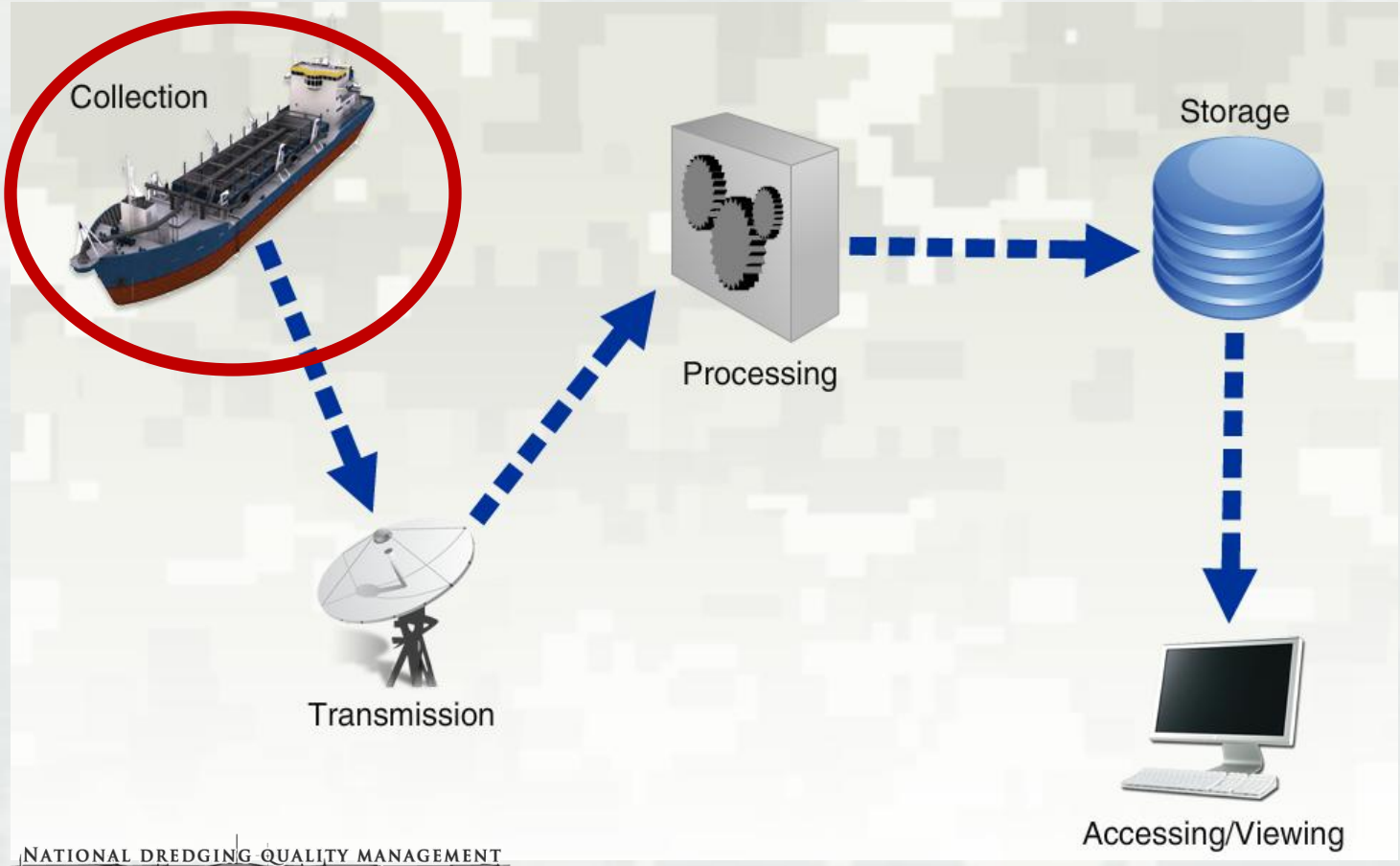
Today
National Dredging
Quality Management
Program

Types of Dredges

Districts Using DQM



Data Management Process



NATIONAL DREDGING QUALITY MANAGEMENT

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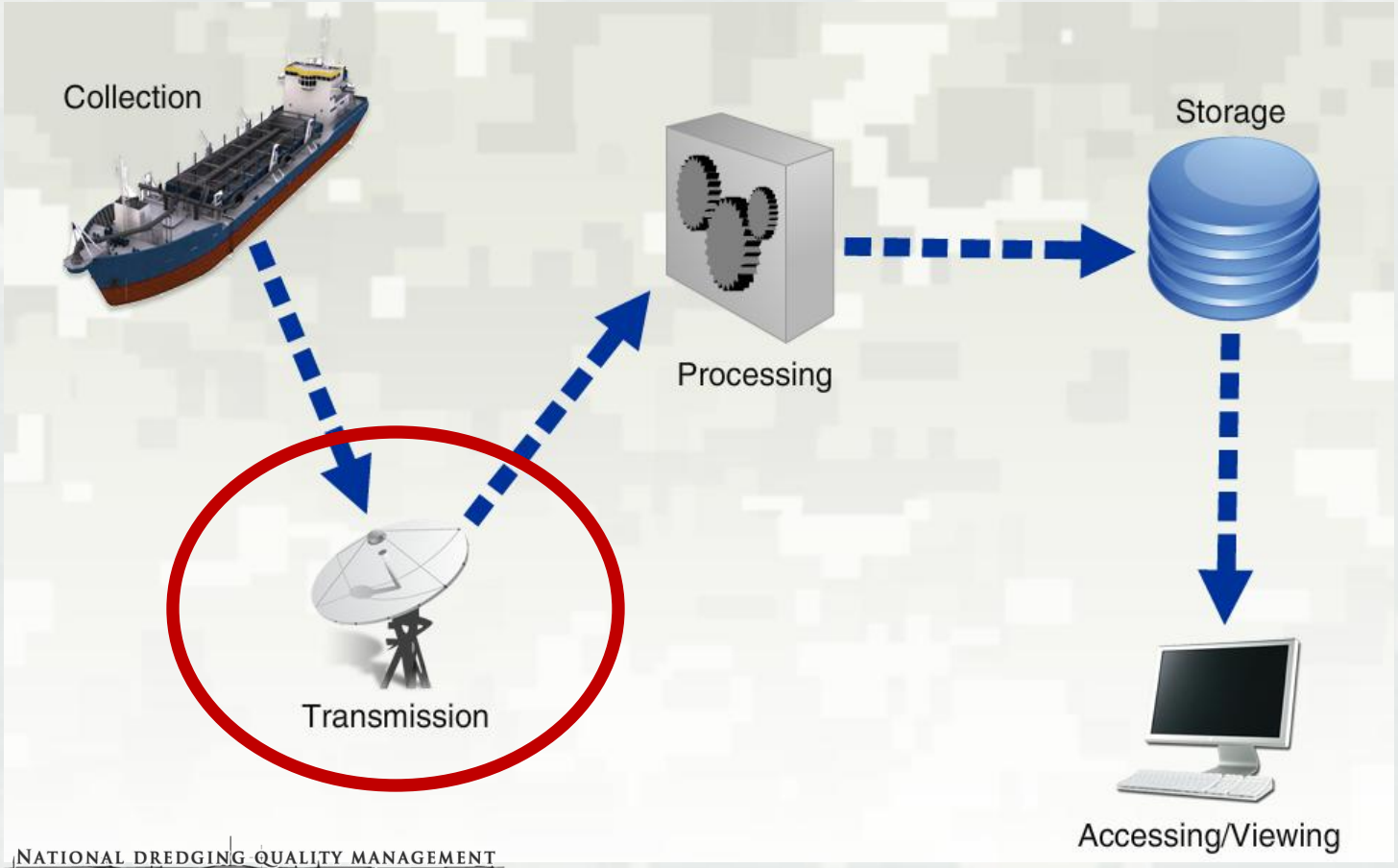
Data Management Process



