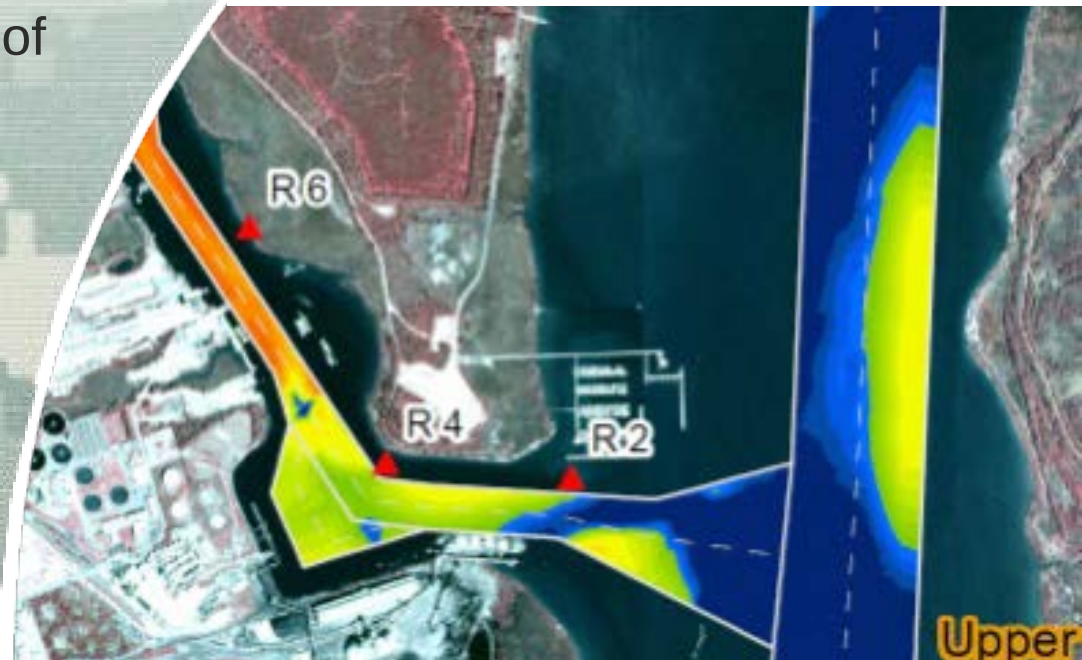
NOAA Hydrographic Services Review Panel

Updated Nautical Charting and Consistency Standards

Tony Niles,
Assistant Director for Civil Works
Research and Development

Headquarters, U.S. Army Corps of Engineers

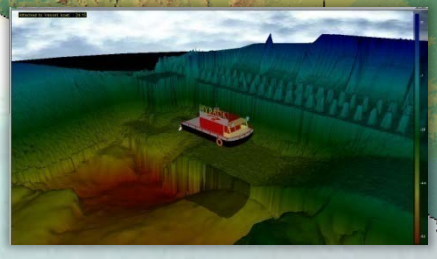


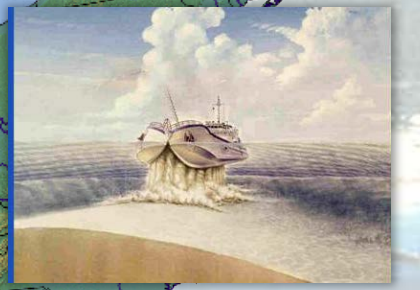
US Army Corps of Engineers®

BUILDING STRONG®

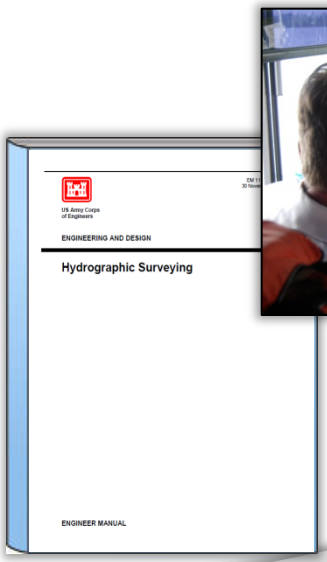
USACE Coastal Navigation Mission

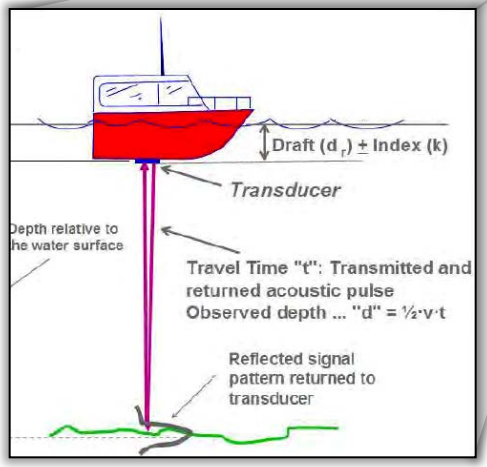
- Largest Business Line
- Mission includes;
  - 1,067 Navigation Projects
  - 19 lock chambers
  - 13,000 miles of channels
  - 929 navigation structures
  - 844 bridges



