National Dredging Quality Management "DQM" Program

V2.0 DQM Training

Vern Gwin

DREDGING QUALITY MANAGEMENT

US Army Corps of Engineers

BUILDING STRONG®

Briefing Summary

- Program Overview
- Advancements
- New Capabilities
- EPA Reporting
- V2.0 Tools

Program Evolution

May 2006
V1.0

Mandated R&D to Operations
MSQL Database
Desktop Client Tools
Hopper dredges/Scows

March 2009
V1.5

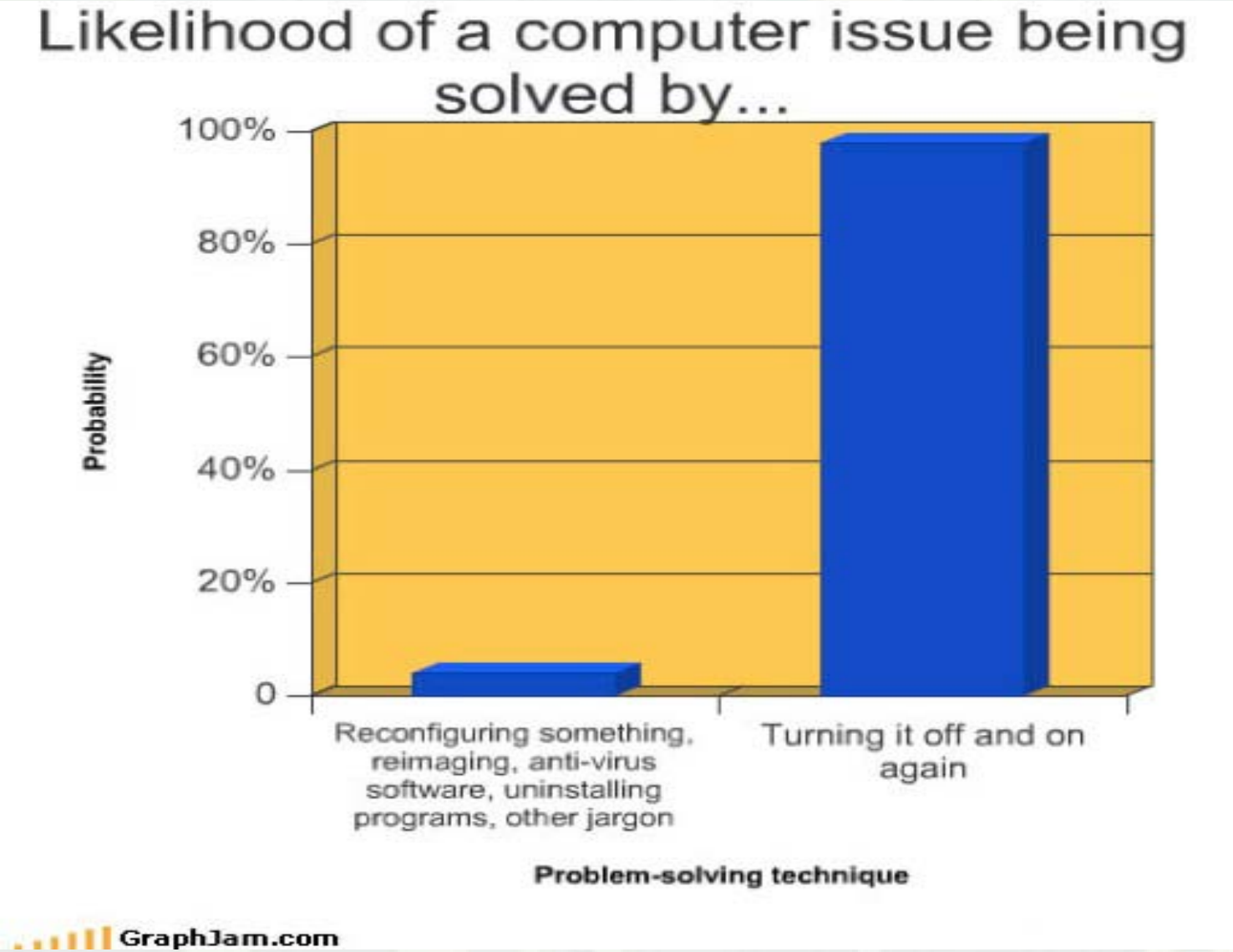
Automated data import to database
New Web-based Viewer
Improved data analysis for QA
Updated Specs

DREDGING QUALITY MANAGEMENT

Fall 2010
V2.0

Oracle e-standard Database
Web based tools
- Viewer
- Disposal Plot
- Data Export in csv
- Near Real-time data receipt

How we really fixed DQM



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Recent Program Advancements

- Industry Partnership and Relationship
  - ► Addressed proprietary concerns
  - ► Prepared parameter justification list
  - ► Discussed technical issues
- Customer Focus - COE Districts Needs
- Technology Exchange with Dutch MARS Program
- Generated specialized report formats
  - ► EPA
  - ► Turtle Take Analysis

Program Advancements (cont'd)

- Implemented V1.5
  - Web-based Viewer
  - Hopper Dredge Automated Backup Script
  - All plant reporting in geographic coordinates & GMT
- Development of V2.0
  - Customer input and testing
  - Purchased new server and set up new Oracle database
  - Expanded capabilities of web-based viewer
  - Automated production of Disposal Plot pdf's
  - Simplified user data export to csv . file
  - Developing logic for automatic cycle and dredge state determination

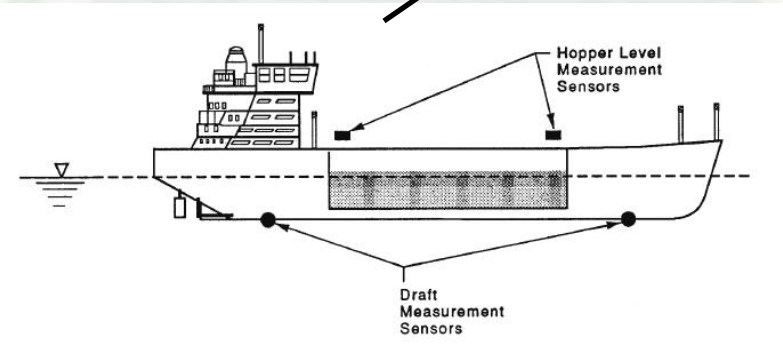
Telemetry

Improving the timeliness to the Dredging Manager

Near Real-Time Hopper Dredge Data Transmittal

DQM Center

Dredging Manager



Database

Flexibility for the future

Importance of Speed

V2.0 Database

- E-Standard Oracle database - Speed
- Flexibility for future tools, capabilities, ect.
- Raw data storage only
- Automated e-mail alerts
- Calculated cycle analysis
- Enhanced web-based data processing capabilities

Data Export Capability

- Spreadsheet/GIS Integration
- EPA Standard Format
- MMS Requirement
- Daily Reports

EPA Vessel Monitoring Data

Project Information

Contract: SAC+W912HN-10-C-0006
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: Glenn Edwards * 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

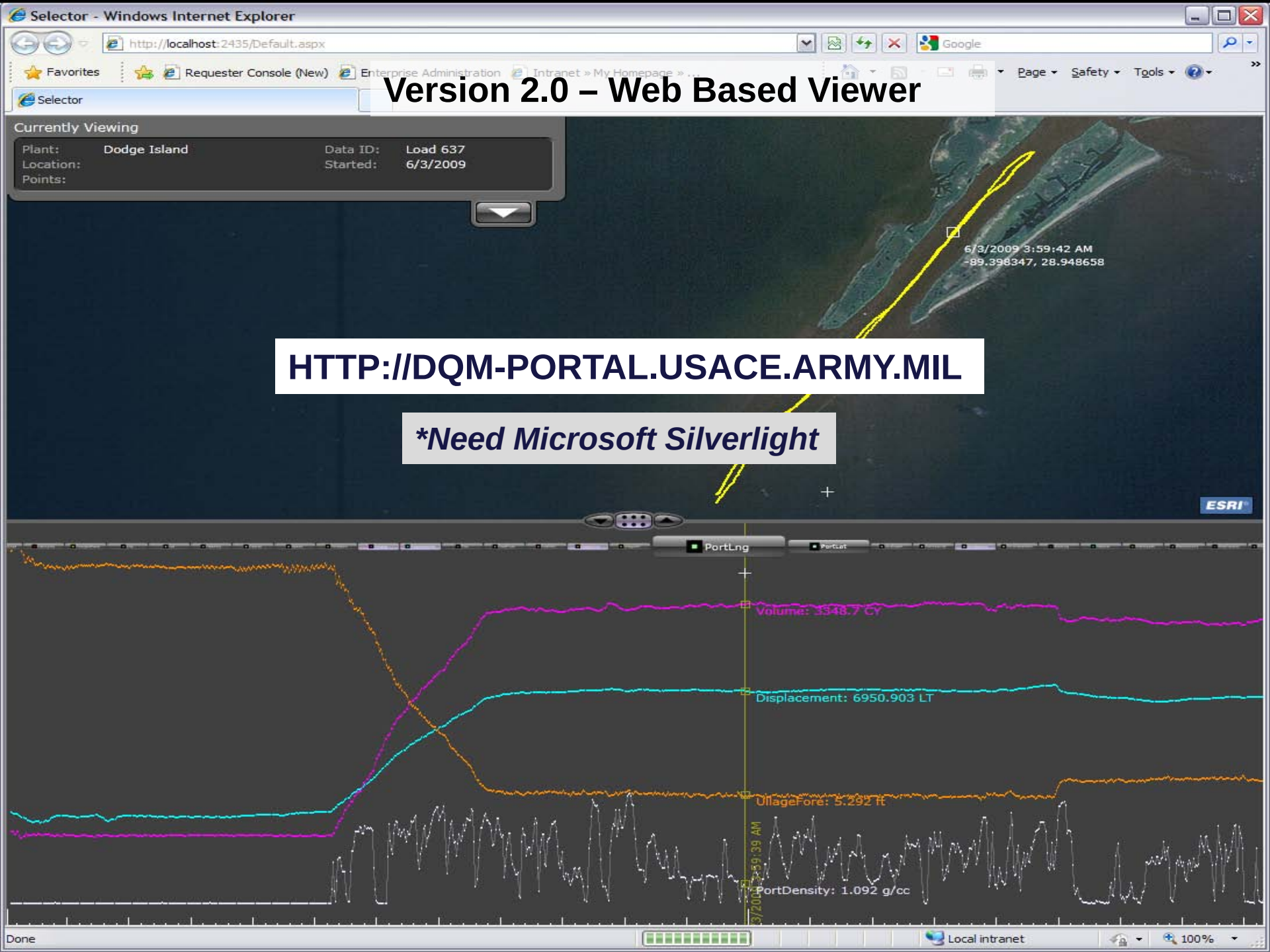
QC Legend: OK, *Error*, *Range Error*, *Suspect*, QC