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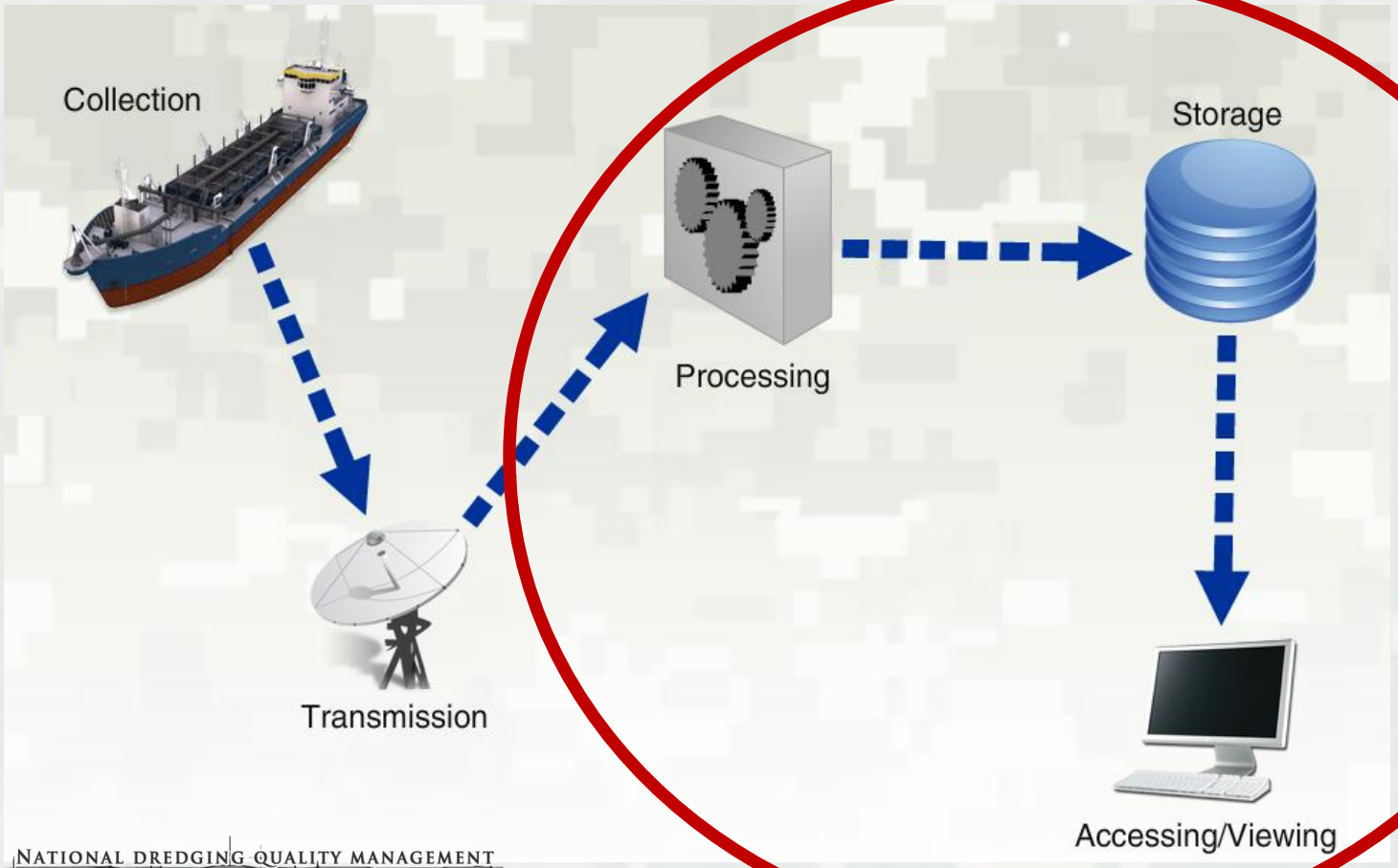
Data Management Process



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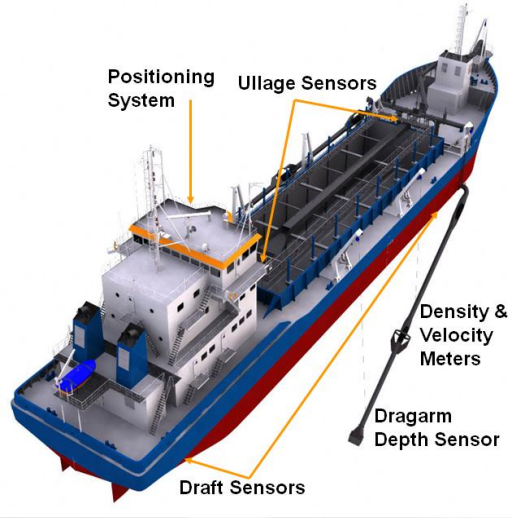
Specifications

- Contractor-provided sensor and data requirements-type, number, locations,
- Minimum data performance requirements
- Data reporting and format
- Reference datum(s)
- Contractor-provided computer equipment
- Certification requirements
- QA/QC requirements (pre-dredge and during)
- Consistent National Standard

