Dredging Quality Management

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WEDA Gulf Coast Chapter
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Presentation Outline

- DQM Overview

- Past Year's Achievements

- Current/Future Developments

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What is DQM?

- Grew out of ERDC Silent Inspector Program – 2006

- Initially implemented on Hoppers & Scows, expanding to Pipeline Dredges (Cutterhead & Dustpan)

- Uses dredge sensor data to remotely monitor dredging activities (Location, Dredge State, Progress, Spec Compliance)

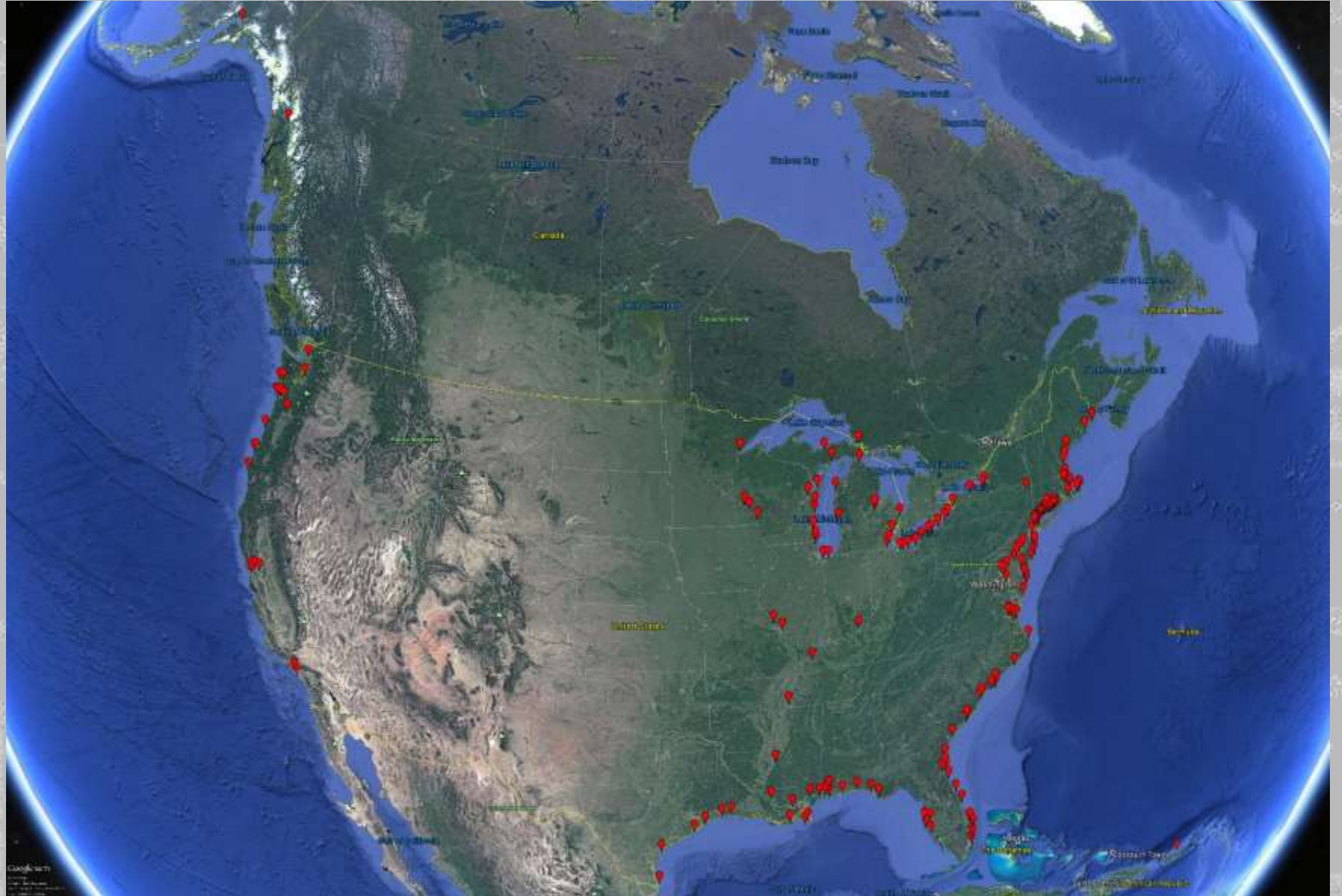- Tracks historical usage/trends for planning future contracts and monitoring plant utilization nationwide.