Tools for the Modern Dredging Manager

Web Based Real-time Access

- Disposal Plots
- Data Export
- Web-Based Viewer

Version 2.0 – Web Based Viewer



HTTP://DQM-PORTAL.USACE.ARMY.MIL

Need Microsoft Silverlight

DQM Basics for

- Selecting a Project
- Graphing Load Data
- Requesting Disposal Plot
- Requesting Data Export

DQM Home Screen

DREDGING QUALITY MANAGEMENT

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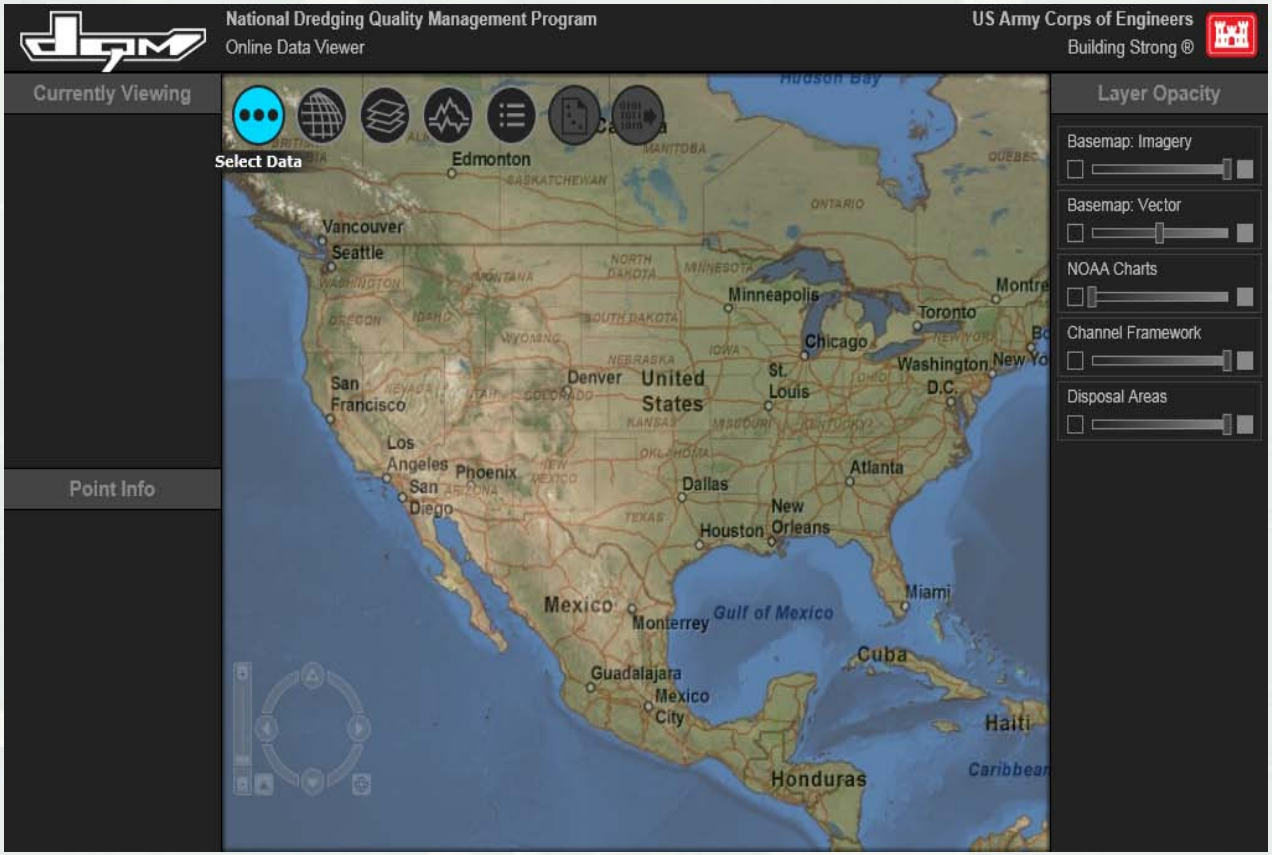
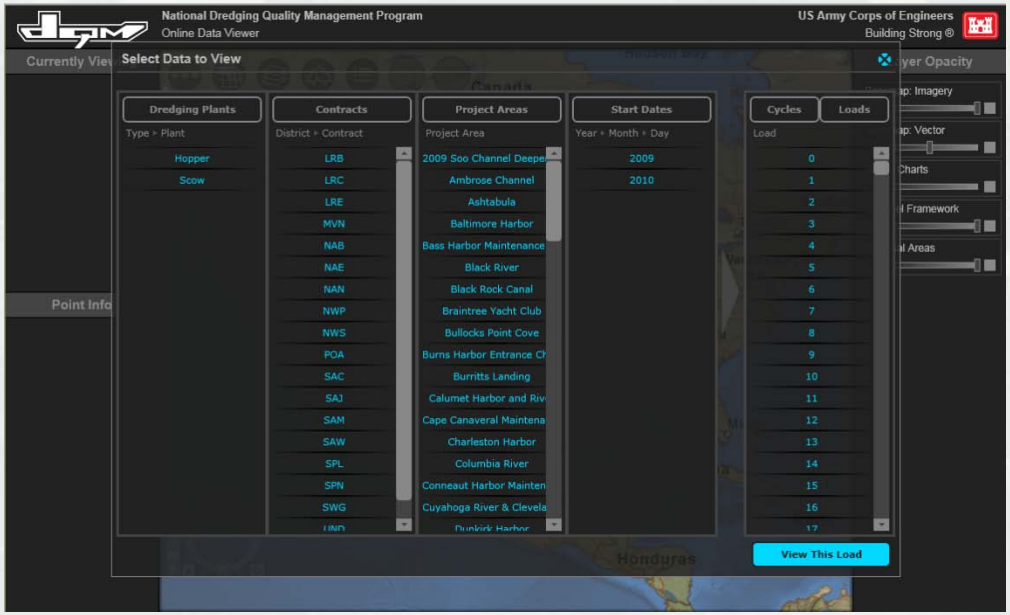
Selecting a Project



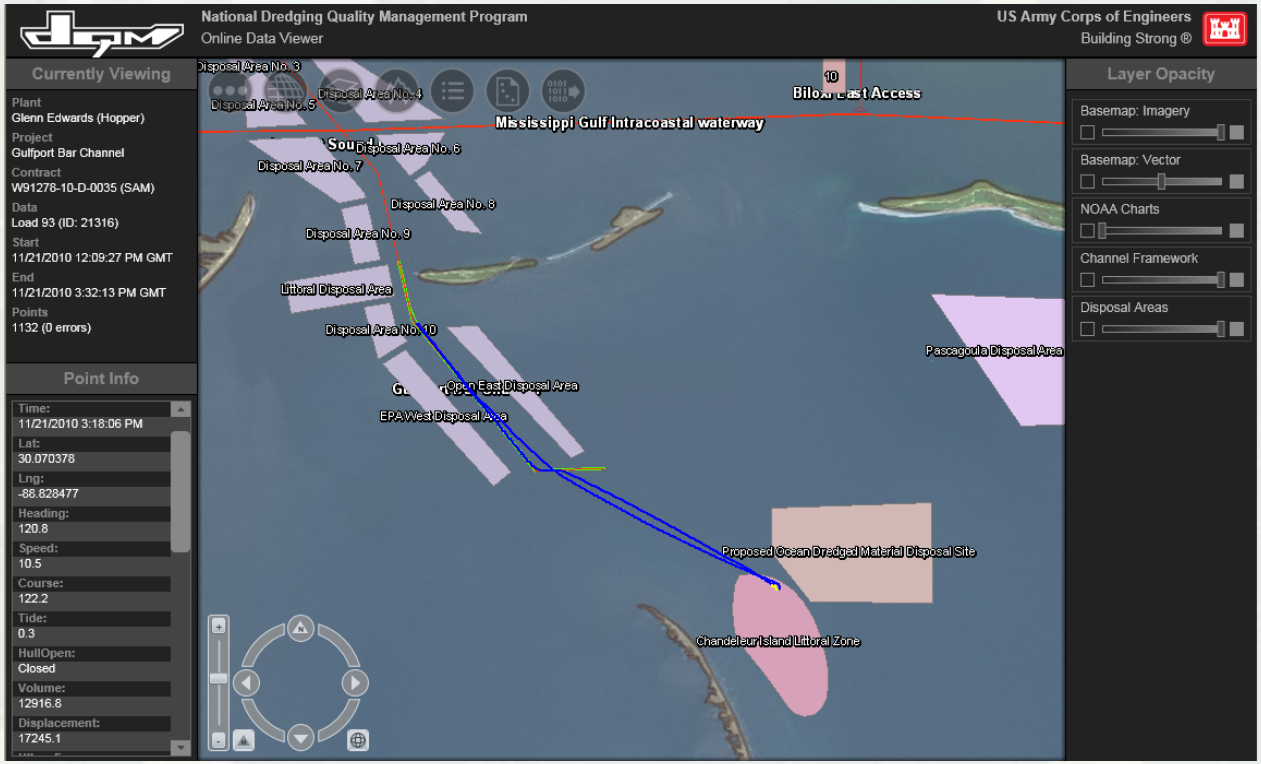
- Click on the ‘Select Data’ button at the top