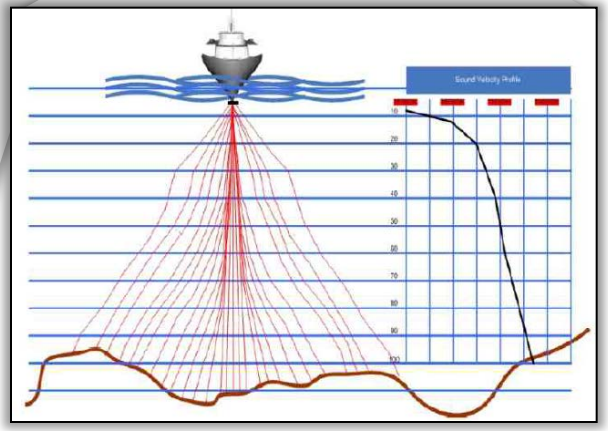


Assessing Channel Conditions

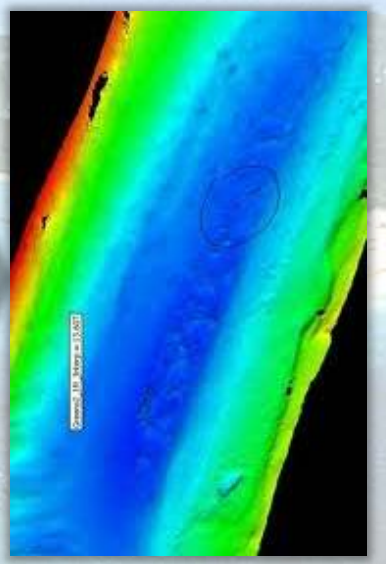




Single-Beam

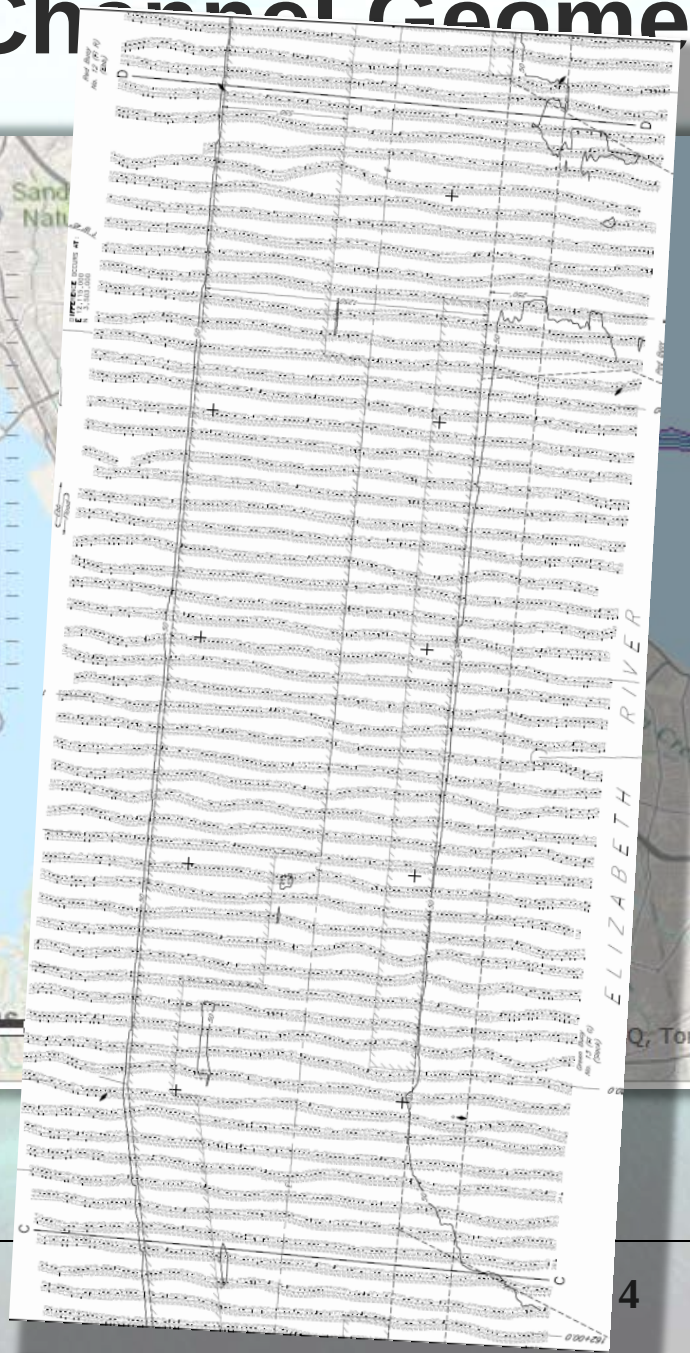


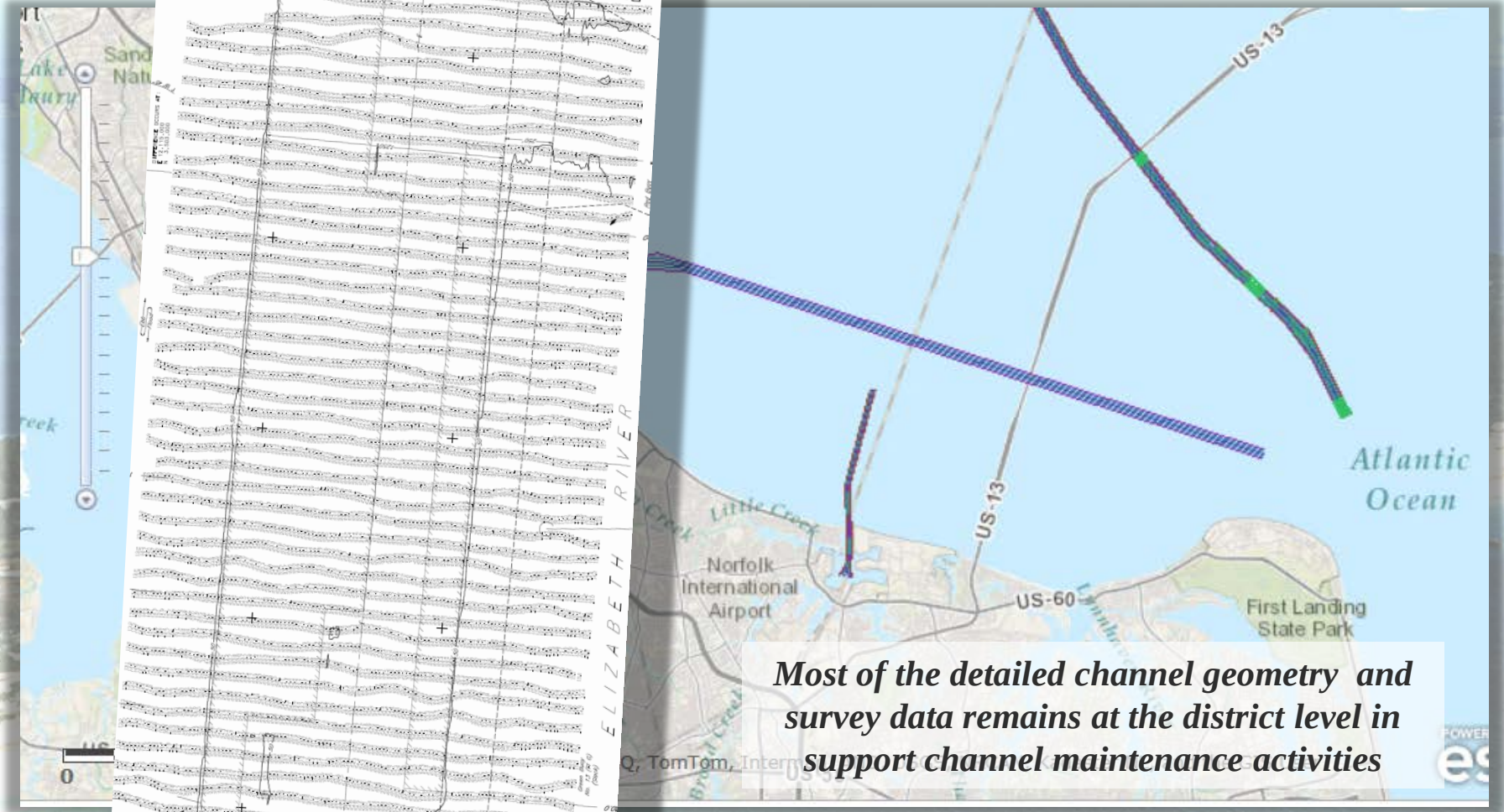
Multi-Beam



Accurate Channel Condition Data

Channel Geometry and Survey Data





Most of the detailed channel geometry and survey data remains at the district level in support channel maintenance activities

Channel Condition Products to NOAA

33 CFR Sec 209.325: USACE is required to provide results of hydrographic surveys to NOAA within one month of the survey.

LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
37.1	43.5	41.1	44.8
21.2	27.5	30.0	33.6
41.0	37.9	30.1	18.5