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A Nationwide Program

Received data from:
20 Hopper Dredges
231 Scows
23 Pipeline Dredges
+ 5 Pipelines prepped

>1000 Contracts/Permits
29 USACE Districts

A Nationwide Program

As of 11/08/2019

Active Dredges:
12 Hopper Dredges*
19 Pipeline Dredges
68 Scows

47 Active Contracts/Permits
19 USACE Districts

Hopper Dredge Instrumentation

Vessel Position
Vessel Heading
Vessel Course
Vessel Draft
Hopper Ullage
Draghead Depth
Hull Status
Slurry Velocity
Slurry Density
Pump RPM

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Scow Instrumentation

Position
Heading
Course
Draft
Ullage
Hull Status

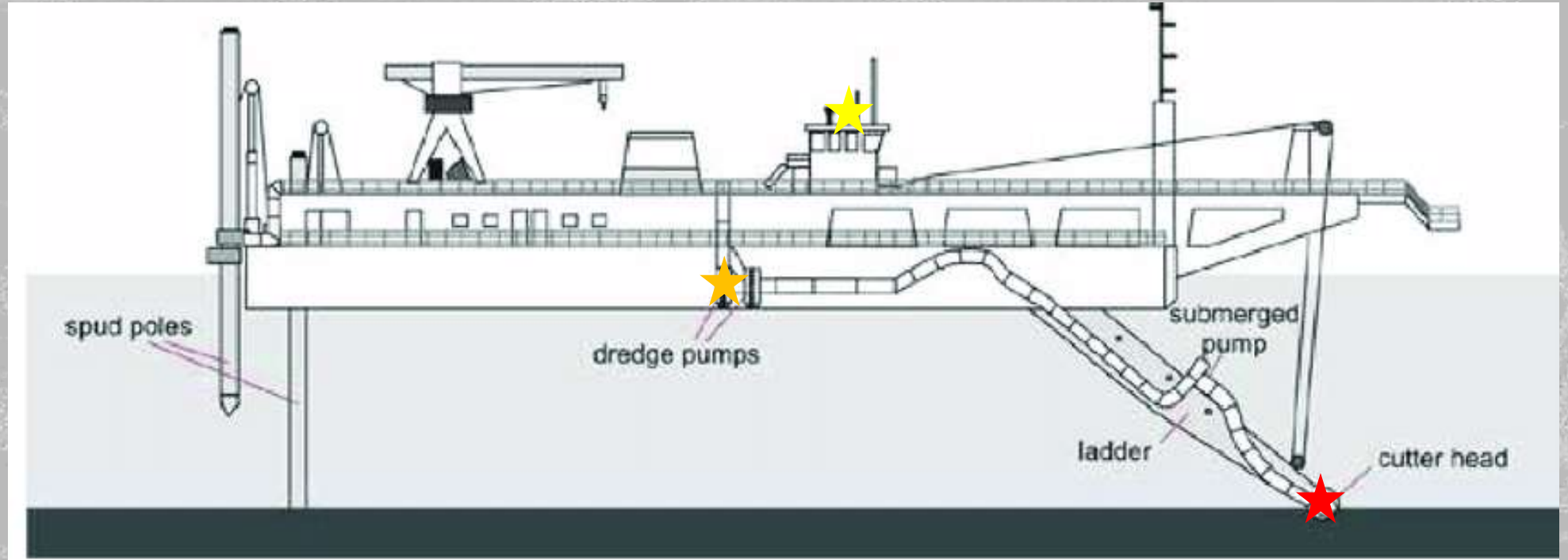# Pipeline Dredge Instrumentation

Vessel Position
Vessel Heading
Suctionhead Depth
Slurry Velocity
Slurry Density
Pump RPM
Vacuum Pressure
Outlet Pressure
Discharge Location

spud poles
dredge pumps
submerged pump
ladder
cutter head

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Pipeline Dredge State Data

- Contract Start/End

- Tide/River Stage Data Source

- Pipeline Lengths

- Booster Pump Usage

- Dredge Advance

- Outfall Information (if not instrumented)