Selecting a Project



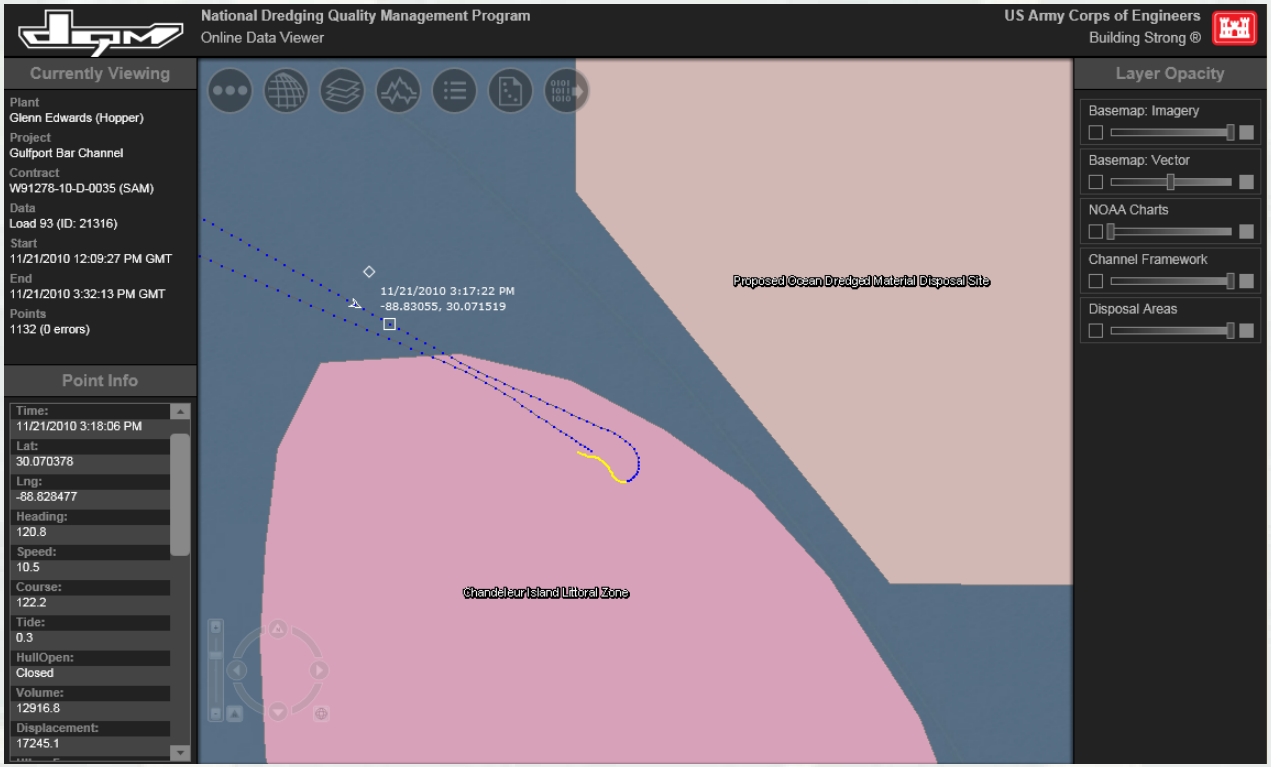
- To select a project, work from left to right on the menus
- Select either hopper or scow, then the name of the vessel
- Select the District acronym where the project is located
- Select the project name
- Select the date of the load in question
- Select the load number
- Click ‘View This Load’

Selecting a Project



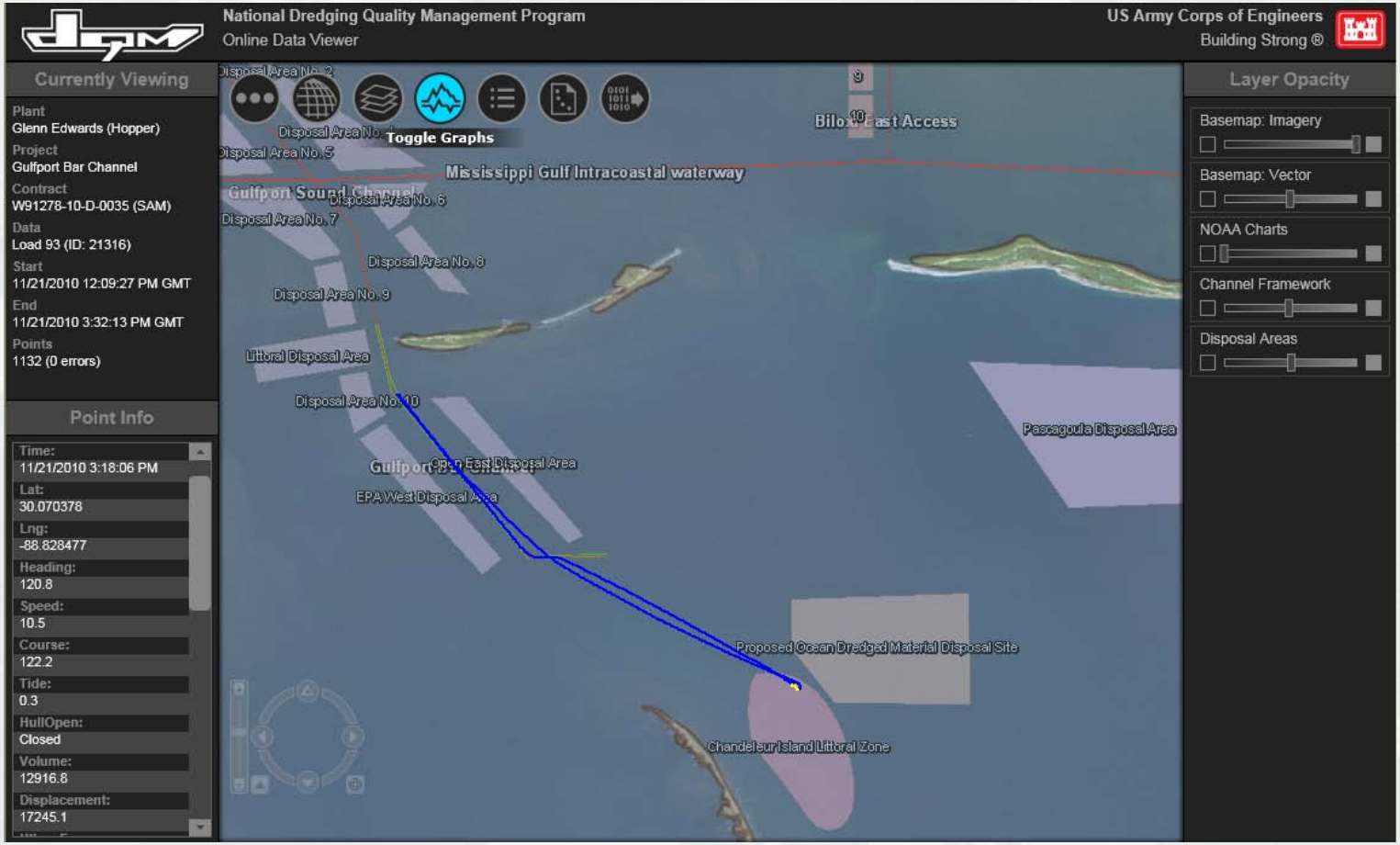
- After clicking ‘View This Load’, you will see a plot of the entire Load Cycle
- Use either the mouse or the on-screen Map Controls (lower left) to zoom in/out, pan, rotate the plot, etc.
- Use the Layer Controls (upper right corner) to turn map layers on/off

Selecting a Project



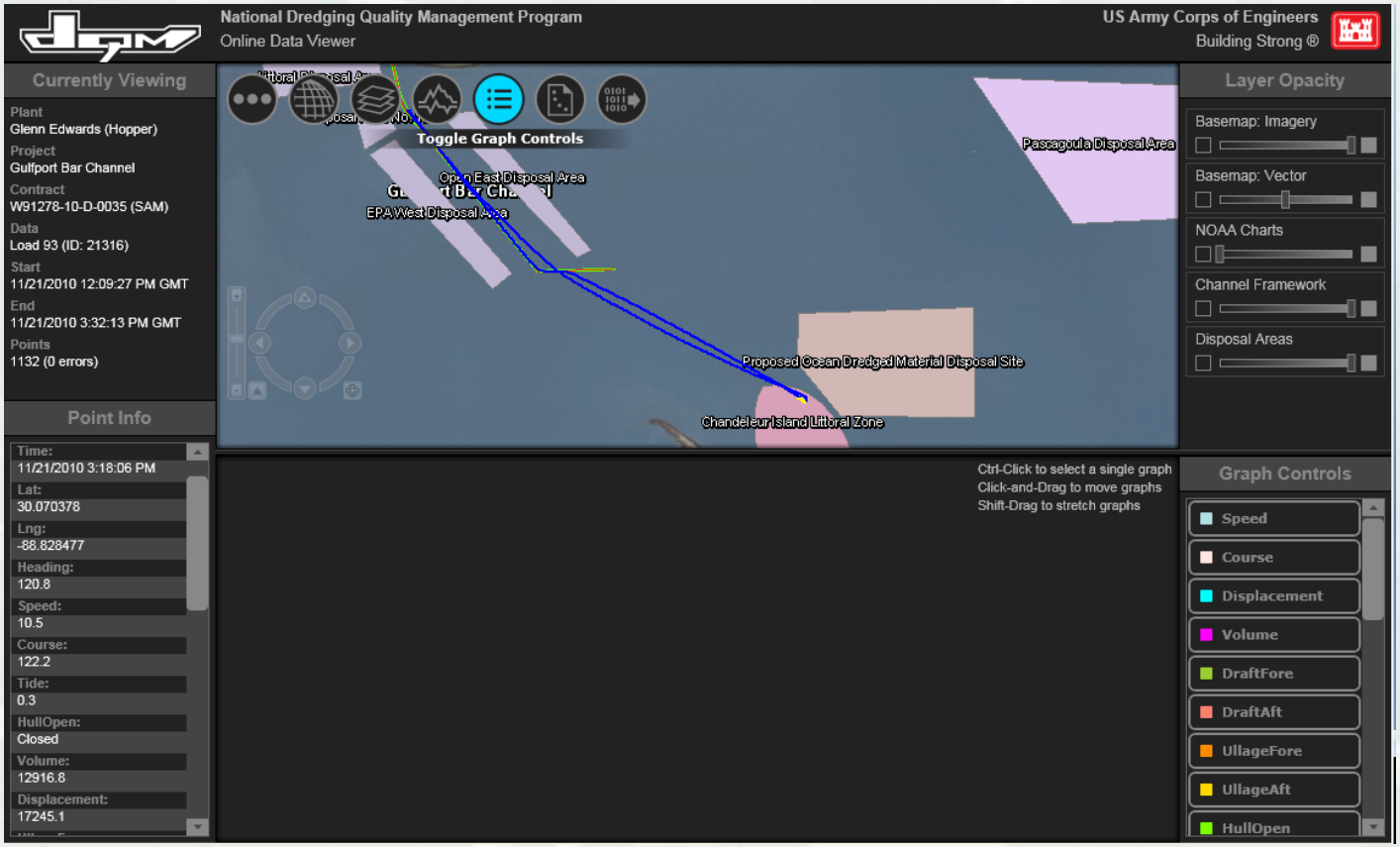
- Hover over a point to see the direction of the vessel, date/time, and coordinates
- Click on any point to view ‘Point Info’ at a specific location
- Point Info display is in the lower left corner of the viewer
- Point Info includes load parameters such as Time, Speed, Hull Status, Displacement, Draft, Volume, etc.