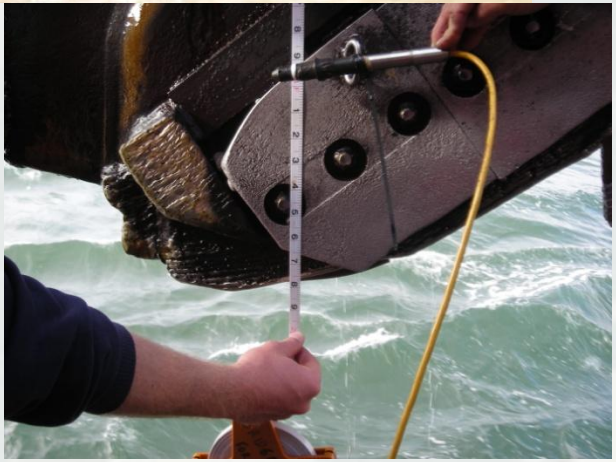
Hopper Dredge Instrumentation vs. Data Parameters Transmitted

- Positioning System
- Open/Close sensor
- Draft sensors
- Ullage sensors
- Drag head depth sensor
- Density Meter
- Velocity Meter
- Pump RPM's
- Computer
  - Corps Software receives the data string
- Telemetry system



- Date and Time
- Vessel Longitude & Latitude
- Draghead Longitude & Latitude
- Dredge Course
- Dredge Speed
- Dredge Heading
- Hull Status
- Load Number
- Tide (Vertical Correction)
- Fore and Aft Draft
- Fore and Aft Ullage
- Hopper Volume
- Displacement
- Empty Displacement
- Draghead Depths
- Slurry Density in Dragarms
- Slurry Velocity in Dragarms
- Pump RPM
- Minimum Pump Effort
- Pumping Water
- Material Recovery
- Pumpout

DQM Certification



DQM On-Board Software (DQMOBS)

http://dqm.usace.army.mil/

US Army Corps of Engineers
National Dredging Quality Management

Home | About Us | Certifications/Inspections | Dredging Plants | Specifications | Tools | Training | Education | menu

DQM Home

About DQM

- About DQM Home
- Benefits
- Authorization
- Roles/Responsibilities
- Contact Us/Support Center

Reference Links

Support Center

Have a problem or question, contact our DQM Support Center

National Dredging Quality Management Program

The DQM Program is a Corps-Dredging Industry partnership for automated dredging monitoring of Corps dredging projects.Onboard sensors monitor dredge activities, operations and efficiency. Data is routed to the DQM Support Center for data retrieval and storage. Districts may utilize Corps-provided software to prepare summary reports, plots or spreadsheet compilations of dredge operations. In addition to assisting dredge inspectors for monitoring performance, the data can be used to improve business practice, ensure environmental compliance, provide dredging information and data to support the National Dredging Mission, and increase our understanding of dredging science and technology.

Training
Manuals, software guidance and training plans/schedules for data collection, analysis and more
Go Now

DQM Viewer 2.0
Interactive Silverlight application for selecting dredging projects, graphing load data, etc.
Go Now

Support Center
Do you have questions, concerns or comments or need help from the support center?
Go Now

Text Version • Public Inquiries • Disclaimer • Privacy & Security • FOIA • IQA • Accessibility

DQM TOOLS

The DQM Viewer is the latest and greatest addition to the USACE dredging tools collection, providing an interactive Silverlight application for selecting dredging projects, graphing load data, managing and requesting disposal plot information, as well as providing data exports.

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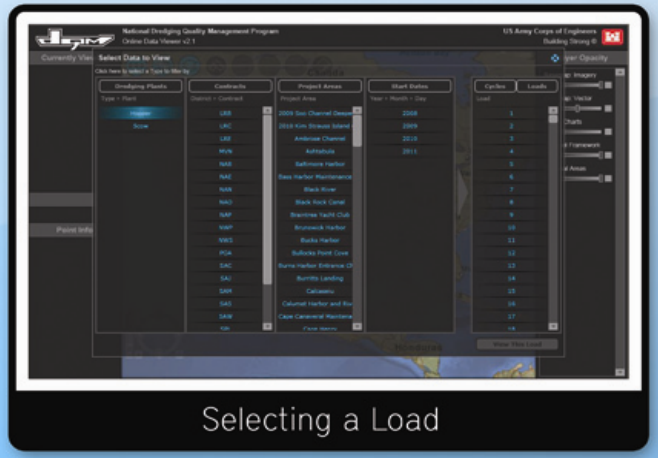
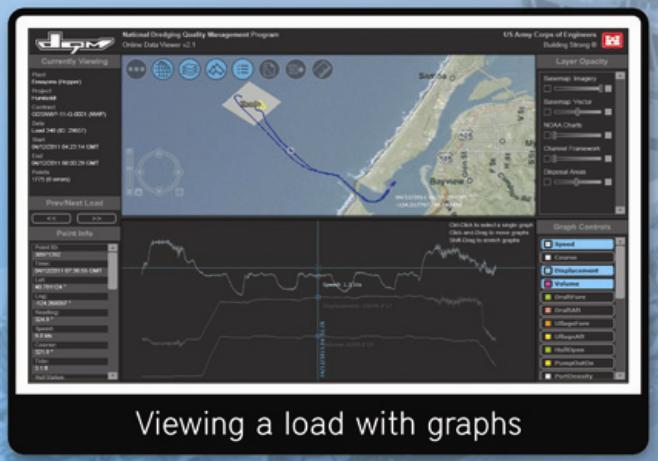
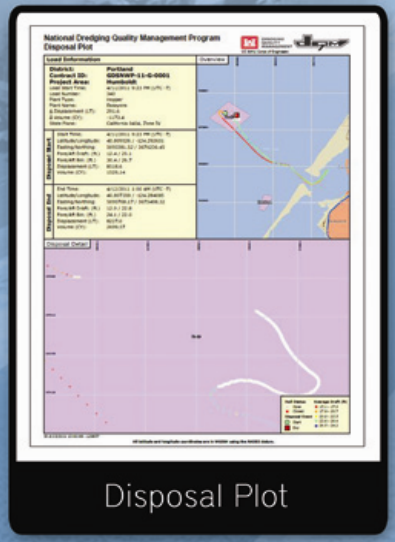