- Non-Effective Events

DQM Data Pyramid

Program Management (Headquarters)
Dredging Trends & Plant Utilization Forecasting
Informed Policy Decisions

Planning
Contract/Project Area/Annual Summaries
Use Historical Data for Gov't Estimates
Estimating Future Costs and Dredging Requirements

Administration (Local Districts, EPA, BOEM)
Monitoring Daily Operations & Progress
Load/Daily Data Summaries
Ensure Specification & Environmental Compliance

Data Acquisition & Quality Assurance (DQM Center – Mobile)
Raw Data Acquisition
Data Quality Assurance (Database and Field QA)
Point-by-Point Data Analysis for State Determination

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Past Year's Achievements

- New DQM Viewer 3.0

- Rollout of DQM on Pipeline Dredges

- DQM Scow System Provider Meeting

- Specification Revisions

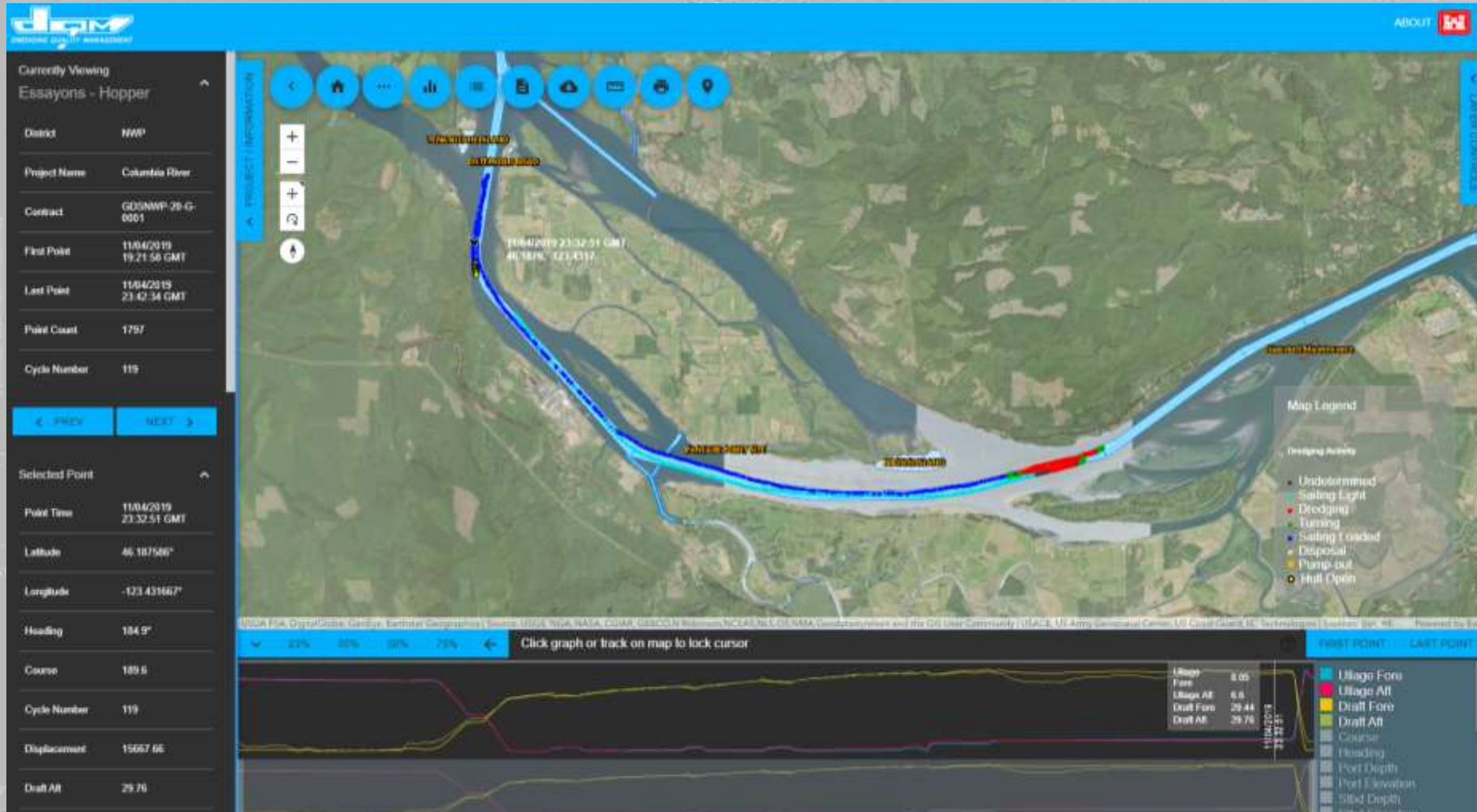- DQM Team Personnel Changes

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New DQM Viewer (Version 3.0)

- Old viewer phased out due to deprecated architecture (MS Silverlight)

- Replaced with newer and more robust JavaScript libraries

- Visualize Hopper, Scow & Pipeline dredge data

- Export Data in other formats (PDF reports, CSV files)

- Works best in Google Chrome

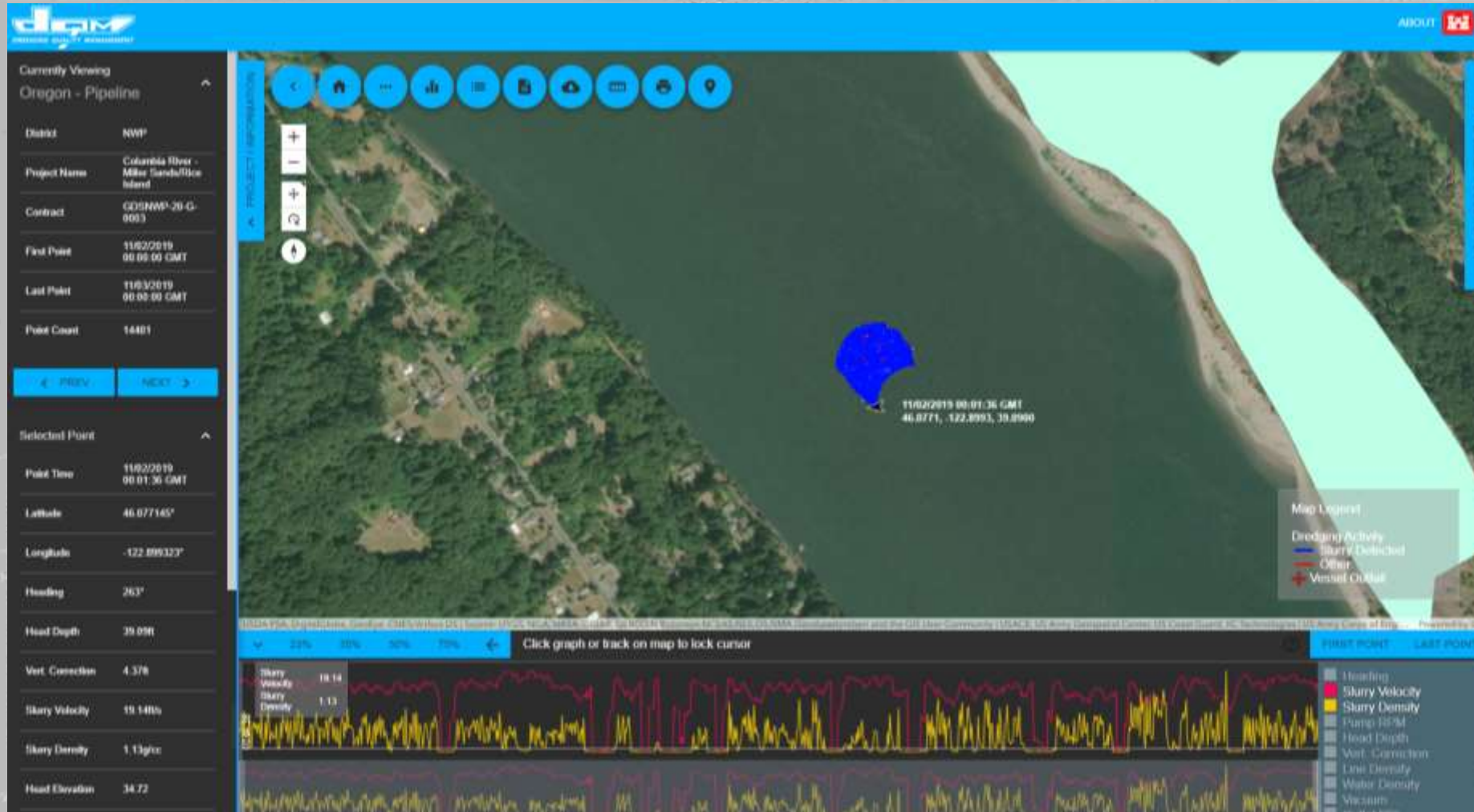- Ongoing Development of New Features and Improvements