Graphing a Load



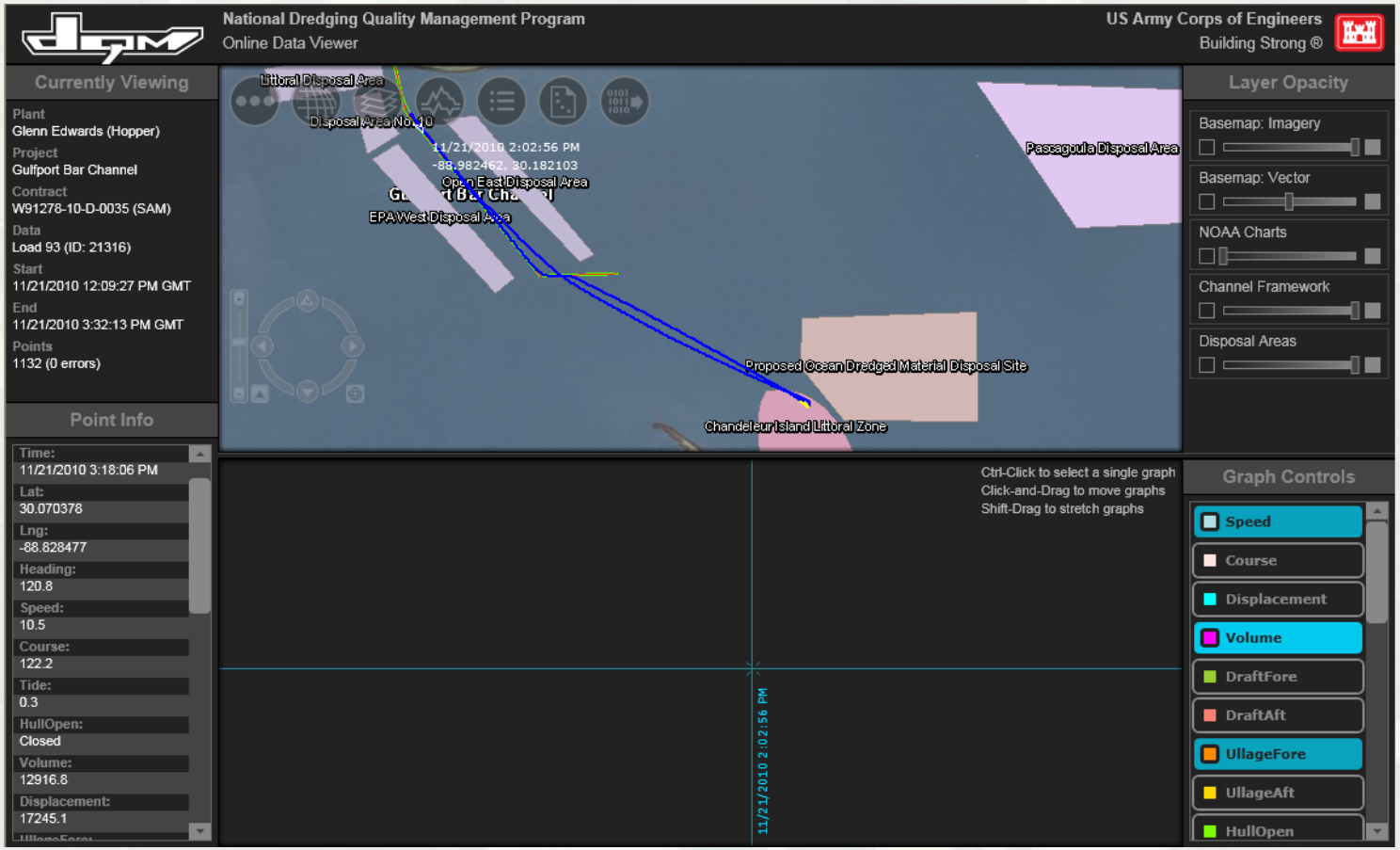
- After the project and a load has been selected…
- Click on the ‘Toggle Graphs’ button at the top

Graphing a Load



- Toggling the graphs ‘on’, splits the screen to allow for graphs at the bottom and the map display at the top
- Click on the button ‘Toggle Graph Controls’ to select graph parameters

Graphing a Load



- From the ‘Graph Controls’ list (lower left corner), select/highlight the load parameters you wish graph
- Any combination of load parameters can be selected

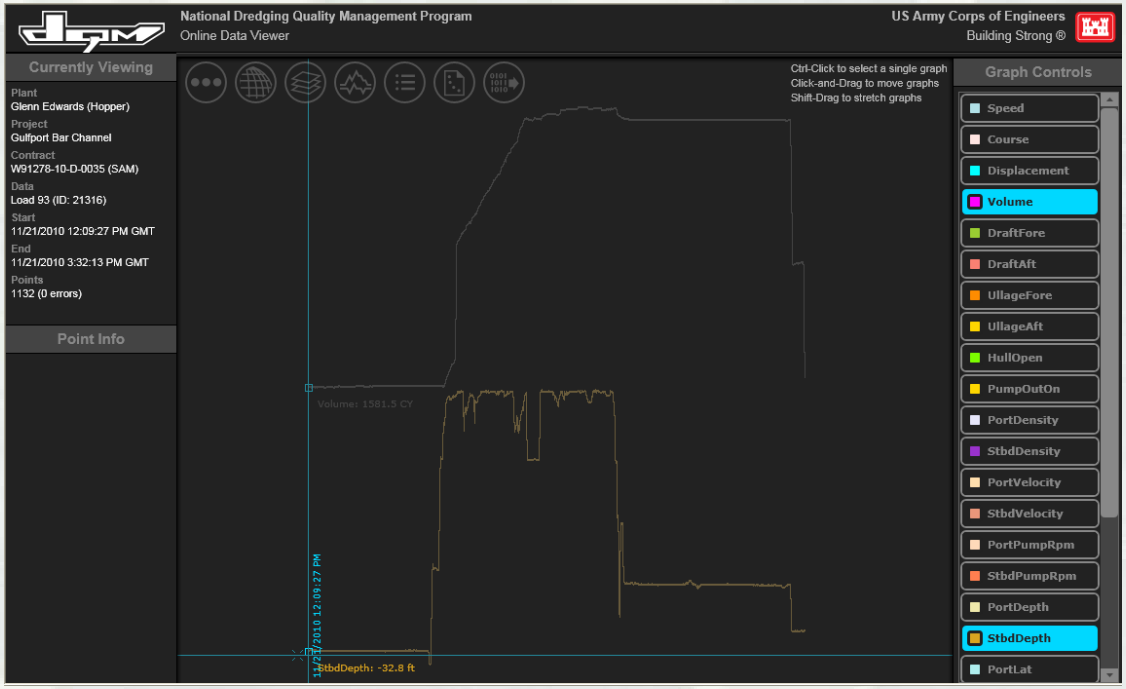
Graphing a Load

- Graphs will appear in the lower screen
- Moving the cursor along the graphs also corresponds to the direction arrow and vessel location on the map

Graphing a Load

- Click on the ‘Toggle Map’ button at the top
- This allows for full screen viewing of graphs without the Map view

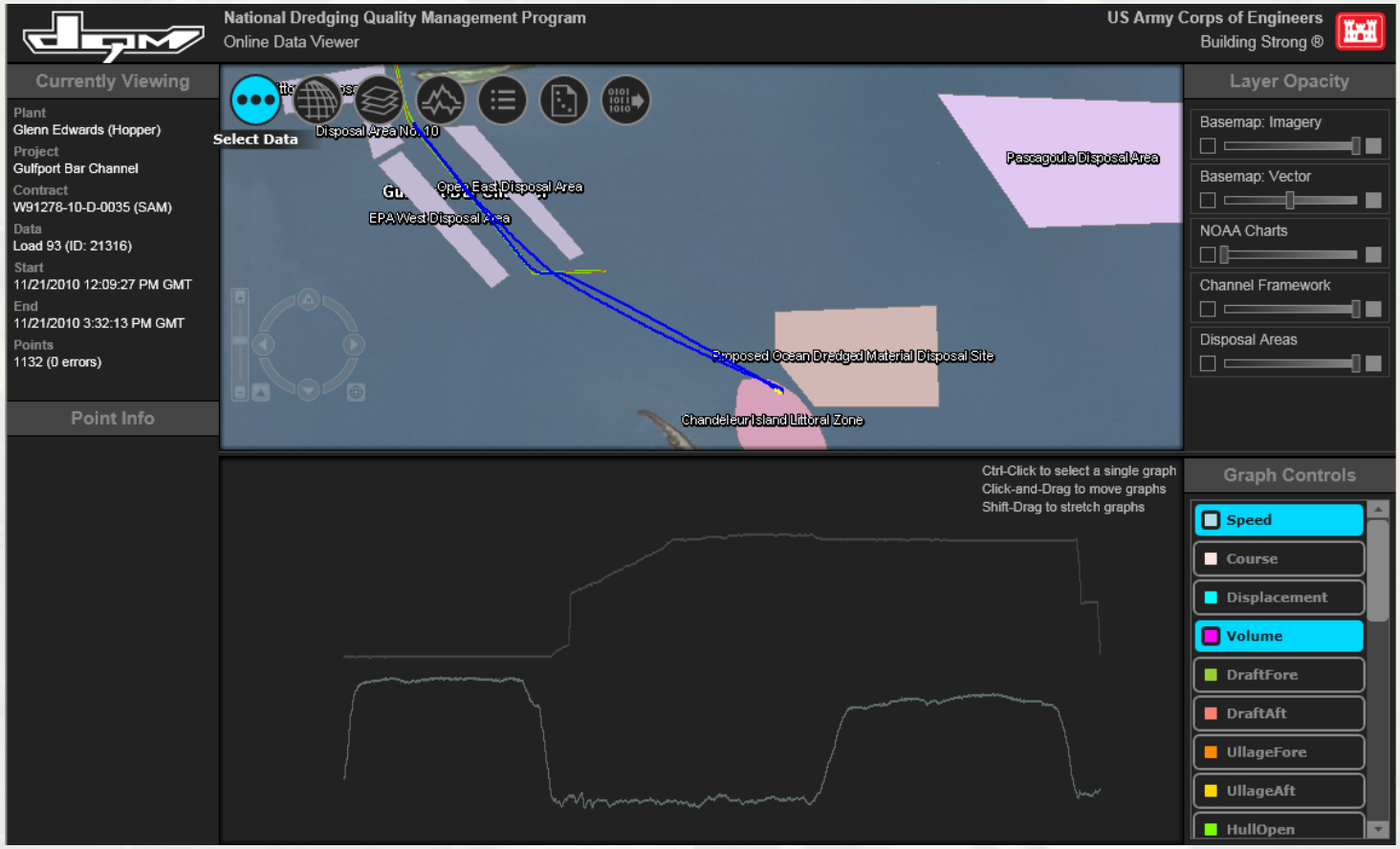
Graphing a Load



Graph Tools:

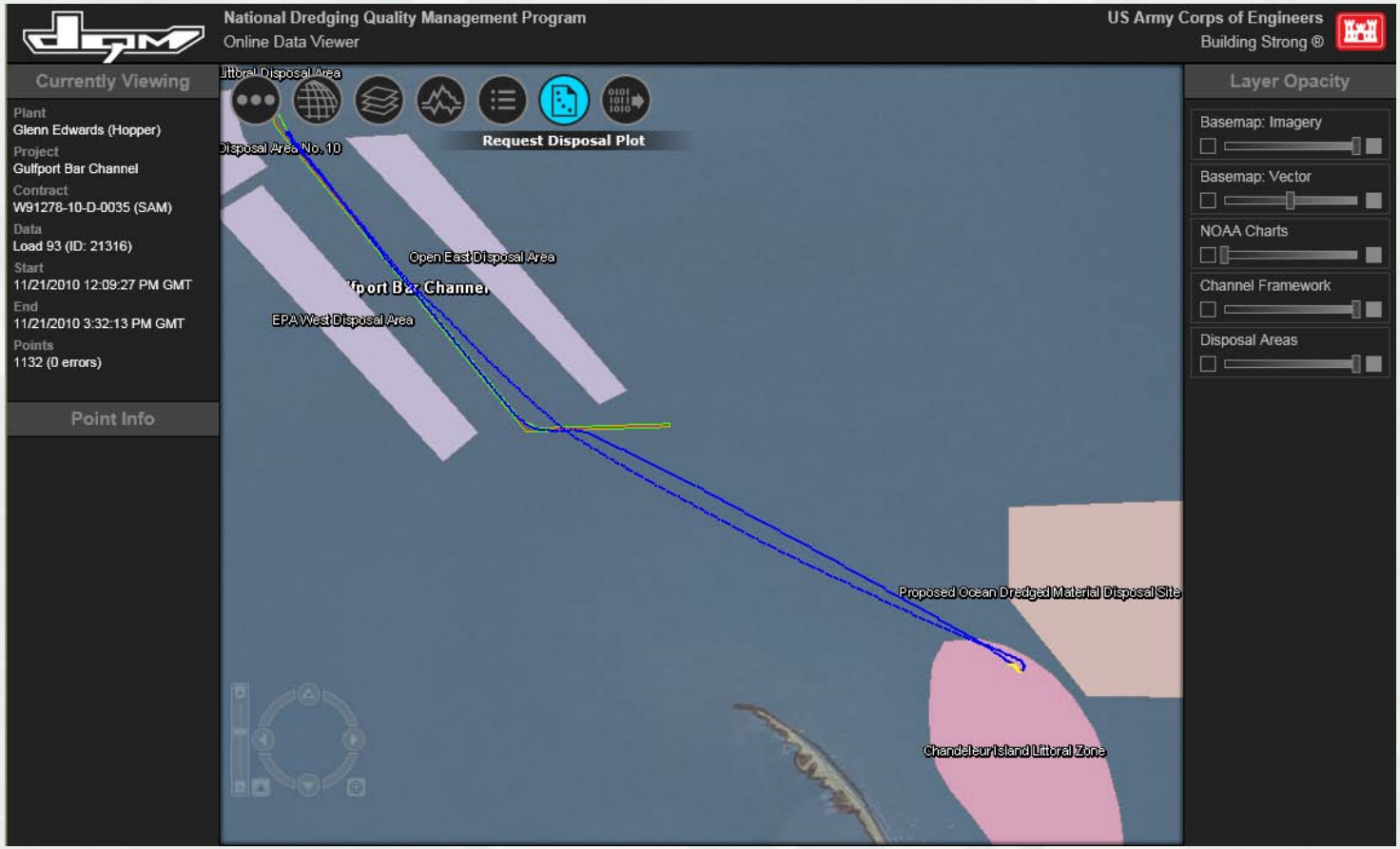
- Click on additional load parameters to add them to the graphs
- Clicking on a parameter already highlighted will remove it from the graphs
- Ctrl Key + Click to select a single graph
- Click-and-Drag to move graphs
- Shift + Click to stretch graphs

Graphing a Load



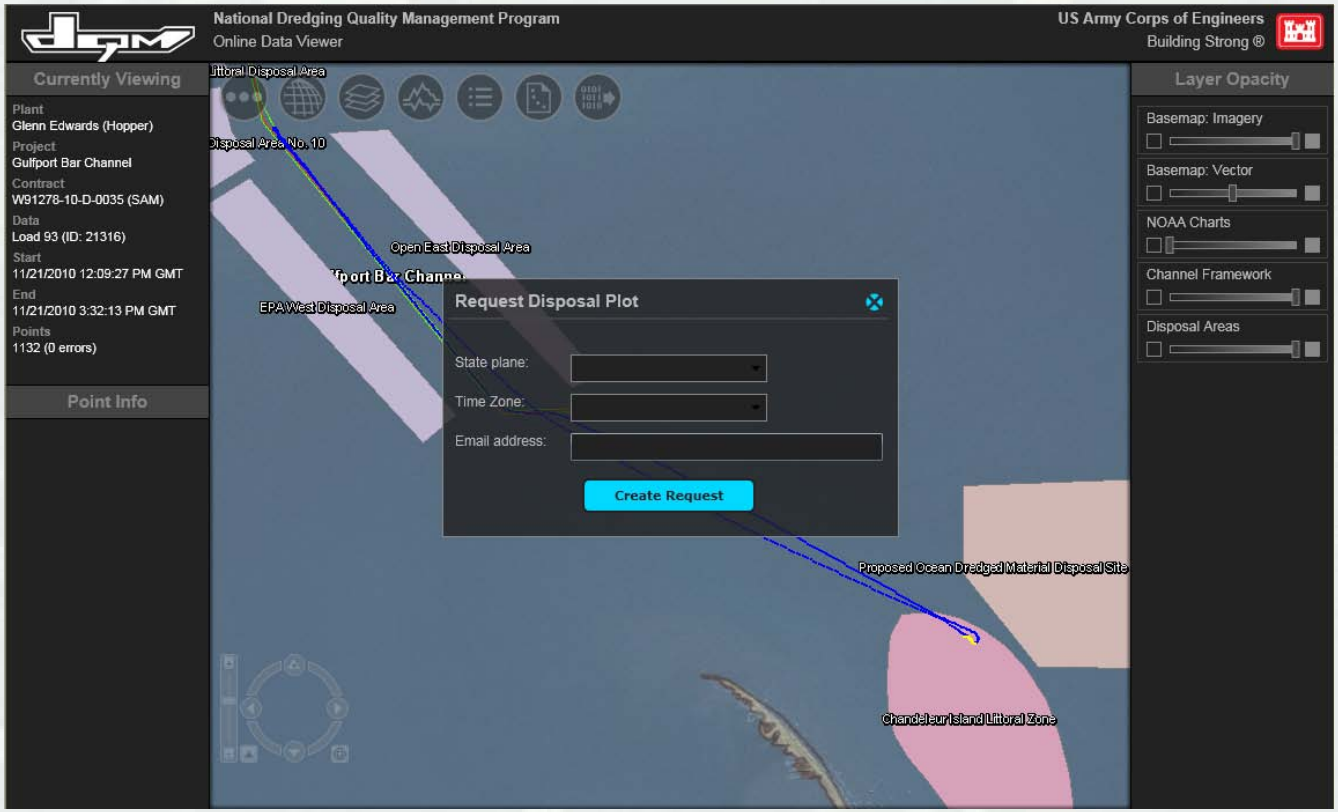
- Click on the ‘Select Data’ button at the top again to view another load or a different project