Selecting a Load



Viewing a load with graphs

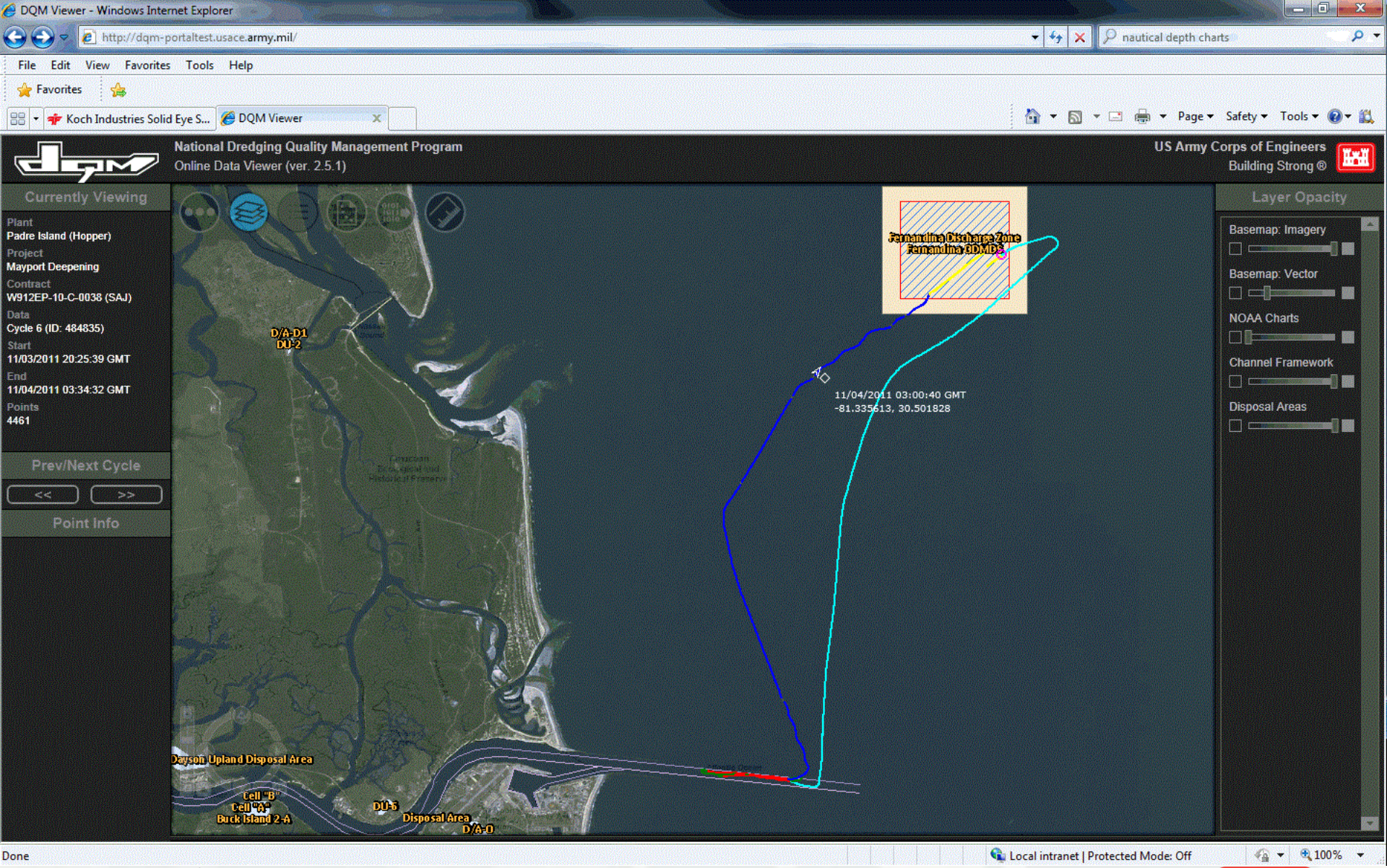


Disposal Plot

COMING SOON

- **Email alerts for compliance issues**
- **Viewing/exporting multiple loads**
- **Dredge plots**