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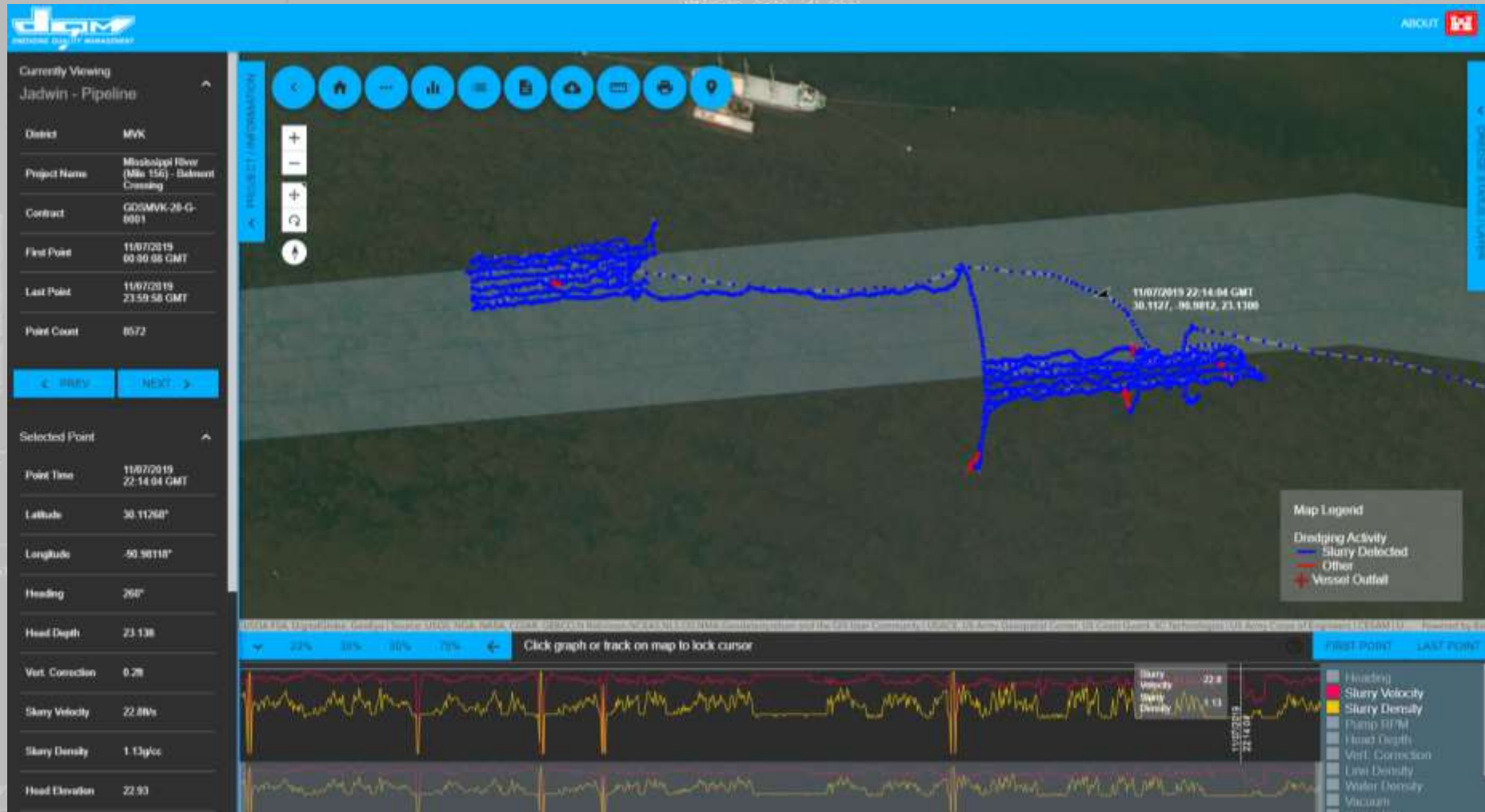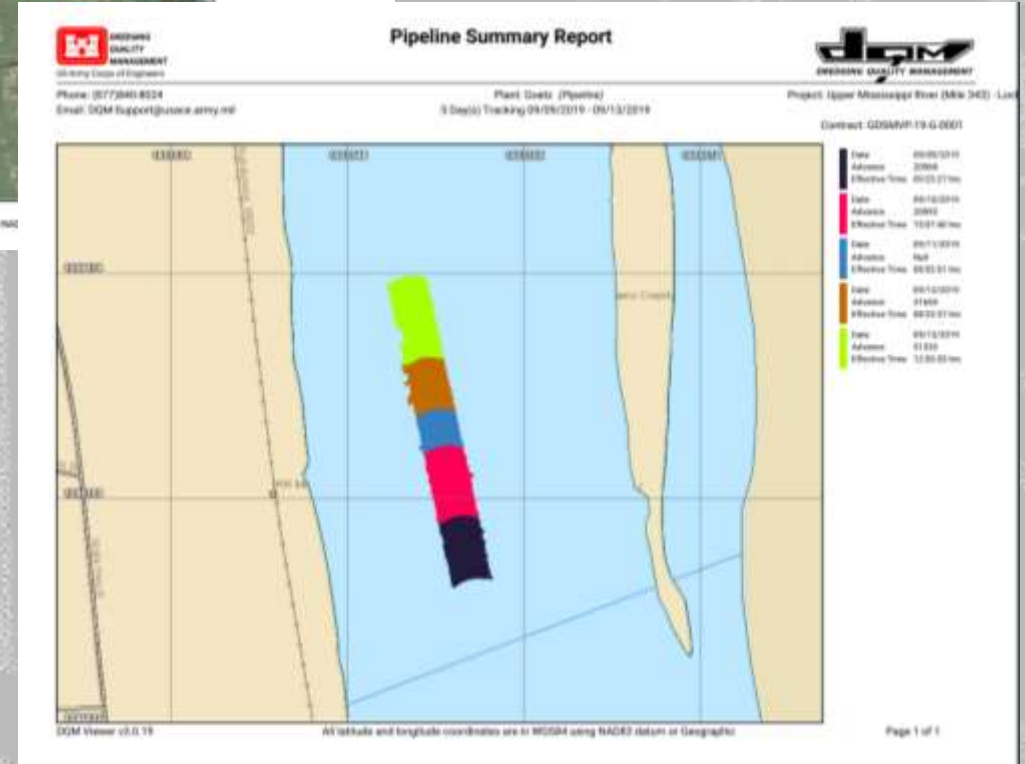