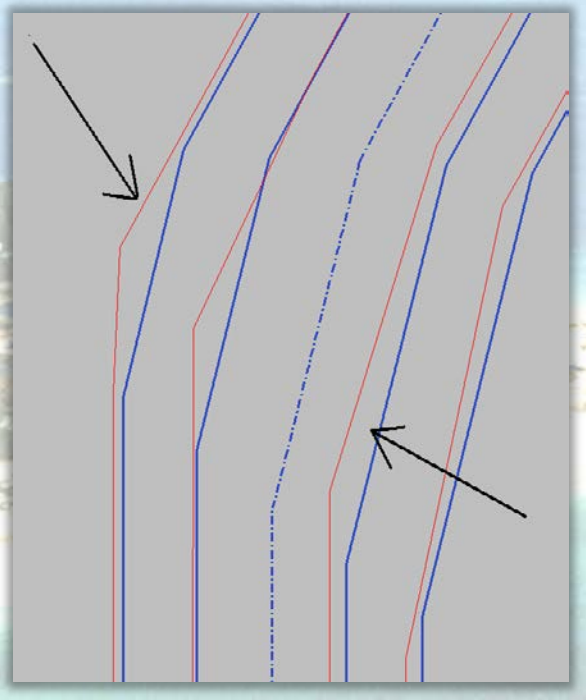
Tabular Channel Condition Report

Digital Survey and Navigation Channel Framework Data

Data Problems

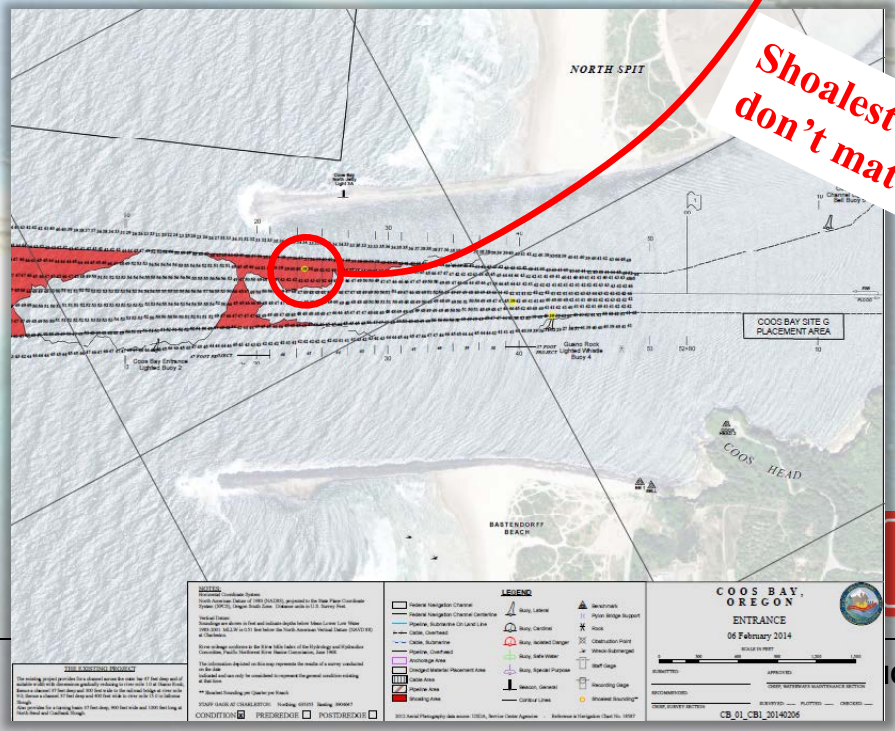
USACE Districts have varying;