Requesting a Disposal Plot



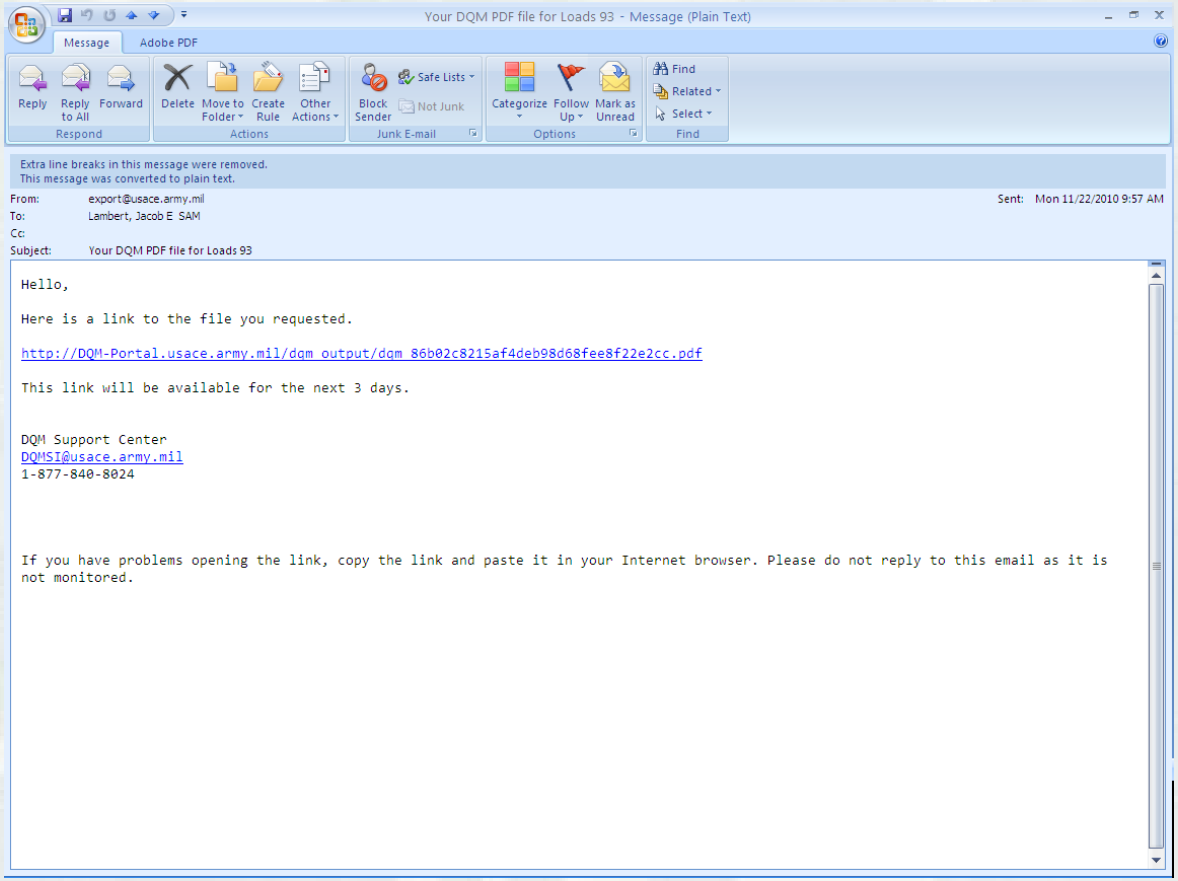
- Click on the ‘Request Disposal Plot’ button at the top

Requesting a Disposal Plot



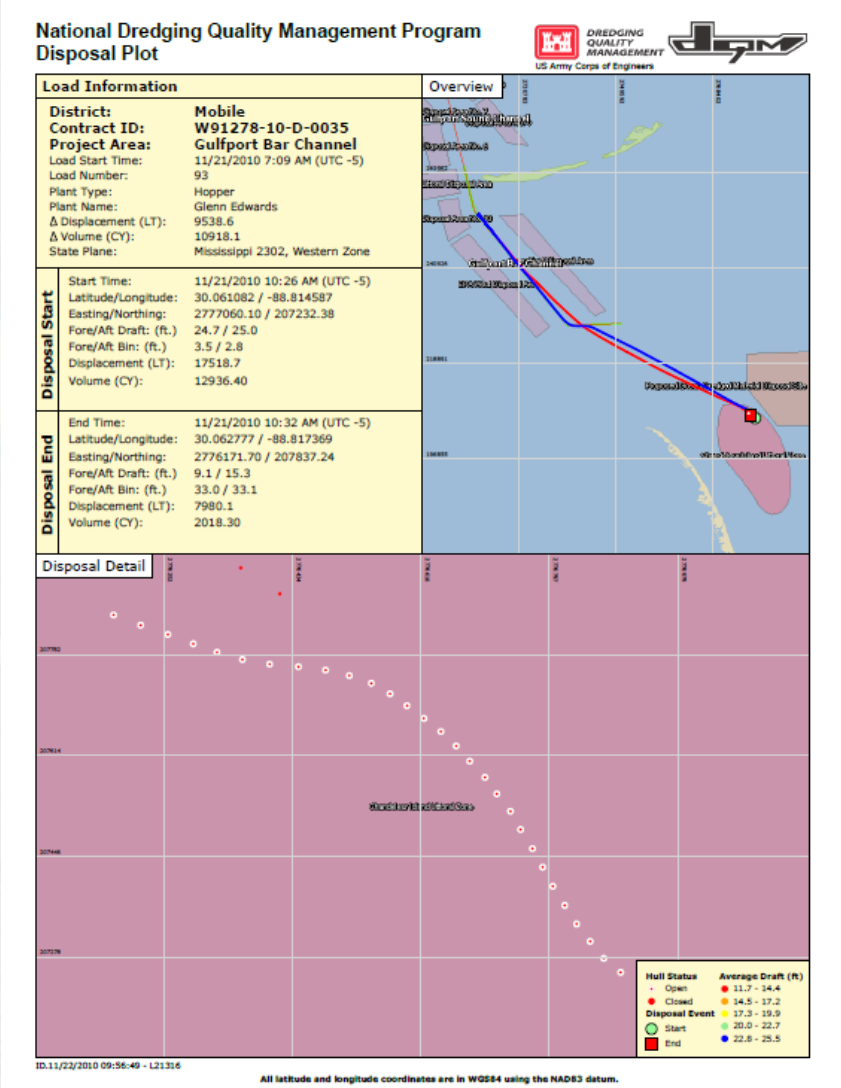
- Using the drop-down menus, select your desired coordinate system and time zone
- Enter the email address at which you wish to receive the disposal plot
- Click ‘Create Request’

Requesting a Disposal Plot



- You will receive an email from ‘export@usace.army.mil’
- Email will include a link to a .pdf file containing the Disposal Plot requested

Requesting a Disposal Plot



National Dredging Quality Management Program
Disposal Plot

DREDGING QUALITY MANAGEMENT
US Army Corps of Engineers

Load Information

District:	**Mobile**
Contract ID:	**W91278-10-D-0035**
Project Area:	**Gulfport Bar Channel**
Load Start Time:	11/21/2010 7:09 AM (UTC -5)
Load Number:	93
Plant Type:	Hopper
Plant Name:	Glenn Edwards
Δ Displacement (LT):	9538.6
Δ Volume (CY):	10918.1
State Plane:	Mississippi 2302, Western Zone

Disposal Start

Start Time:	11/21/2010 10:26 AM (UTC -5)
Latitude/Longitude:	30.061082 / -88.814587
Easting/Northing:	2777060.10 / 207232.38
Fore/Aft Draft: (ft.)	24.7 / 25.0
Fore/Aft Bin: (ft.)	3.5 / 2.8
Displacement (LT):	17518.7
Volume (CY):	12936.40

Disposal End

End Time:	11/21/2010 10:32 AM (UTC -5)
Latitude/Longitude:	30.062777 / -88.817369
Easting/Northing:	2776171.70 / 207837.24
Fore/Aft Draft: (ft.)	9.1 / 15.3
Fore/Aft Bin: (ft.)	33.0 / 33.1
Displacement (LT):	7980.1
Volume (CY):	2018.30

Overview

Disposal Detail

Hull Status: Open, Closed
Disposal Event: Start, End
Average Draft (ft): 11.7 - 14.4; 14.5 - 17.2; 17.3 - 19.9; 20.0 - 22.7; 22.8 - 25.5

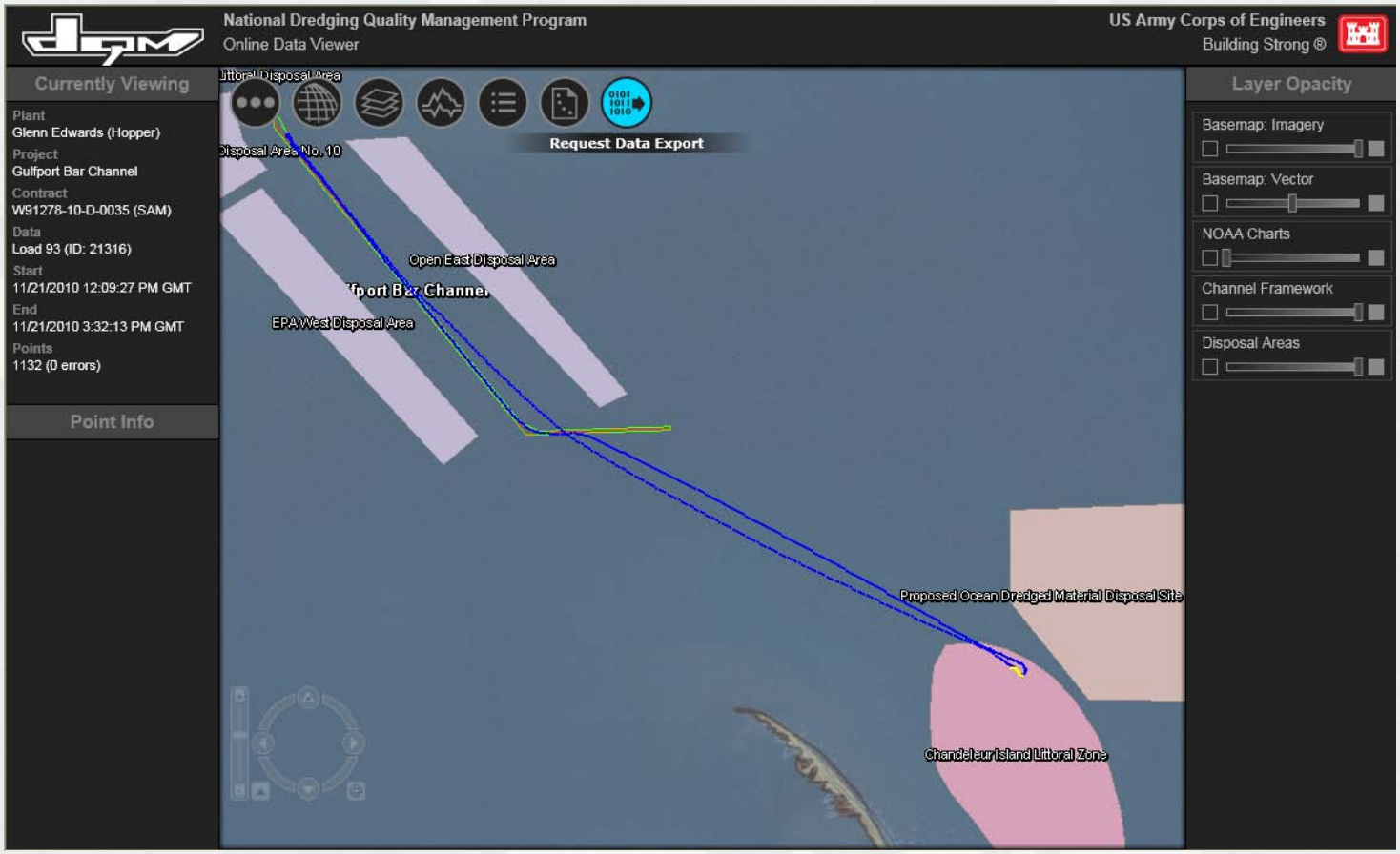
ID.11/22/2010 09:56:49 - L21316

All latitude and longitude coordinates are in WGS84 using the NAD83 datum.