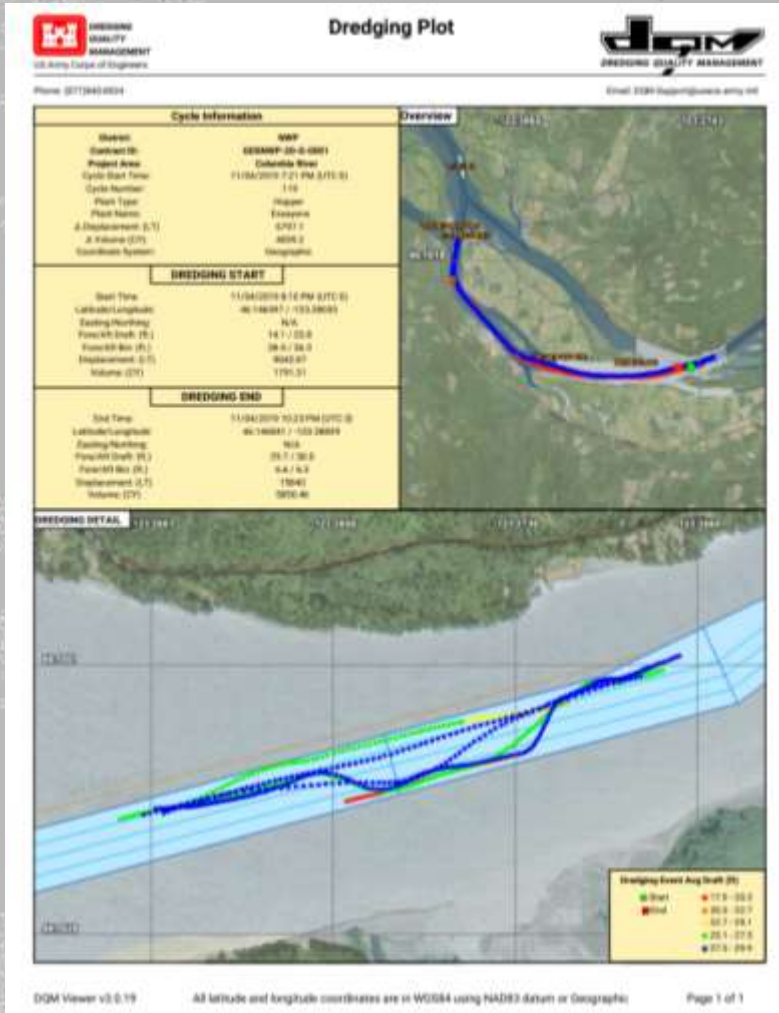
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- All Government dredges have been updated to meet current specs.