- **Data formats**
- **Reporting frequency**
- **Methods of dissemination**



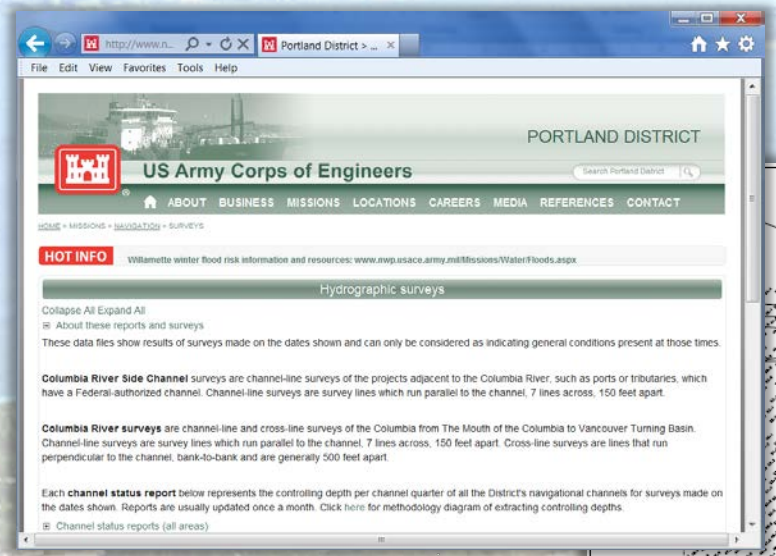
Inconsistent Framework

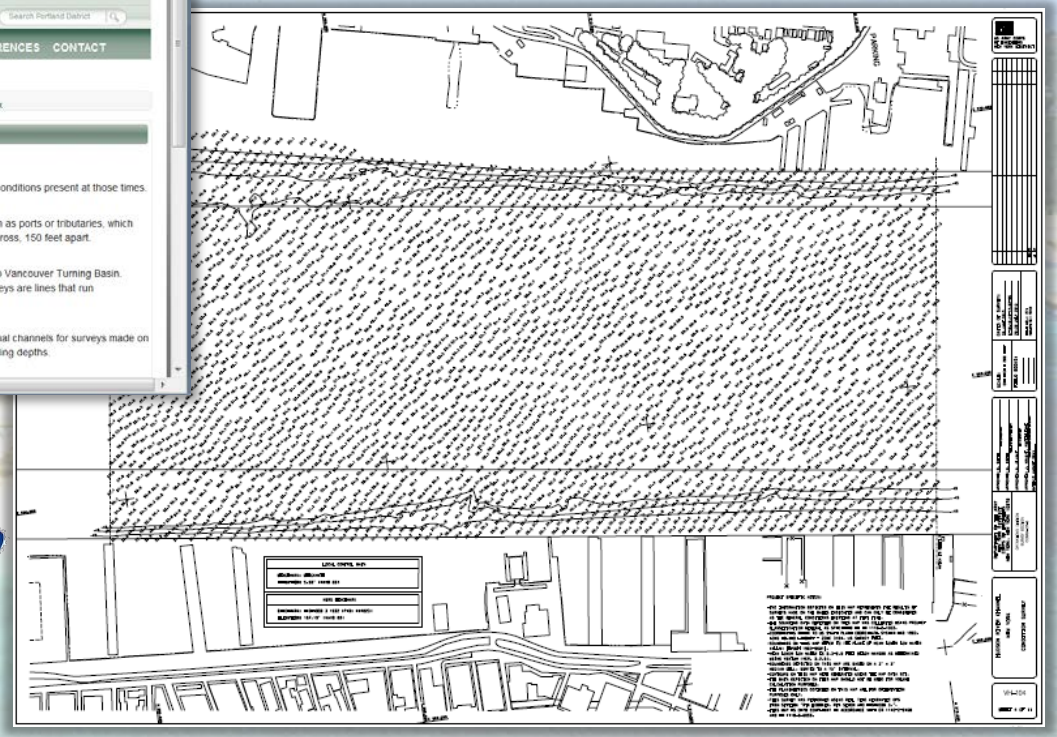
RIVER/HARBOR NAME AND STATE COOS BAY OREGON					MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	AUTHORIZED PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
COOS BAY ENTRANCE Entrance Range	09-03-2013	0	1.90	47	35	40	40
COOS BAY RANGES Entrance Range & Turn	06-06-2013	300	0.80	37	38	42	34
COOS BAY RANGES Coos Bay Inside Range	06-06-2013	300	0.80	37	36	38	39
COOS BAY RANGES Coos Bay Range	06-06-2013	300	0.90	37	38	37	38
COOS BAY AND EMPIRE RANGES Empire Range	07-23-2013	300	2.30	37	35	38	30



Shoalest Depths don't match

Channel Condition Product to Navigation Interests





Survey Plot of Reach or Project Area

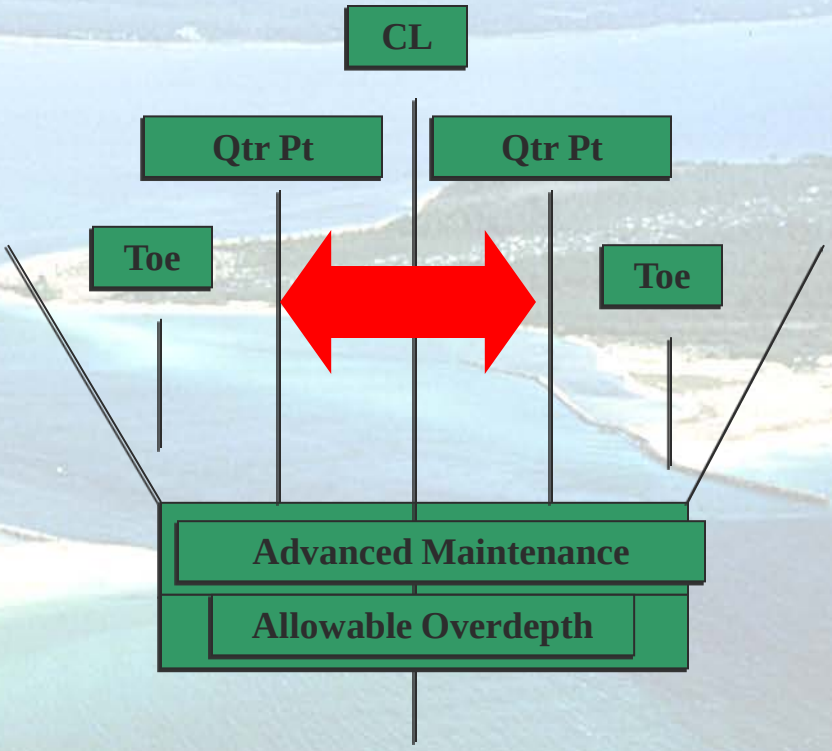
Coastal Navigation Issues - Nationwide

- **Budget Reductions**
- **Dredging Costs Increasing**
- **Dredged Material Placement Capacity Issues**
- **Environmental ‘Windows’: Increasing restrictions on when dredging can be performed**
- **Low Use Navigation Projects**

Channel Performance – Coastal

High Use Channels, >10M tons/year

- Goal: Half channel width, 95% of time
- Actual: 35% of time
- Analogy to building a 2-lane road; Present funding allows one lane, one-third of the year



Enterprise Needs for Channel Condition Data

Must quantify the impacts of present channel conditions on commercial shipping, and compare to all other channels requesting dredging funds.