DREDGING QUALITY MANAGEMENT



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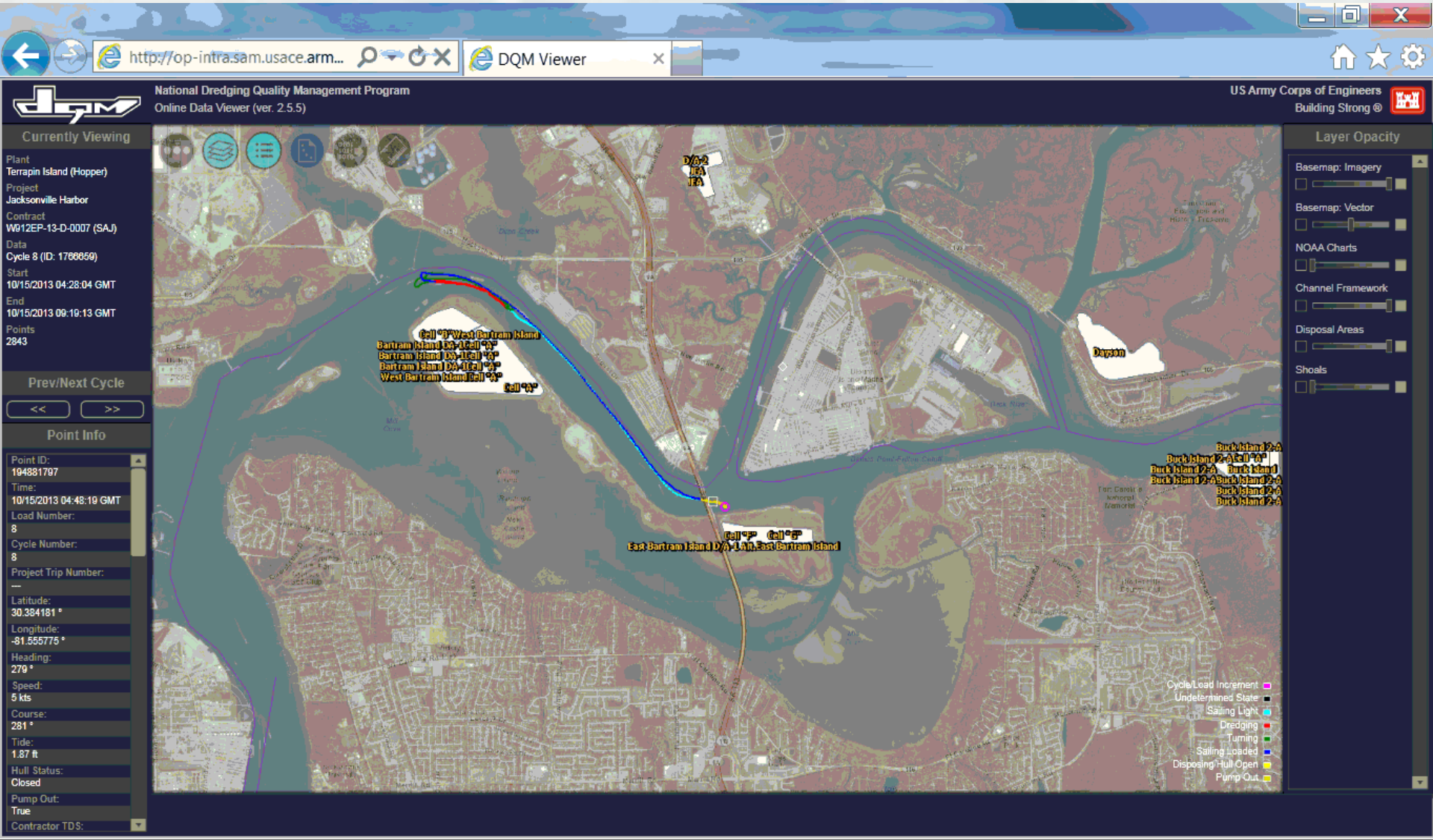
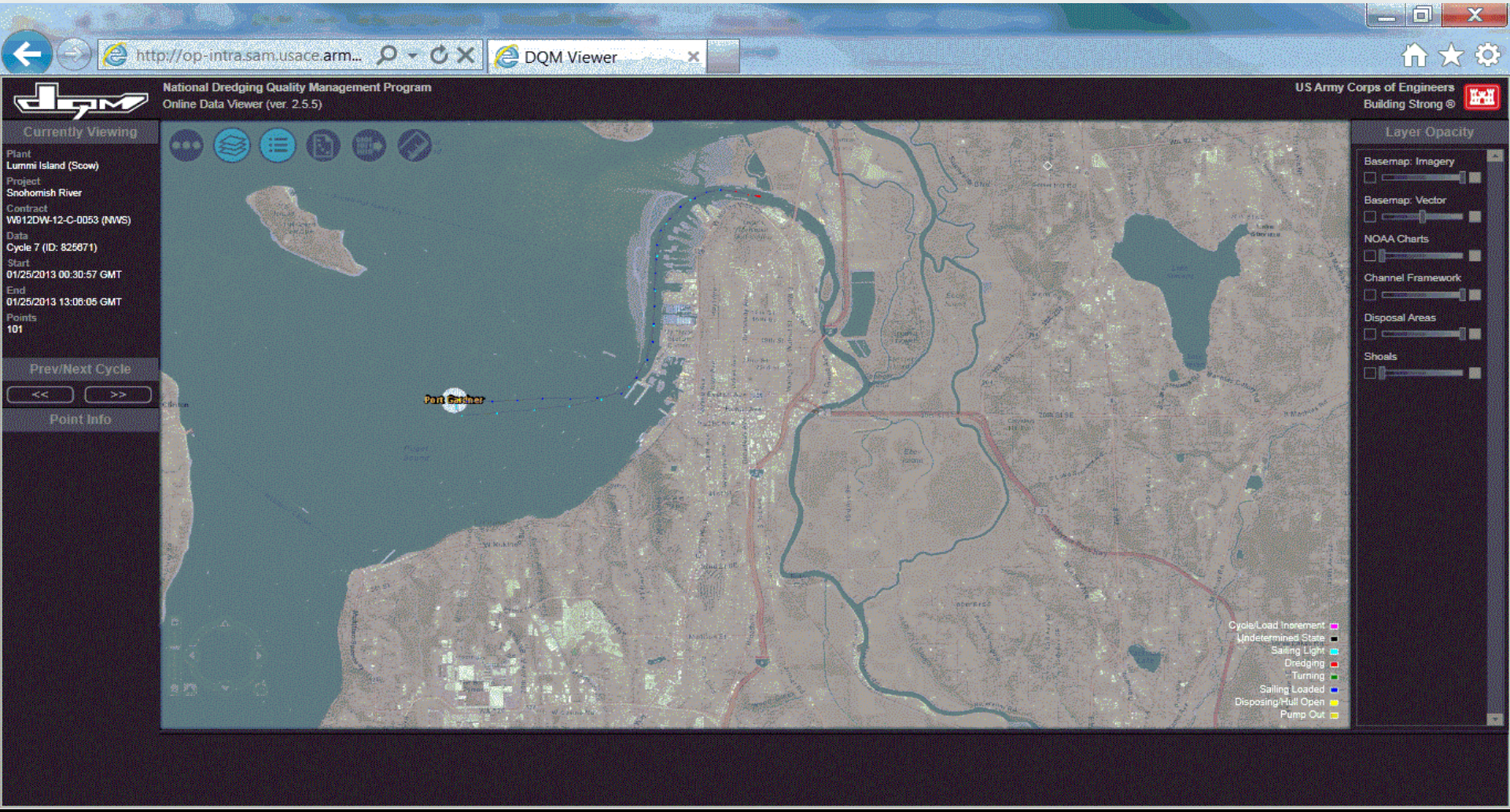
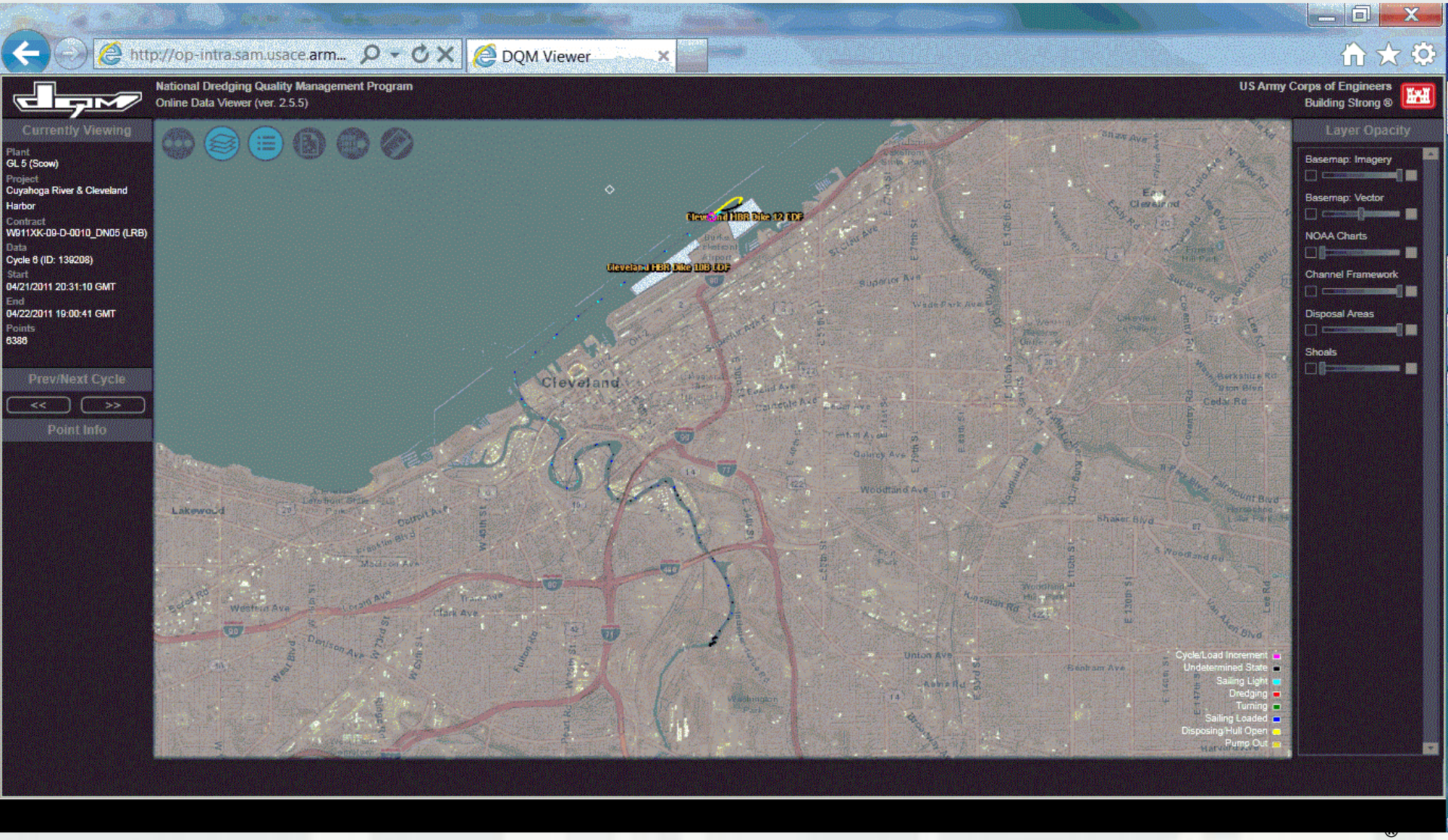
Jacksonville Harbor



