

NATIONAL DREDGING QUALITY MANAGEMENT (DQM) PROGRAM

WEDA PACIFIC CHAPTER

OCTOBER 24, 017

OMAHA, NE

VERN GWIN, PROGRAM DIRECTOR
NATIONAL DQM CENTER



PRESENTATION OUTLINE

- PROGRAM STATUS / ADVANCEMENTS
- CURRENT SIGNIFICANT ACTIVITIES
- FUTURE OBJECTIVES



BUILDING STRONG®

PROGRAM STATUS

SINCE LAST YEAR....

- **PIPELINE VIEWER WAS RELEASED (JAVAS)**
- **NEW SECURITY ACCESS**
- **GOV PLANT PIPELINE MONITORING**
- **BOEM DREDGE INTENSITY MODEL**
- **ODESS PROGRAM IMPLEMENTATION**
- **CYCLE LOGIC REVISION**
- <https://dqm-portal.usace.army.mil/pipelineviewer/>



2018

- Private Pipeline Monitoring
- New Customers/More Customer Service
- ODESS Trawler Implementation
- BOEM Dredge Intensity Model
- Cloud Database/Server Environment
- Dev
 - ▶ V2.9 Parity, V3.0, Portal, Desktop tools, Management Tools



More 2018

- Technical Advancements
 - ▶ Machine Learning, Browser Independent
- Personnel Changes
- Pipeline Data Analysis
- Hopper Dredge Utilization Support
- Revising Specs for Non-Nuclear Density Meters



NEW V2.9 DQM VIEWER



BUILDING STRONG®

SECURITY REQUIREMENTS

- **AS2 REQUIREMENTS FOR DATA WEB SERVICES**
 - ▶ **DATA TRANSMITTAL**
 - ▶ **USER ACCESS**
- **SECURITY MATRIX ROLES AND ACCESS**
 - ▶ **PASSWORD ACCESS – CONTRACTOR ACCESS**



PIPELINE IMPLEMENTATION

- HEAD QUARTERS IMPLEMENTATION GUIDANCE APRIL 2014
- GOVERNMENT PLANT PILOT MONITORING 2015-2017
- FINAL SPEC VERSIONS
- FY18 PRIVATE PIPELINE MONITORING (SBA EXEMPT, REQUIRED ON ALL NON-RESTRICTED PROJECTS)



National Dredging Quality Management Program (DQM)

Pipeline Data Flow Sensor-Based Parameters (per Compliance Specification)



Pump Sensors

- Pump Vac
- Pump Press
- Density
- Velocity



Position Sensors

- Position
- Heading
- Vert Correction (Tide)
- CH Depth



Discharge Sensors

- (radio link)
- Discharge Position
- Discharge Elevation
- Discharge Heading

Notes

*Dredge Positioning Computer—Data is compiled and converted to JSON format

**DQM Onboard Computer—Minimum Specifications

CPU: Intel/AMD processor; 3 GHz (non-overclocked) clock speed

Hard Disk: 250 GB; internal

RAM: 2 GB

Ethernet Adapter: 10/100 Mbps internal network card; RJ-45 connector

Video Adapter: Supports 1024x768 resolution at 16-bit color depth

Monitor: 17" viewable display; supports 1024x768 resolution at 16-bit color depth

Keyboard: Standard 101-key

Mouse: Standard 2-button

CD-ROM Drive: 16X read speed/8X write speed

Ports: 2 free serial ports (standard 9-pin connectors); 1 free USB port

Cables: Cat-5 cable; standard RJ-45 plugs connecting the network adapter to the network hub; 1 spare cable

Software: Windows 7 Professional (fully licensed); any necessary manufacturer-provided drivers for the installed hardware



New DQM Pipeline Viewer

The screenshot displays the DQM Pipeline Viewer interface. At the top left is the logo for Dredging Quality Management (DQM). The main area features a globe centered on North America, with several blue and yellow location pins indicating project sites. On the left side, there are two panels: 'Currently Viewing' (with a 'No project or day loaded...' message and an 'OPEN SELECTION' button) and 'Selected Point' (with a 'Select a point on the graph below...' message and a 'SHOW/HIDE GRAPH' button). A central toolbar includes icons for home, menu, bar chart, list, document, and print, along with zoom controls. On the right, a vertical sidebar contains 'ABOUT' and 'DREDGE STATUS / AVER CONTROL'. The bottom of the screen includes a small 'pins' label and a footer with source attributions and 'Powered by' text.