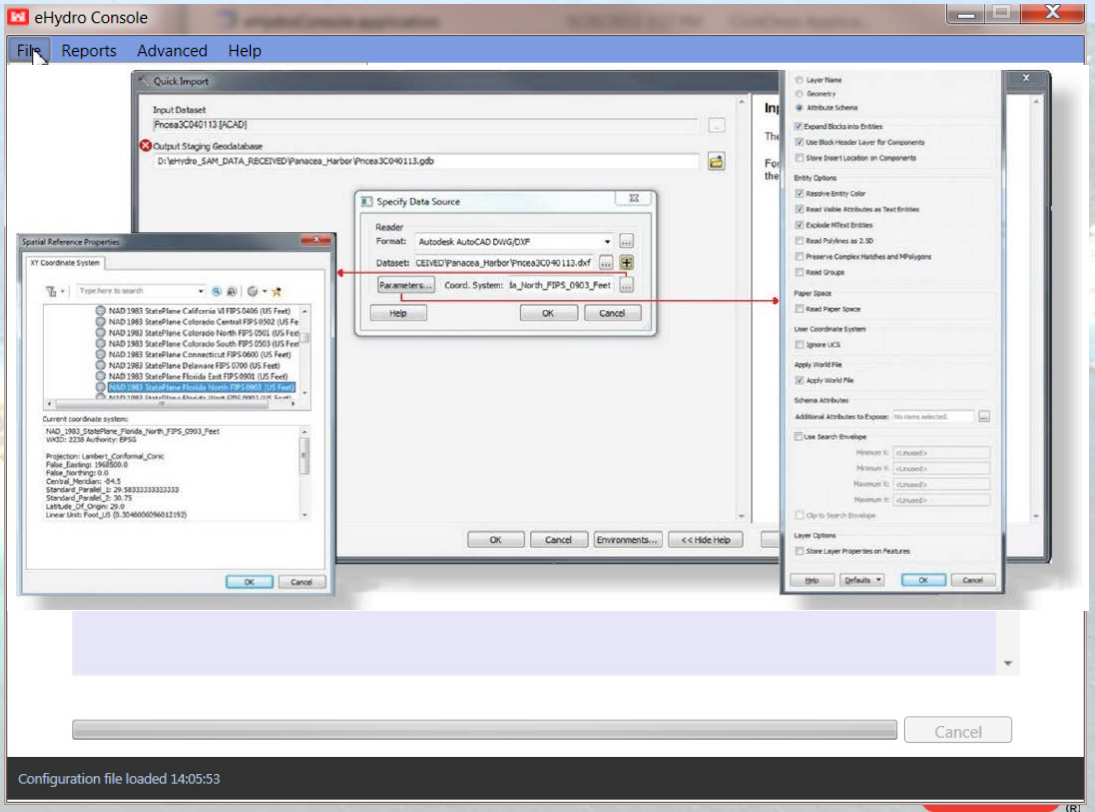
- **Data must be quantitative, objective, repeatable, consistent, and straightforward enough that it can be applied rapidly and affordably to all channels in the navigation portfolio of projects.**

eHydro Application and Reporting Process

Agency-wide software and process that must pass the unfunded mandate requirement;

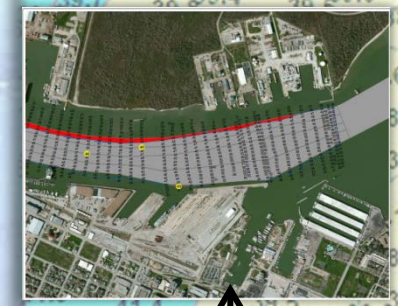
1) Minimal burden on the districts' resources,

2) Must benefit the field's project workflow.

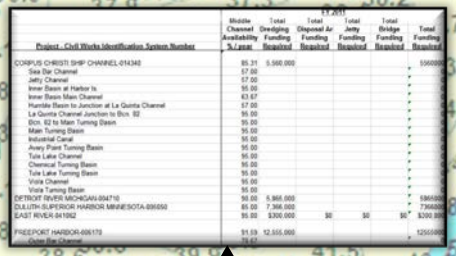


eHydro Application and Reporting Process

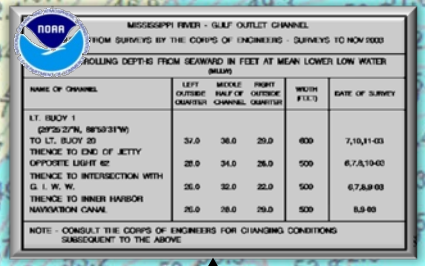
Condition Plots



HQ Channel Indices



NOAA Reports



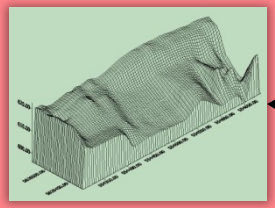
Metadata

Identification_Information:
Citation:
Citation_Information:
Originator: U.S. Army, Corps of Engineers,
New England District (comp.)
Publication_Date: 20090306
Title: Boston Harbor, Boston, Massachusetts,
After Dredge/Condition Survey
Geospatial_Data_Presentation_Form: map
Series_Information:
Series_Name: N/A
Issue_Identification: N/A