Disposal Plot Includes:

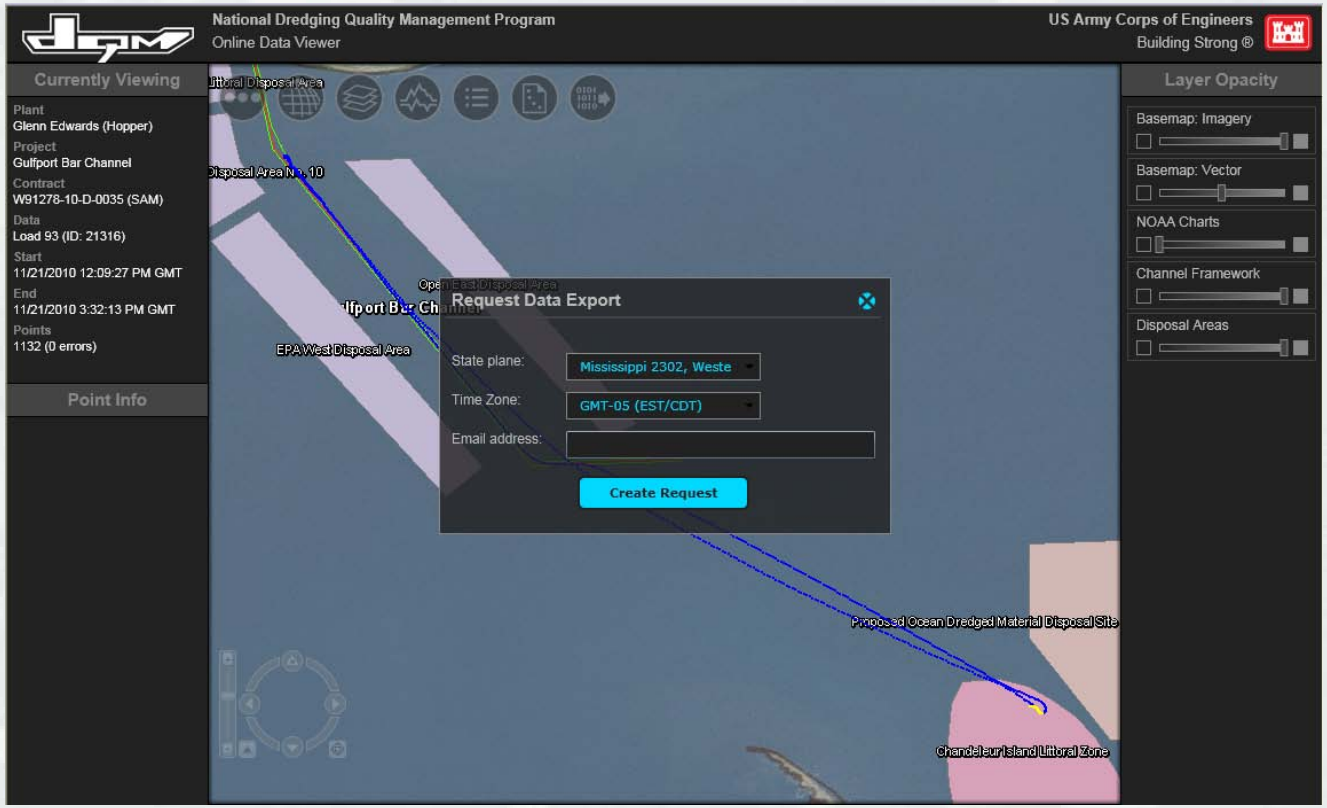
- Load Information
  - Contract Info
  - Load Parameters
  - Disposal Start and End Info
- Overview Plot of Load Cycle
  - Symbols displayed for start and end disposal event
- Disposal Details
  - Hull status (Open or Closed)
  - Average Draft

Requesting a Data Export



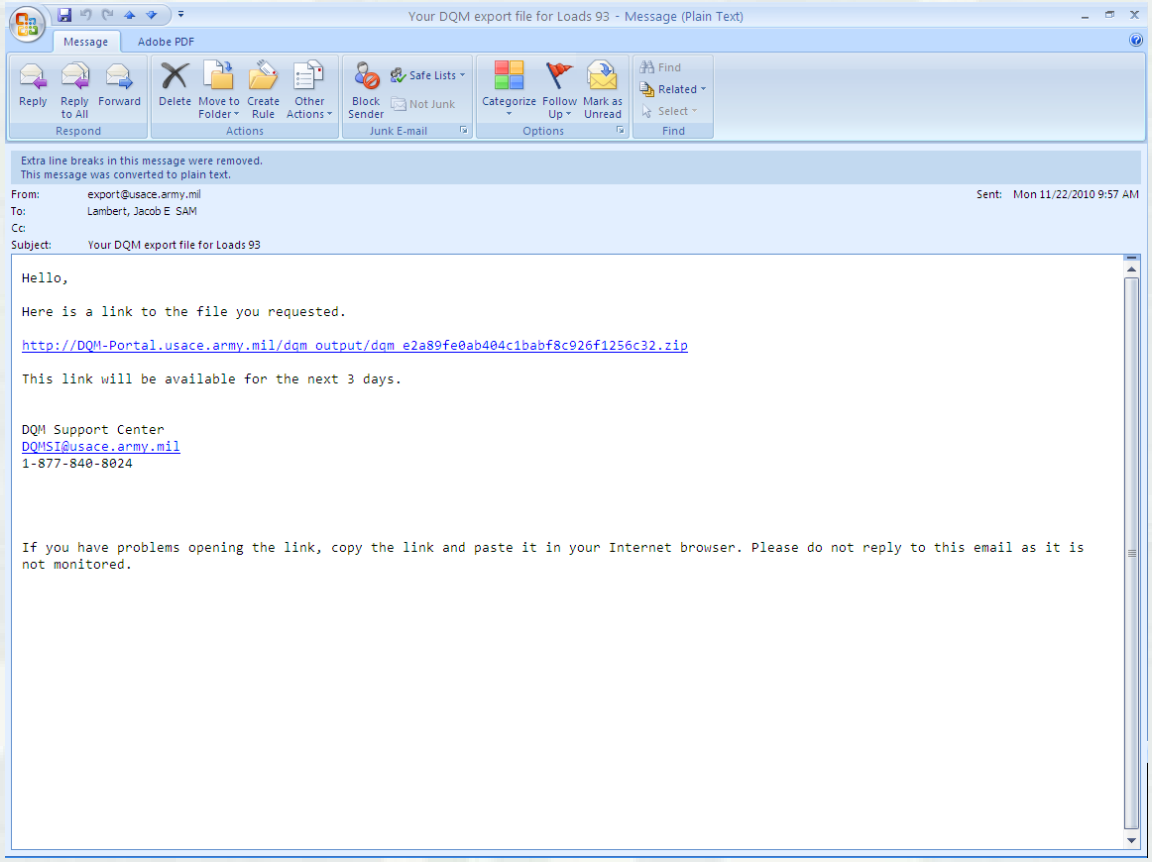
- Click on the ‘Request Data Export’ button at the top

Requesting a Data Export



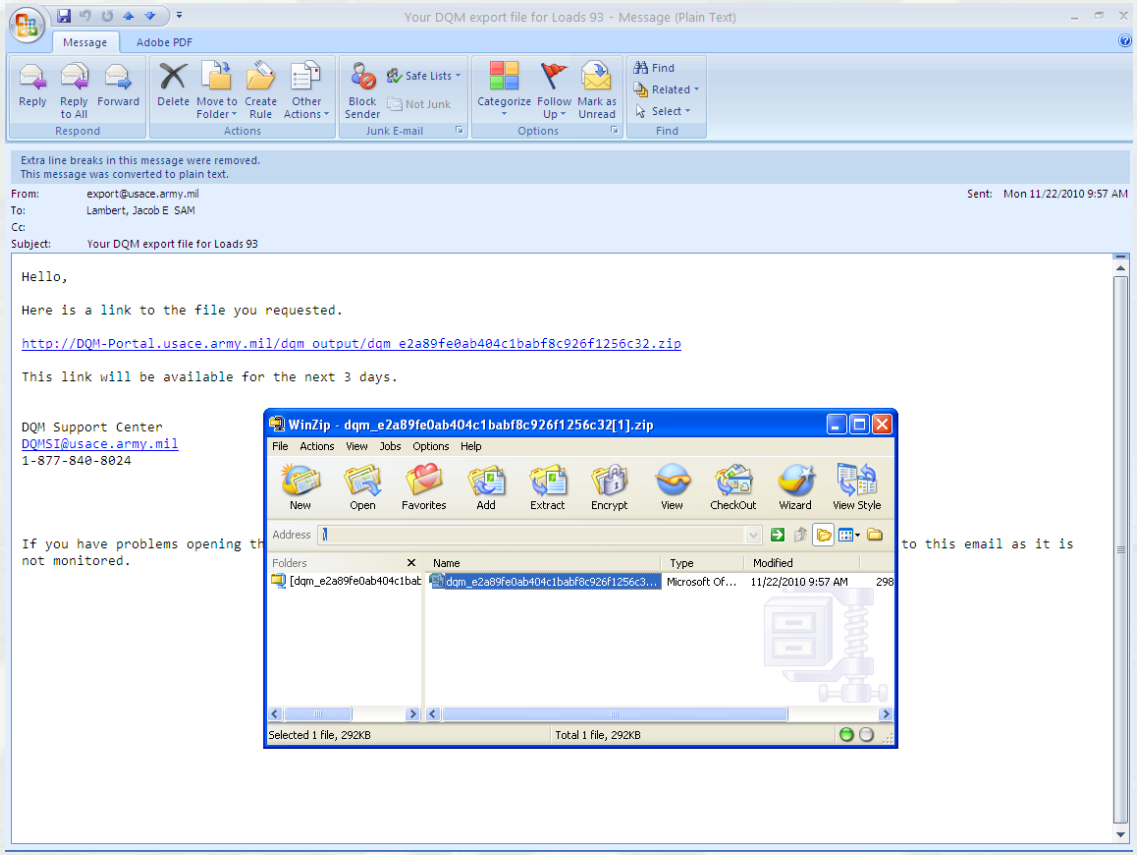
- Using the drop-down menus, select your desired coordinate system and time zone
- Enter the email address at which you wish to receive the disposal plot
- Click ‘Create Request’