ABOUT

Currently Viewing
No project or day loaded...

Select a project day by opening the selection above or by clicking on a push pin on the map...

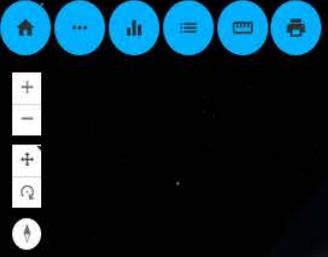
OPEN SELECTION

Selected Point

Select a point on the graph below...

SHOW/HIDE GRAPH

PROJECT / INFORMATION



DREDGE STATUS / AVER CONTROL

pins

Currently Viewing

Plant: Bill Holman
 Type: Pipeline
 Project: Project_Test_Bill_Holman
 Contract: CONTRACT_TEST_BILL_
 Start Date: 05/30/2012
 End Date: 11/02/2015

[PREV](#) [NEXT](#)

Selected Point

ADVANCE_DAILY: null
 ADVANCE_HOURLY: null
 ADVANCE_TOTAL: null
 CH_DEPTH: -12.29
 CH_HEADING: 268.60
 CH_LATITUDE: 37.072012
 CH_LONGITUDE: -88.564571
 CH_RATE: null
 CH_RPM: 200.21
 CH_SWING: null
 MSG_BUNDLE_ID: 916206
 MSG_STATUS_ID: undefined
 MSG_DATE: 05/30/2012
 MSG_TIME: 11:27:06
 OUTFALL_ELEVATION: null
 OUTFALL_HEADING: -19.90
 OUTFALL_LATITUDE: 37.074674
 OUTFALL_LONGITUDE: -88.562046
 PROD_CUMULATIVE: 1074.30
 PROD_INSTANTANEOUS: 11.30
 PROD_INTEGRATED: null
 SLURRY_DENSITY: 1.02
 SLURRY_VELOCITY: 15.48
 SURVEY_DEPTH: null
 SWING_CABLE_PSI_PORT: 0
 SWING_CABLE_PSI_STBD: 141.72
 TARGET_DEPTH: null
 VERT_CORRECTION: 302