- Rollout has been variable by district thus far. Mandate was signed by USACE Headquarters on Tuesday, November 12, 2019.

- Required on 'Unrestricted' contracts, **independent of dredge size**.
  - If a small business, 8a, etc. bids on an unrestrictive contract, then they must meet the DQM specs.

- Language for Regulatory Permits is still pending, but DQM requirements will be based upon multiple variables ($$$, Total Volume, Is dredge already outfitted?, etc).

4. GUIDANCE: The use of DQM on all future unrestricted pipeline dredging contracts is to be implemented immediately. DQM monitoring is a requirement on unrestricted (Full and Open Competition) pipeline dredging contracts only. Any pipeline dredging contracts classified as [...] pipeline dredge monitoring specifications and requirements when bidding on unrestricted contracts. These specifications are located on the DQM Center website at https://dqm.usace.army.mil/Specifications/Pipeline.aspx.

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Specification Revisions

- Elimination of the Tracking Profile for scows.

- Clarification of ambiguous statements and correction of reported errors.

- Latest Versions are available on the DQM Website
  - https://dqm.usace.army.mil/Specifications/Index.aspx

Current/Future Developments

- Migration to the Cloud

- Pipeline Dredge State Data Entry Tool

- Dredge State Determination Logic Improvements

- Automated Data QA Procedures

- Improved & Automated Data Analysis and Reporting

- Updated DQM Mandate from USACE Headquarters

- Integration with other USACE Databases (RMS, DIS)

- DQM Road Show

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Questions?