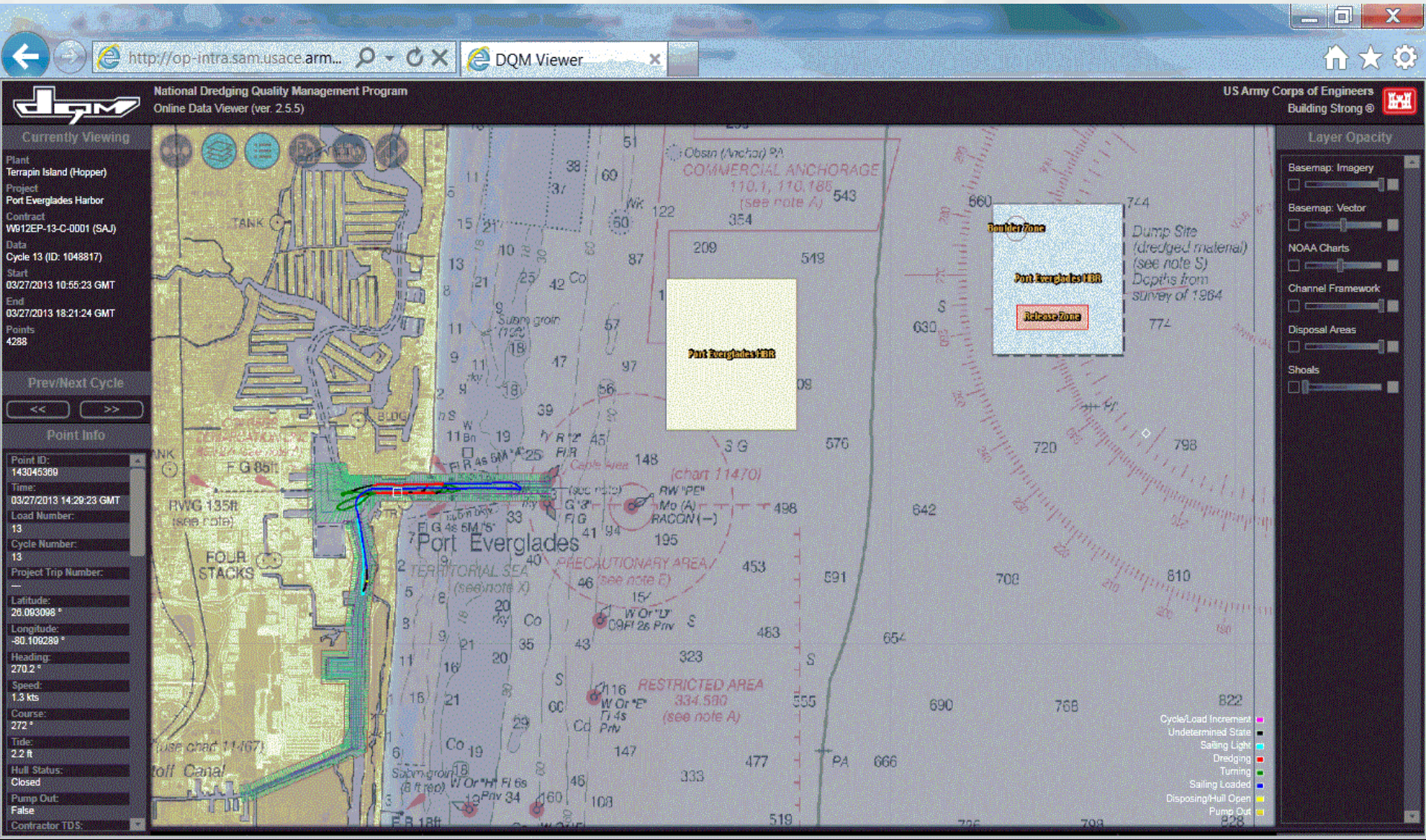
Snohomish River, WA



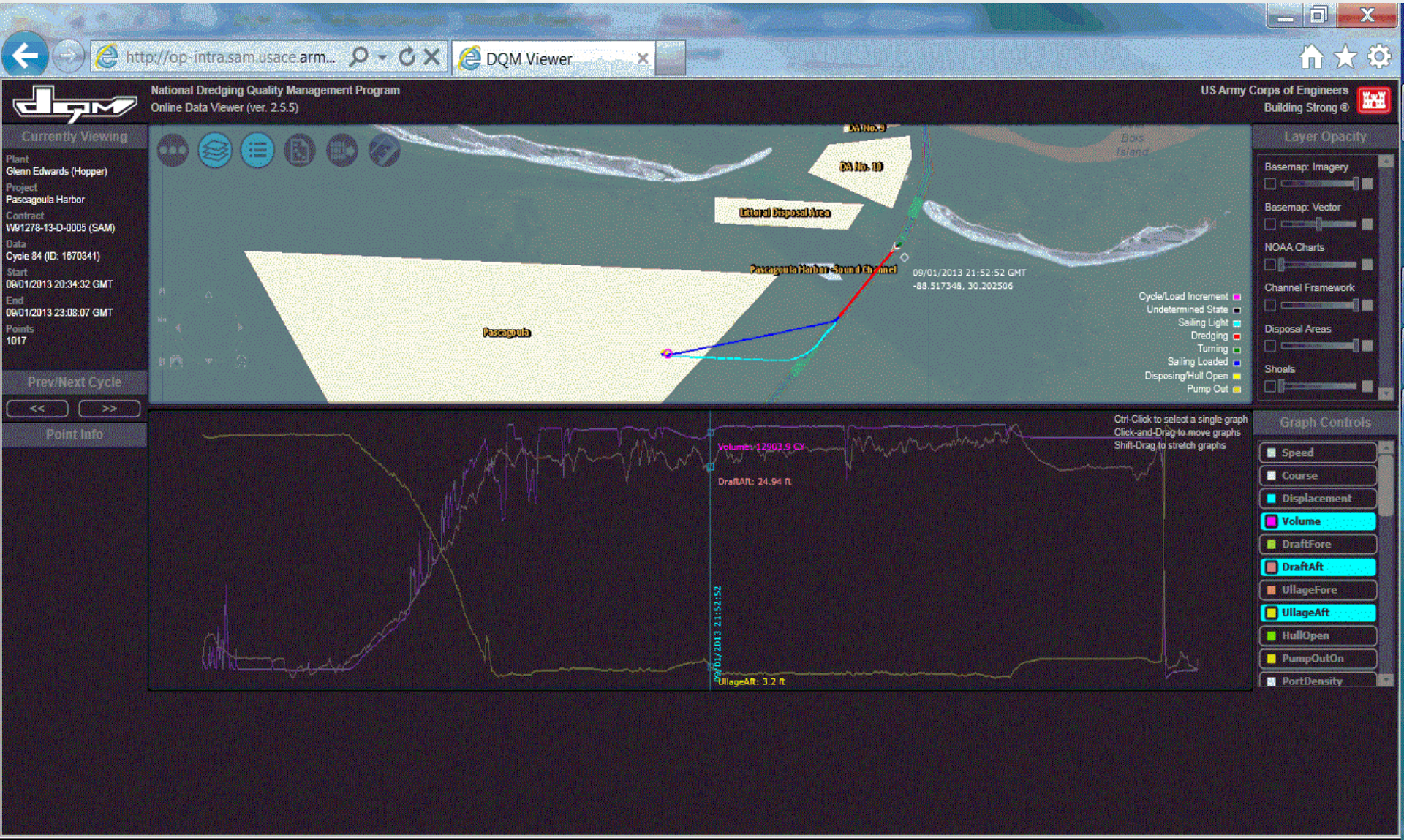
Cleveland Harbor

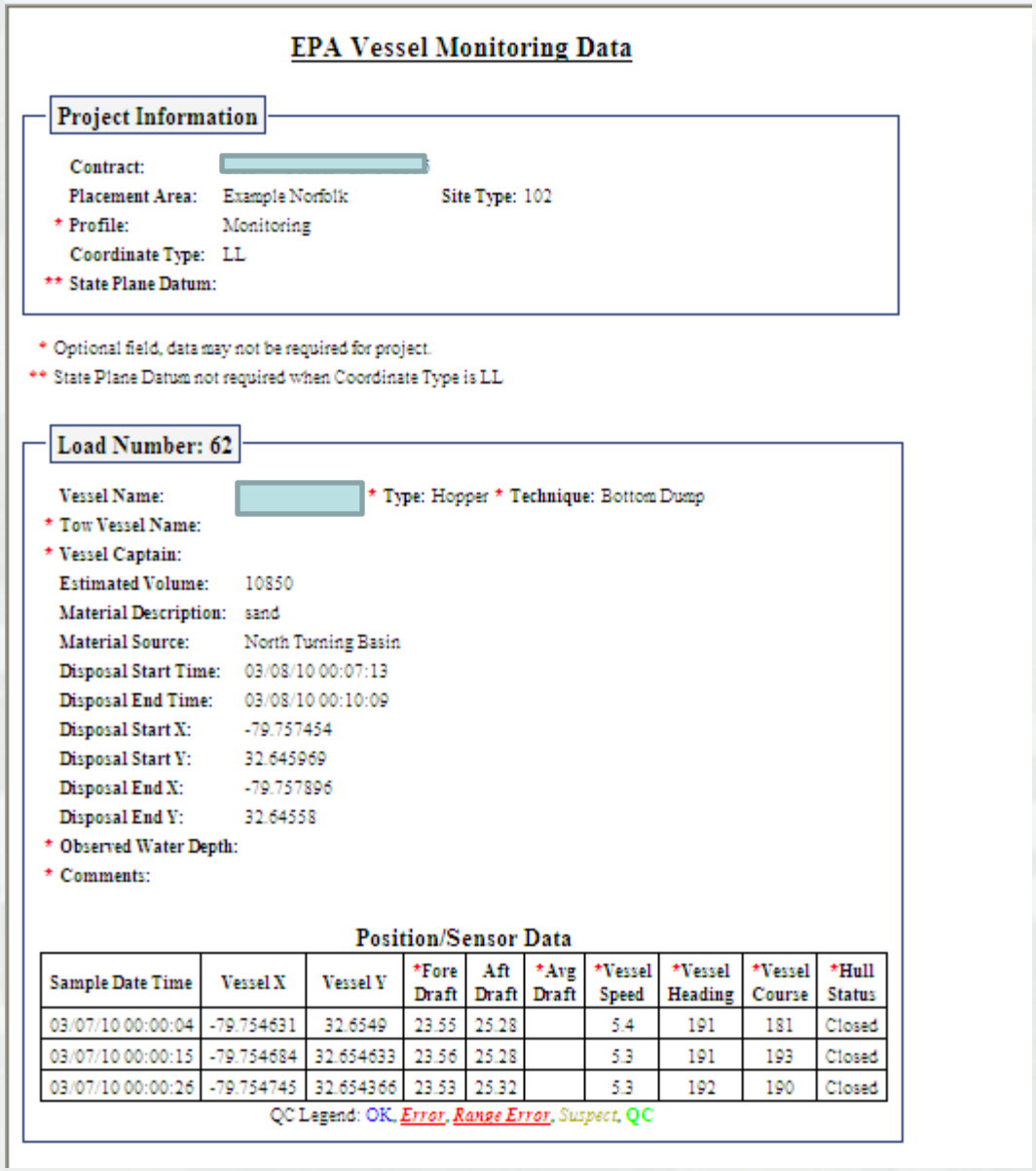


Port Everglades



Pascagoula Harbor





EPA Vessel Monitoring Data

Project Information

Contract:
Placement Area: Example Norfolk Site Type: 102
* Profile: Monitoring
Coordinate Type: LL
** State Plane Datum:

* Optional field, data may not be required for project.
** State Plane Datum not required when Coordinate Type is LL