Zoom: 100% 75% 50% 36% 25%

Zoom: 1 Min 1 Hr 1 Day All

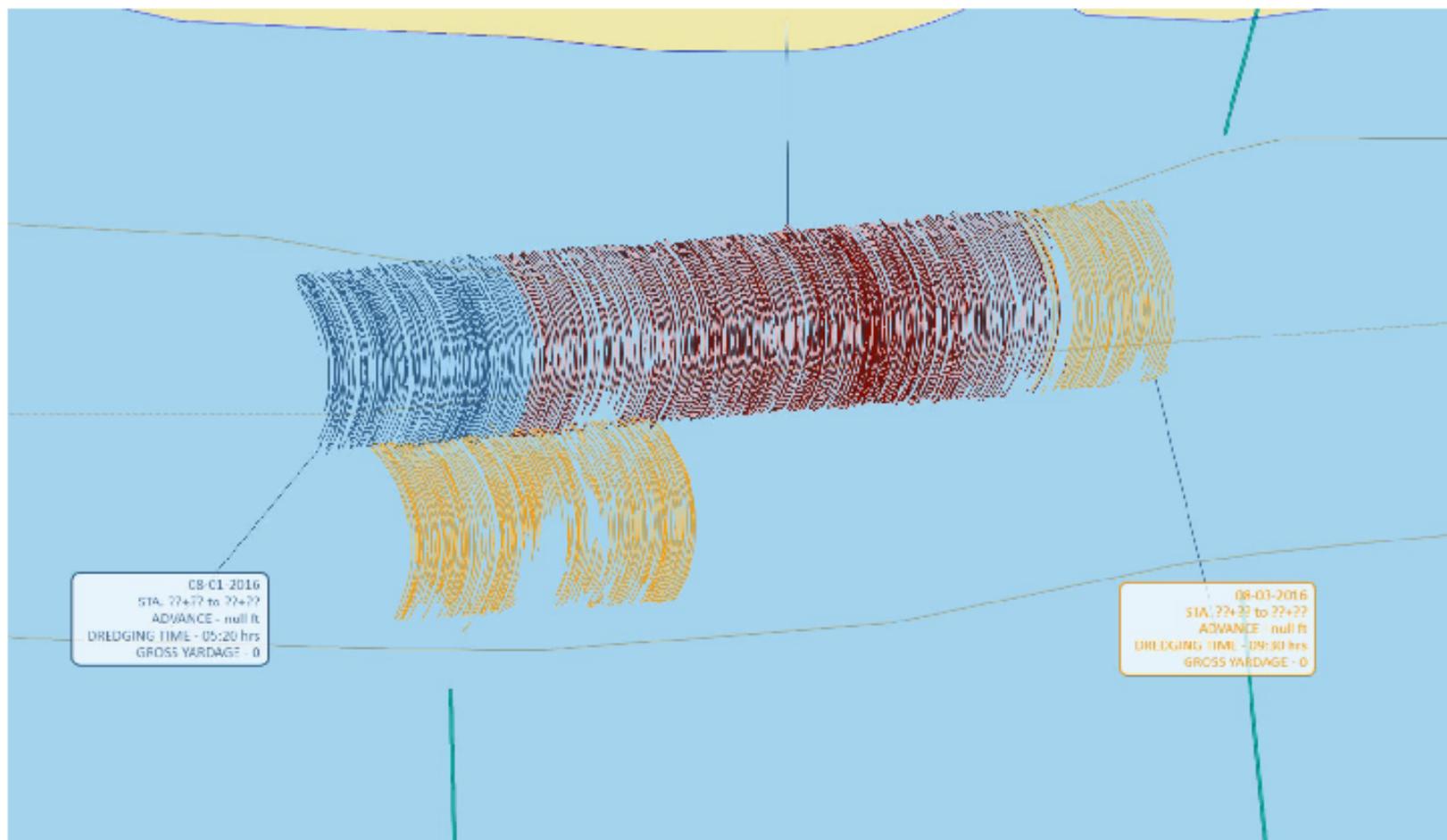


Dredge Status

Pipe Length: [Insufficient Data]
 Boosters: [WIP | Insufficient Data]
 Effective Time: [Insufficient Data]
 Non-effective Time: [Insufficient Data]



- ADVANCE_DAILY
- ADVANCE_HOURLY
- ADVANCE_TOTAL
- CH_DEPTH
- CH_HEADING
- CH_LATITUDE
- CH_LONGITUDE
- CH_RATE
- CH_RPM
- CH_SWING
- OUTFALL_ELEVATION
- OUTFALL_HEADING
- OUTFALL_LATITUDE
- OUTFALL_LONGITUDE
- PROD_CUMULATIVE
- PROD_INSTANTANEOUS
- SLURRY_DENSITY
- SLURRY_VELOCITY
- SURVEY_DEPTH
- SWING_CABLE_PSI_PORT
- SWING_CABLE_PSI_STBD
- TARGET_DEPTH
- VERT_CORRECTION





Overview

- T&E Species Data Collection and Decision Making Tool in support of Operations and Dredging, starting with sea turtles, sturgen
- Streamline T&E species data collection, processing, and reporting
- Reduction in premature project shut down
- Pilot Testing complete
- Full Implementation late 2016