Web Site

Web Services

District



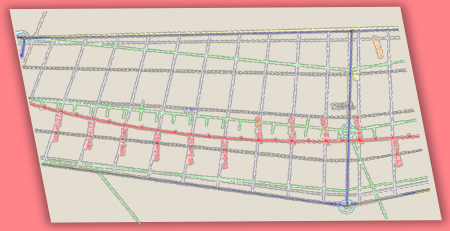
Planning Quantities

eHydro GIS Application

esri

Enterprise Navigation Channel Framework

Surveys

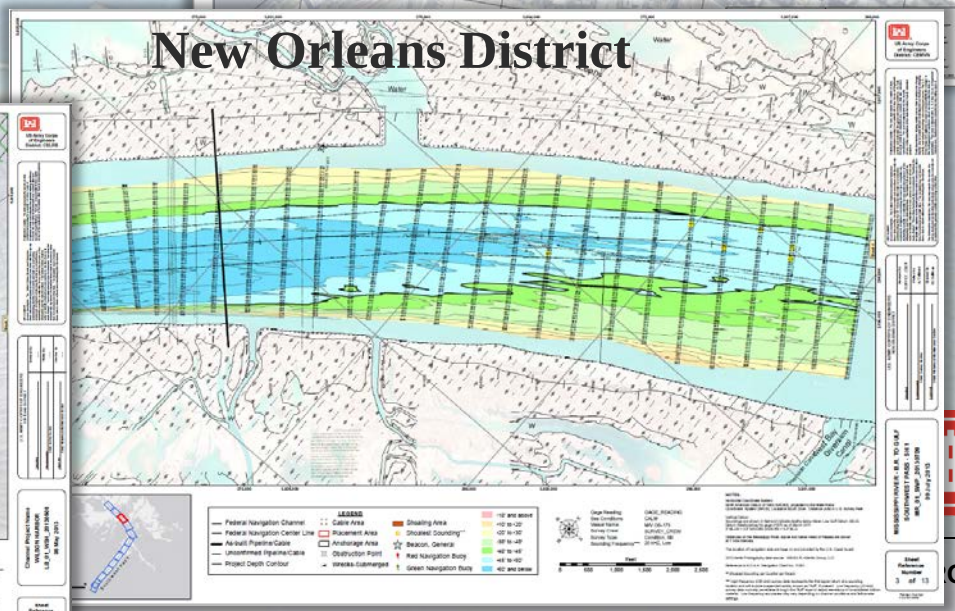


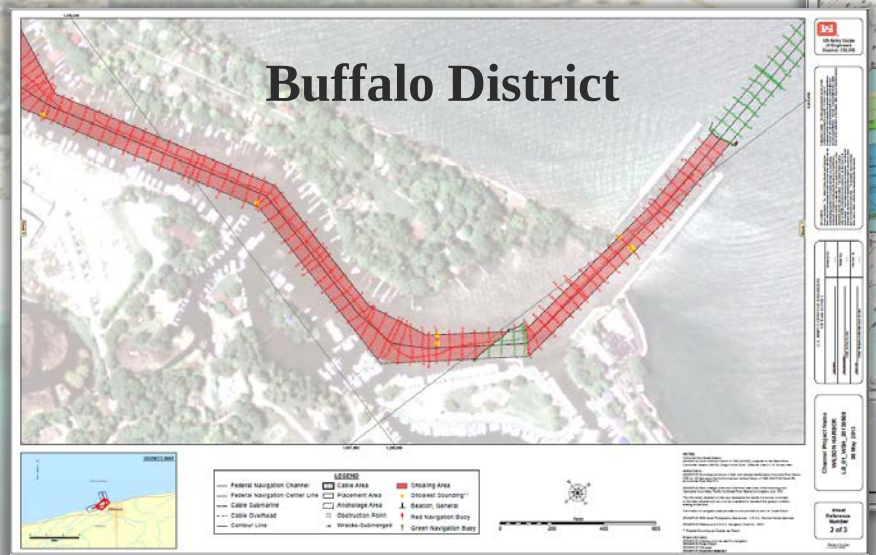
Framework

BUILDING STRONG®

eHydro – Condition Plots

- **Minimum list of features to include NAIP Imagery, channel geometry, controlling depths, official NAVAIDs**
- **flexible size and orientation**
- **basic notes**
- **additional features to suit local requirements**





eHydro - Channel Condition Report

RIVER/HARBOR NAME AND STATE COOS BAY OREGON					MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	AUTHORIZED PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
COOS BAY ENTRANCE Entrance Range	09-03-2013	0	1.90	47	35	40	40
COOS BAY RANGES Entrance Range & Turn	06-06-2013	300	0.80	37	38	42	34
COOS BAY RANGES Coos Bay Inside Range	06-06-2013	300	0.80	37	36	38	39
COOS BAY RANGES Coos Bay Range	06-06-2013	300	0.90	37	38	37	38
COOS BAY AND EMPIRE RANGES Empire Range	07-23-2013	300	2.30	37	35	38	30

eHydro - Channel Condition Index

COOS BAY OREGON						Date 09/18/2013
Sheet Name	Reach Number	Depth	Left Outside Quarter	Middle Half	Right Outside Quarter	Survey Name
COOS BAY ENTRANCE	1	47	35	40	40	CB_01_CB1_20130903
COOS BAY RANGES	1	37	38	42	34	CB_02_CB2_20130606
COOS BAY RANGES	2	37	36	38	39	CB_02_CB2_20130606
COOS BAY RANGES	3	37	38	37	38	CB_02_CB2_20130606
COOS BAY AND EMPIRE RANGE	1	37	35	38	30	CB_03_CB3_20130723
JARVIS RANGES	1	37	34	38	22	CB_04_CB4_20130718
JARVIS RANGES	2	37	37	37	33	CB_04_CB4_20130718