Load Number: 62

Vessel Name: * Type: Hopper * Technique: Bottom Dump
* Tow Vessel Name:
* Vessel Captain:
Estimated Volume: 10850
Material Description: sand
Material Source: North Turning Basin
Disposal Start Time: 03/08/10 00:07:13
Disposal End Time: 03/08/10 00:10:09
Disposal Start X: -79.757454
Disposal Start Y: 32.645969
Disposal End X: -79.757896
Disposal End Y: 32.64558
* Observed Water Depth:
* Comments:

Position/Sensor Data

Sample Date Time	Vessel X	Vessel Y	*Fore Draft	Aft Draft	*Avg Draft	*Vessel Speed	*Vessel Heading	*Vessel Course	*Hull Status
03/07/10 00:00:04	-79.754631	32.6549	23.55	25.28		5.4	191	181	Closed
03/07/10 00:00:15	-79.754684	32.654633	23.56	25.28		5.3	191	193	Closed
03/07/10 00:00:26	-79.754745	32.654366	23.53	25.32		5.3	192	190	Closed

QC Legend: OK, *Error*, *Range Error*, *Suspect*, QC

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Standardized Environmental Protection Agency (EPA) Reporting

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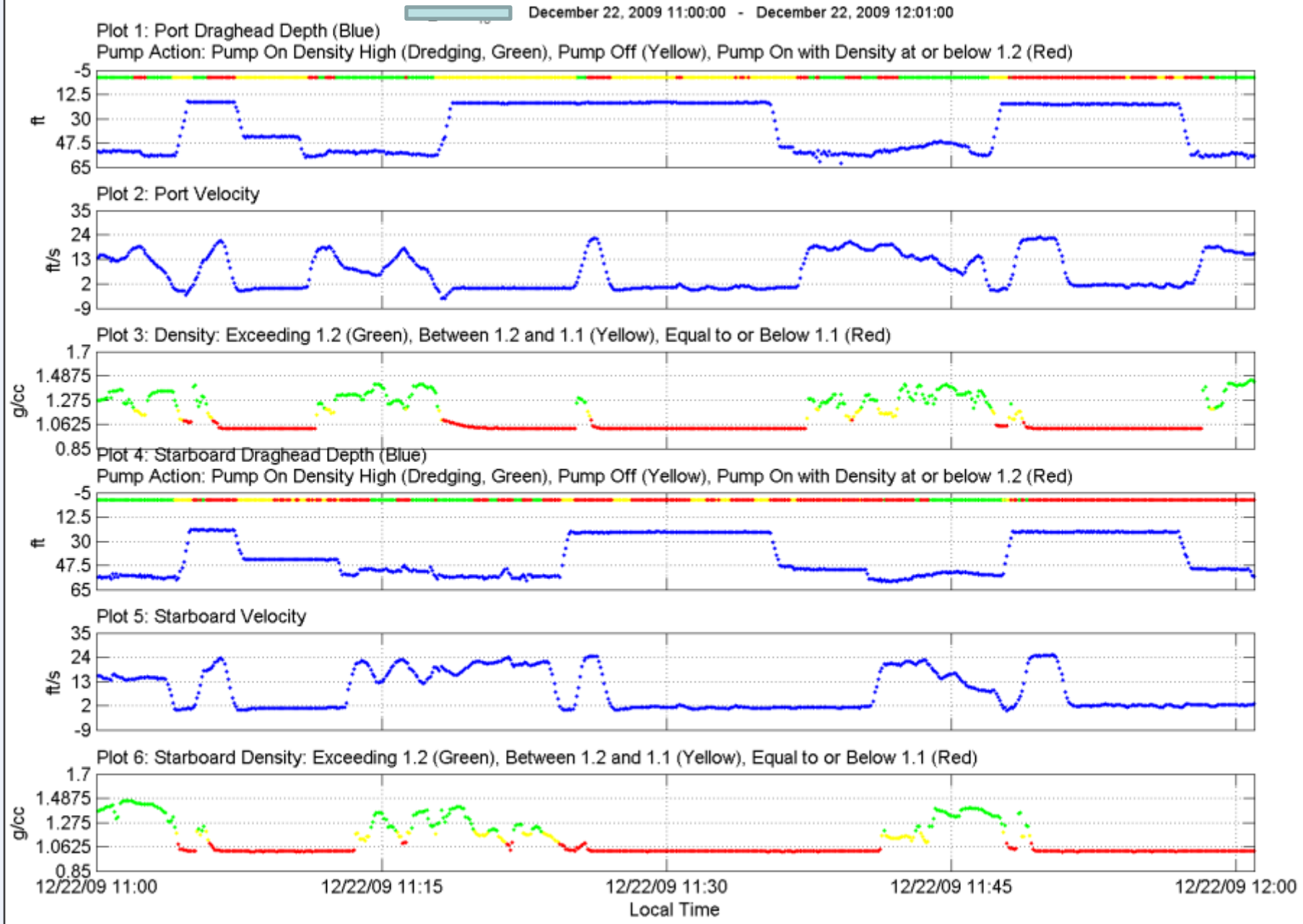
December 22, 2009 11:00:00 - December 22, 2009 12:01:00
Plot 1: Port Draghead Depth (Blue)
Pump Action: Pump On Density High (Dredging, Green), Pump Off (Yellow), Pump On with Density at or below 1.2 (Red)
ft
-5
12.5
30
47.5
65
Plot 2: Port Velocity
ft/s
35
24
13
2
-9
Plot 3: Density: Exceeding 1.2 (Green), Between 1.2 and 1.1 (Yellow), Equal to or Below 1.1 (Red)
g/cc
1.7
1.4875
1.275
1.0625
0.85
Plot 4: Starboard Draghead Depth (Blue)
Pump Action: Pump On Density High (Dredging, Green), Pump Off (Yellow), Pump On with Density at or below 1.2 (Red)
ft
-5
12.5
30
47.5
65
Plot 5: Starboard Velocity
ft/s
35
24
13
2
-9
Plot 6: Starboard Density: Exceeding 1.2 (Green), Between 1.2 and 1.1 (Yellow), Equal to or Below 1.1 (Red)
g/cc
1.7
1.4875
1.275
1.0625
0.85
12/22/09 11:00
12/22/09 11:15
12/22/09 11:30
12/22/09 11:45
12/22/09 12:00
Local Time

New Endeavors

- Evaluate applicability on cutterhead and mechanical dredges
- Develop web-based tools to meet the needs of the ever changing dredging manager needs and requirements.
- National Turtle Warehouse/Website

THE NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM

The DQM Program is a partnership between the Corps and the dredging industry for automated monitoring of dredge activities.

Onboard sensors provide near-real-time data that allows for immediate response to emerging situations.

Districts can use the web-based DQM software to view, analyze, report on, and export dredging data.

The data can be used to improve business practice, ensure environmental compliance, and increase our understanding of dredging science and technology.

http://dqm.usace.army.mil

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