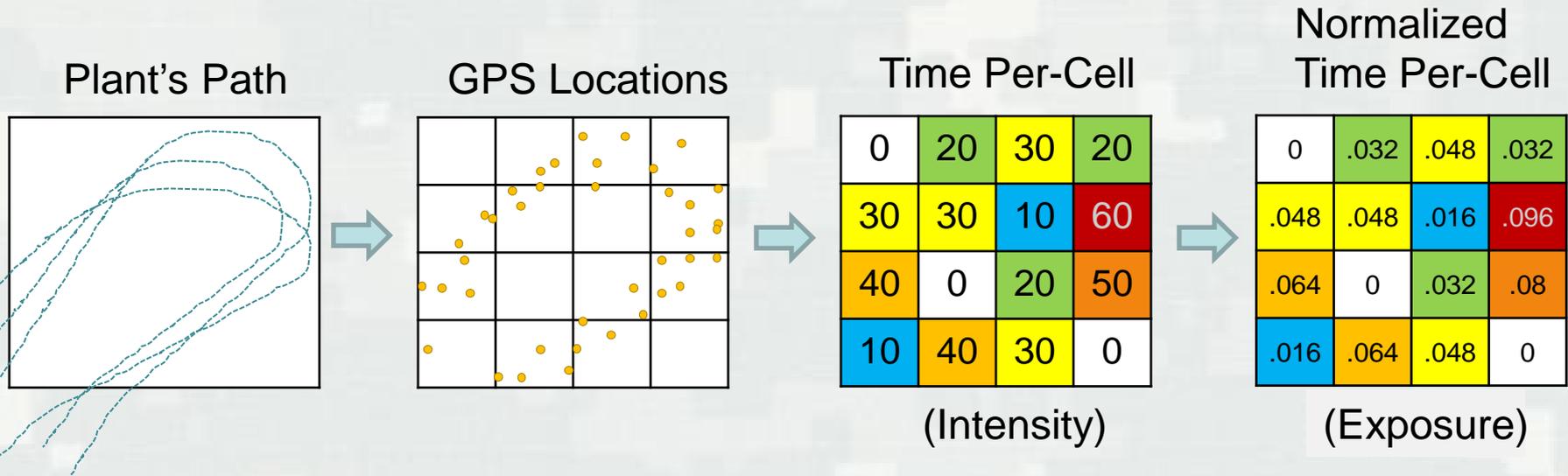


Dredge Intensity Model

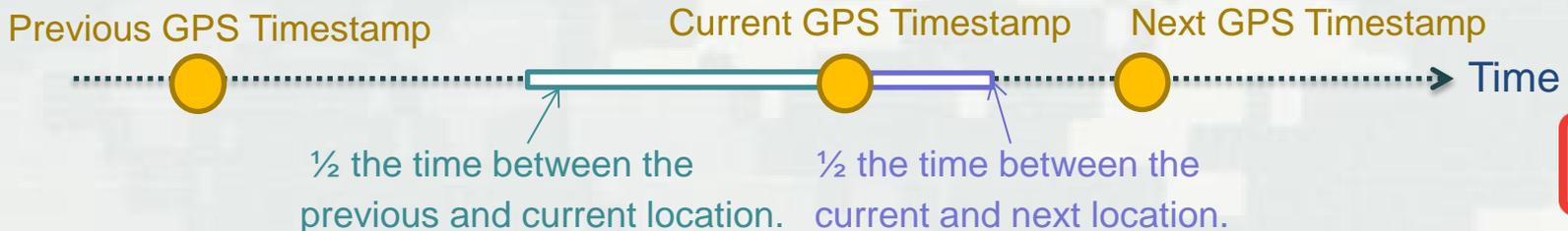
- ✓ Software tool which takes the results of the mathematical model and creates products compatible with prominent GIS applications
- ✓ Vessel transit tracks delineating areas of high traffic use
- ✓ Generation of relevant geospatial metadata for the product including processing history sections