Requesting a Data Export



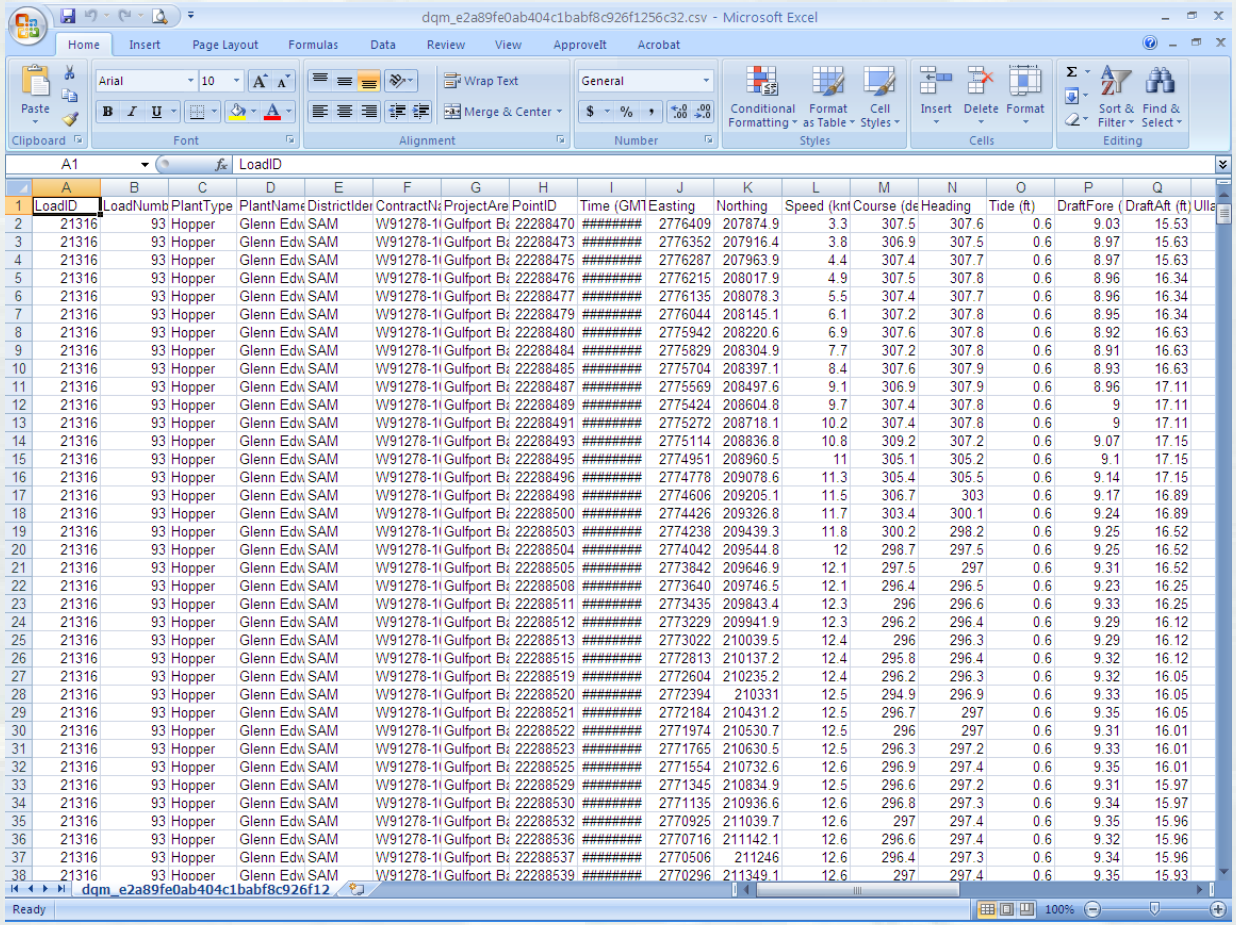
- You will receive an email from ‘export@usace.army.mil’
- The email will include a link to a .zip file containing the Data Export requested

Requesting a Data Export



- Open the .zip file
- Extract the excel spreadsheet file from the .zip file

Requesting a Data Export



LoadID	LoadNumb	PlantType	PlantName	DistrictIder	ContractNa	ProjectAre	PointID	Time (GMT	Easting	Northing	Speed (knt	Course (de	Heading	Tide (ft)	DraftFore (	DraftAft (ft)	Ulla
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288470	########	2776409	207874.9	3.3	307.5	307.6	0.6	9.03	15.53	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288473	########	2776352	207916.4	3.8	306.9	307.5	0.6	8.97	15.63	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288475	########	2776287	207963.9	4.4	307.4	307.7	0.6	8.97	15.63	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288476	########	2776215	208017.9	4.9	307.5	307.8	0.6	8.96	16.34	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288477	########	2776135	208078.3	5.5	307.4	307.7	0.6	8.96	16.34	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288479	########	2776044	208145.1	6.1	307.2	307.8	0.6	8.95	16.34	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288480	########	2775942	208220.6	6.9	307.6	307.8	0.6	8.92	16.63	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288484	########	2775829	208304.9	7.7	307.2	307.8	0.6	8.91	16.63	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288485	########	2775704	208397.1	8.4	307.6	307.9	0.6	8.93	16.63	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288487	########	2775569	208497.6	9.1	306.9	307.9	0.6	8.96	17.11	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288489	########	2775424	208604.8	9.7	307.4	307.8	0.6	9	17.11	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288491	########	2775272	208718.1	10.2	307.4	307.8	0.6	9	17.11	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288493	########	2775114	208836.8	10.8	309.2	307.2	0.6	9.07	17.15	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288495	########	2774951	208960.5	11	305.1	305.2	0.6	9.1	17.15	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288496	########	2774778	209078.6	11.3	305.4	305.5	0.6	9.14	17.15	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288498	########	2774606	209205.1	11.5	306.7	303	0.6	9.17	16.89	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288500	########	2774426	209326.8	11.7	303.4	300.1	0.6	9.24	16.89	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288503	########	2774238	209439.3	11.8	300.2	298.2	0.6	9.25	16.52	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288504	########	2774042	209544.8	12	298.7	297.5	0.6	9.25	16.52	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288505	########	2773842	209646.9	12.1	297.5	297	0.6	9.31	16.52	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288508	########	2773640	209746.5	12.1	296.4	296.5	0.6	9.23	16.25	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288511	########	2773435	209843.4	12.3	296	296.6	0.6	9.33	16.25	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288512	########	2773229	209941.9	12.3	296.2	296.4	0.6	9.29	16.12	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288513	########	2773022	210039.5	12.4	296	296.3	0.6	9.29	16.12	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288515	########	2772813	210137.2	12.4	295.8	296.4	0.6	9.32	16.12	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288519	########	2772604	210235.2	12.4	296.2	296.3	0.6	9.32	16.05	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288520	########	2772394	210331	12.5	294.9	296.9	0.6	9.33	16.05	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288521	########	2772184	210431.2	12.5	296.7	297	0.6	9.35	16.05	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288522	########	2771974	210530.7	12.5	296	297	0.6	9.31	16.01	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288523	########	2771765	210630.5	12.5	296.3	297.2	0.6	9.33	16.01	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288525	########	2771554	210732.6	12.6	296.9	297.4	0.6	9.35	16.01	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288529	########	2771345	210834.9	12.5	296.6	297.2	0.6	9.31	15.97	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288530	########	2771135	210936.6	12.6	296.8	297.3	0.6	9.34	15.97	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288532	########	2770925	211039.7	12.6	297	297.4	0.6	9.35	15.96	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288536	########	2770716	211142.1	12.6	296.6	297.4	0.6	9.32	15.96	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288537	########	2770506	211246	12.6	296.4	297.3	0.6	9.34	15.96	
21316	93	Hopper	Glenn Edw	SAM	W91278-1	Gulfport Ba	22288539	########	2770296	211349.1	12.6	297	297.4	0.6	9.35	15.93	

- Data Export spreadsheet contains all load parameters collected on-board the dredging vessel

National Dredging Quality Management Program

DREDGING QUALITY MANAGEMENT®

V2.1 – Summer 2011

- **Update web-viewer per user comments**

Clearer definition of parameters and units, new report plot options, option to print graphs

- **Add e-mail QA/QC "alerts"**

Data quality issues and compliance issues (miss-dumps)

- **Enhance Export features**

Choose time range, parameters and projection/time

- **Revise DQM Website**

Reflect new name and logo, multiple formats for specifications, current dredge status and information, V2.0 tutorial

- **Document and implement system maintenance procedures**
- **Coordinate with industry concerning upgrading scow data transmissions to near real time**

Develop plan to eliminate e-mail attachment submission of data and adopt direct, real time transmission to web service

V2.2
2012

- **Develop web-based tools for evaluating dredge performance over a contract**
- **Integrate logic to mathematically determine cycle and dredge state**
- **Coordinate with industry to upgrade scow data transmissions to near real time**
- **Survey current instrumentation on pipeline dredges and make recommendations concerning DQM extension to that plant type**

V2.3
2013

- **Expand access to data using passwords**
- **Add ability to “bookmark” settings**
- **Integrate Metadata in database structure**
- **Link to other USACE e-databases**
- **Explore GIS potential applications of data**
- **Investigate potential for quantity determinations from data**
- **Investigate event criteria for data collection**

Summary

- Total New System, V2.0
  - Real-Time Hopper Data
  - Oracle Database
  - All new Web based tools
  - Two-way hopper communication
  - District Training
- EPA/MMS Data Reports
- Future – V2.1, V2.2, V2.3, ect..

National Dredging Quality Management Program

DREDGING QUALITY MANAGEMENT®