Dredge Intensity Model

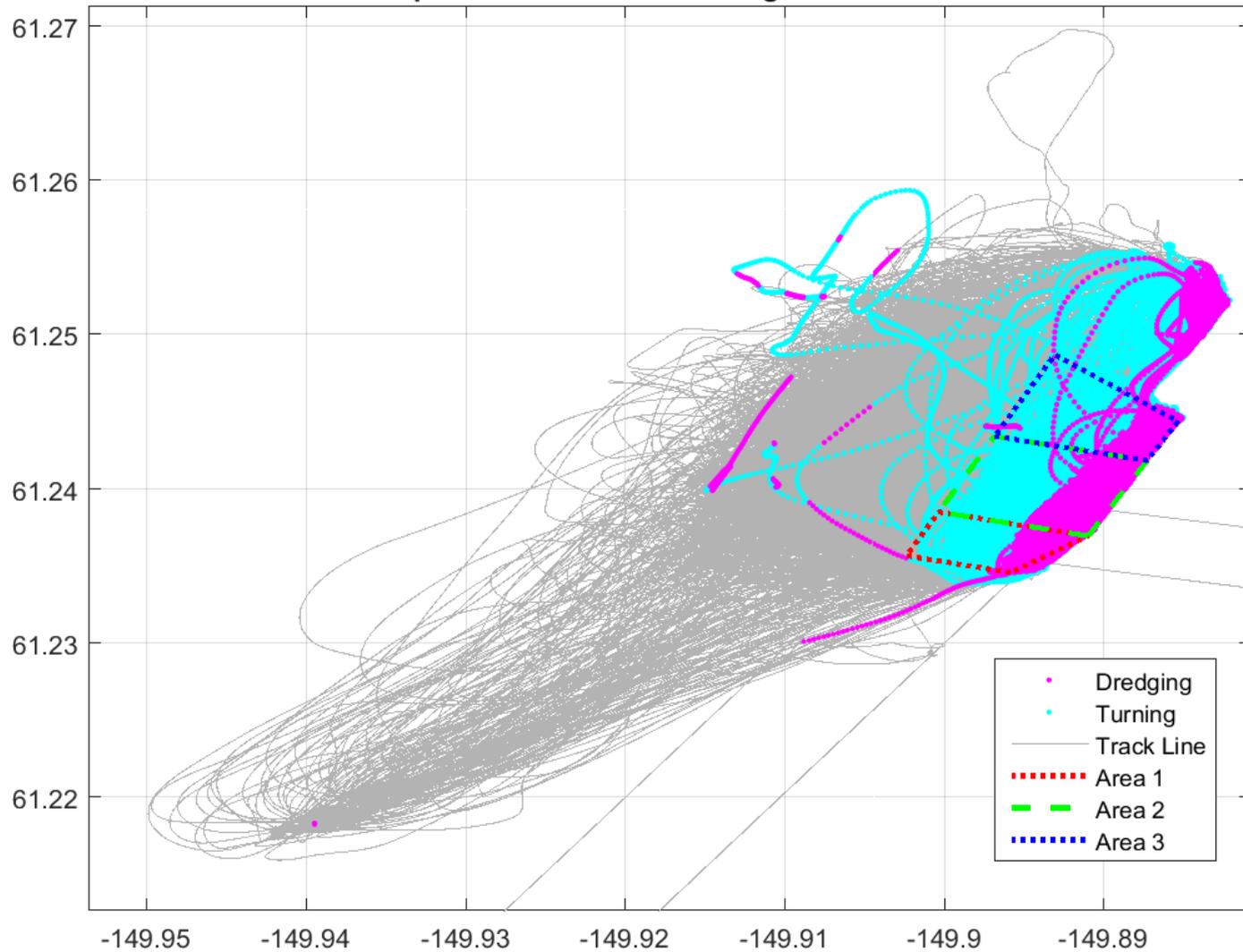


- Time spent at each location is calculated
- GPS locations are converted to UTM, and a grid is constructed
- Time per-location is accumulated within cells of a grid
- Values are normalized based on the cell size, final units are seconds per meter squared.

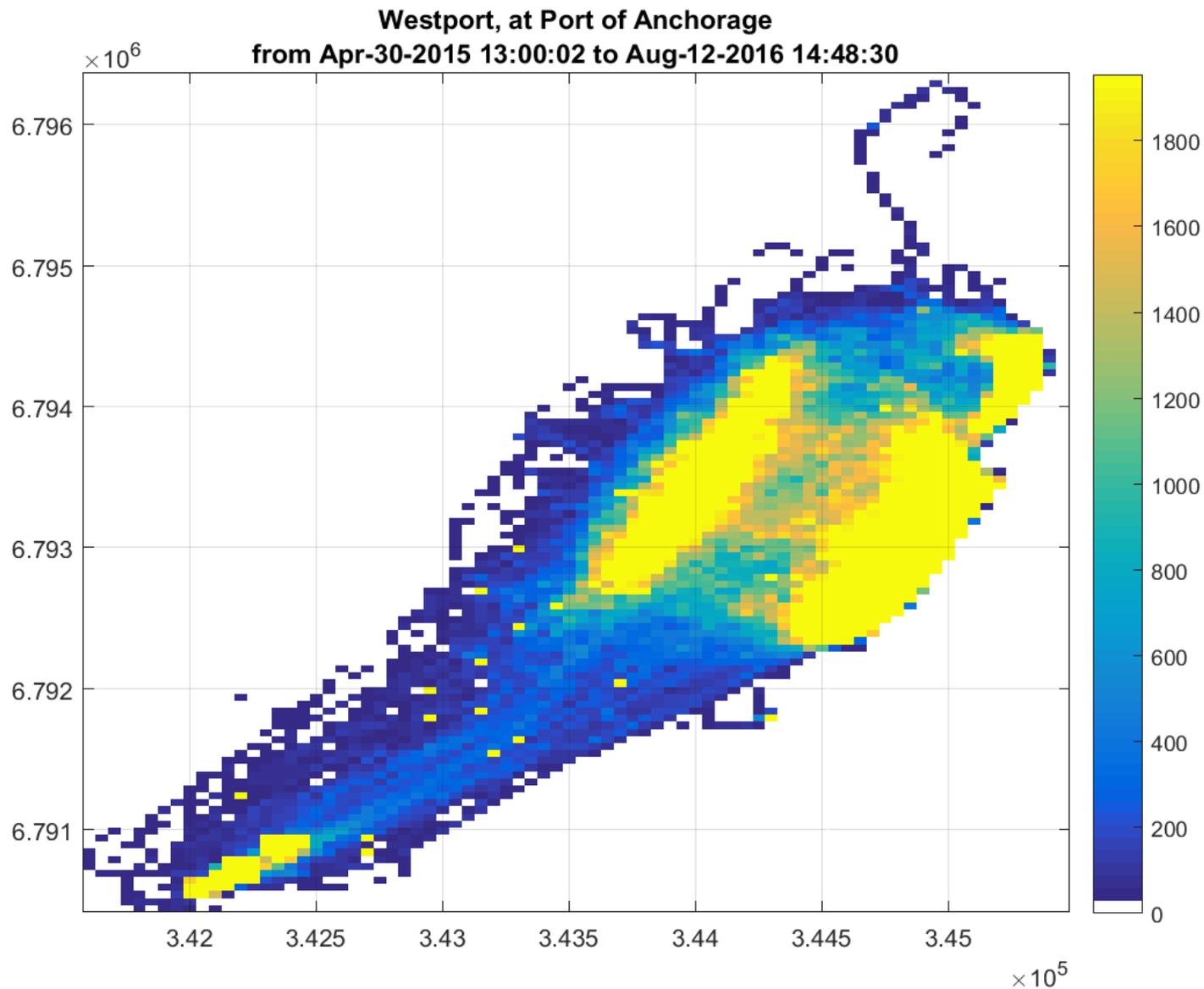


Westport Tracks & Dredging

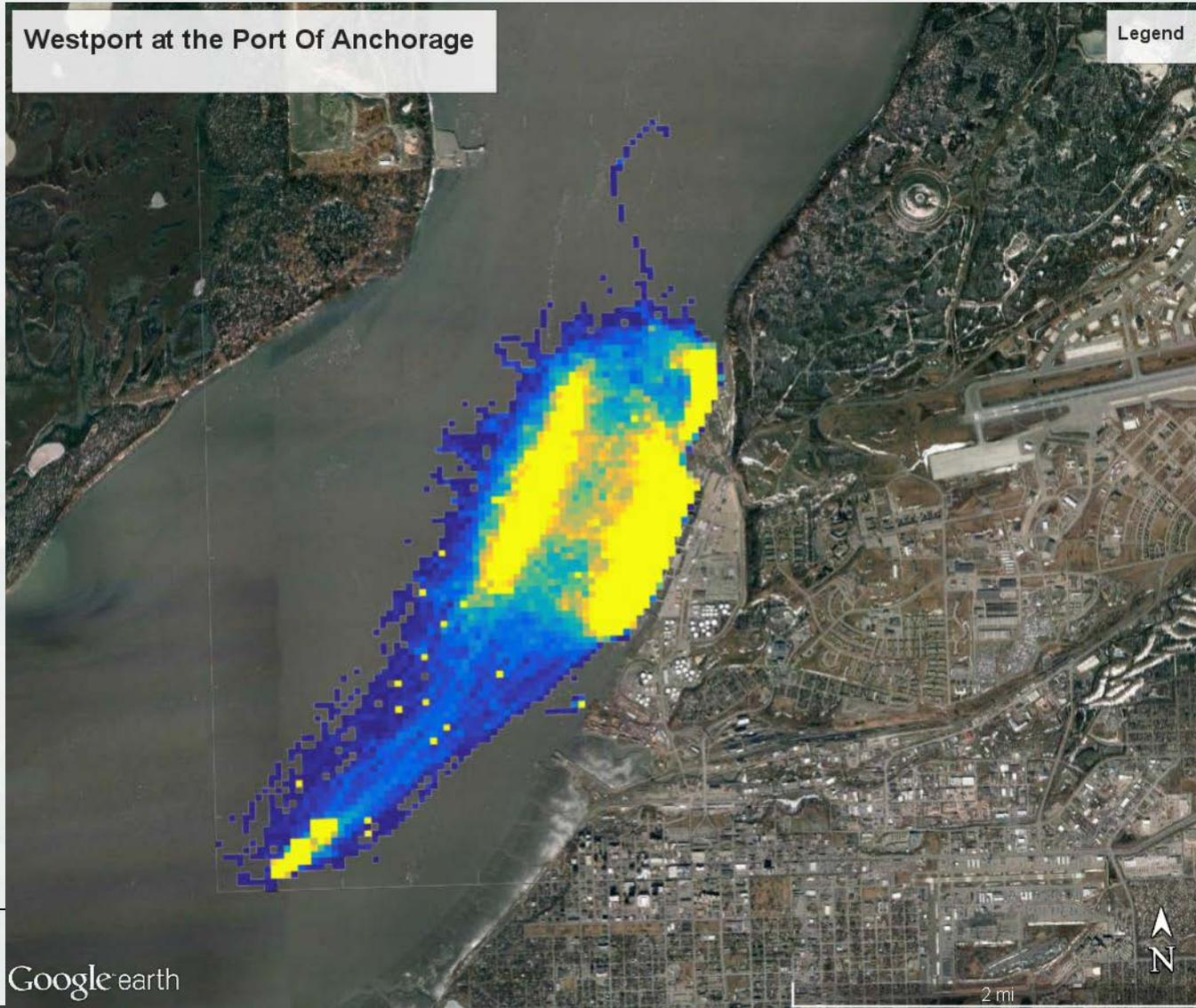
Westport, at Port of Anchorage
from Apr-30-2015 13:00:02 to Aug-12-2016 14:48:30



Westport Heat Map



Google Earth Overlay



NEW **DQM** PORTAL



Search for Application



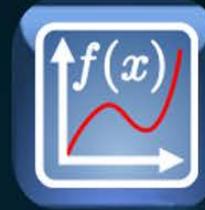
Certifications/QA



Administration



Reports



Plots



Export



DQM Viewer



Dashboard



Payments



Tools



DQM Public Website



Training



2018

- Private Pipeline Monitoring
- ODESS Trawler Implementation
- Cloud Database/Server Environment
- Dev
 - ▶ V2.9 Parity, V3.0, Portal, Desktop tools, Management Tools



More 2018

- Technical Advancements
 - ▶ Machine Learning, Browser Independent
- Pipeline Data Analysis
- Revising Specs for Non-Nuclear Density Meters



Question/Comments?



NATIONAL DREDGING QUALITY MANAGEMENT
DQPM



BUILDING STRONG®



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.