eHydro - Survey Planning Quantities

COLUMBIA 43 FOOT FY2012

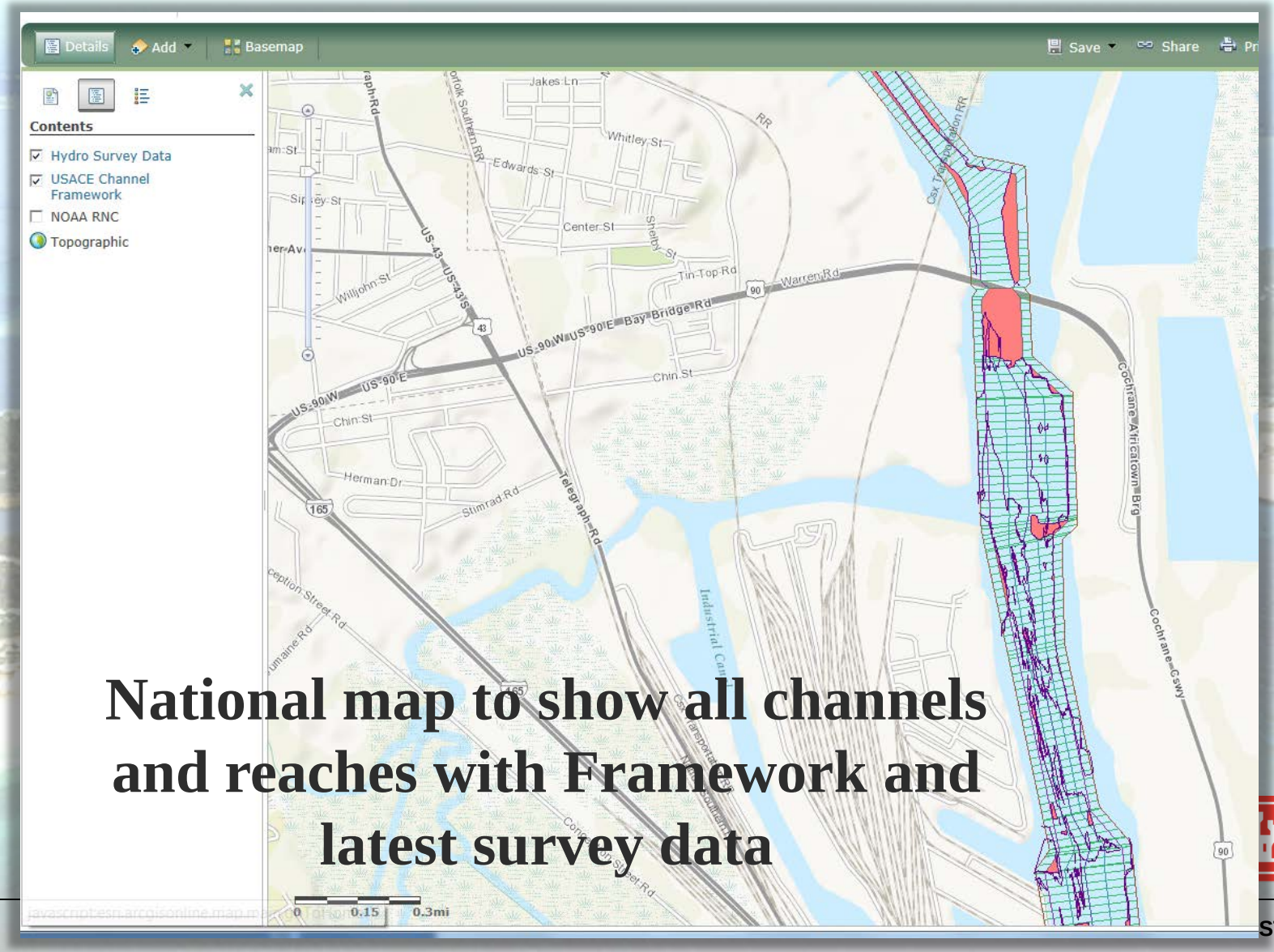
Sheet Name	Reach Number	Depth	Left Outside Quarter	Left Inside Quarter	Right Inside Quarter	Right Outside Quarter
LOWER DESDEMONA SHOAL	1	43	45\100\4	47\100\4	49\100\4	47\100\4
UPPER DESDEMONA SHOAL	1	43	42\36\4	43\100\4	44\100\4	42\91\4
FLAVEL BAR	1	43	38\0\10	40\64\10	42\81\10	33\0\10
UPPER SANDS	1	43	41\0\9	43\100\9	44\100\9	42\93\9
UPPER SANDS	2	43	42\24\9	43\100\9	43\100\9	42\3\9
TONGUE POINT CROSSING	1	43	38\0\11	41\96\11	42\96\11	41\96\11
TONGUE POINT CROSSING	2	43	38\0\11	40\62\11	40\64\11	35\0\11
MILLER SANDS	1	43	41\52\11	39\92\11	37\61\11	31\0\11
MILLER SANDS	2	43	37\0\11	43\100\11	41\71\11	31\33\11
MILLER SANDS	3	43	37\3\11	40\54\11	40\74\11	38\9\11
PILLAR ROCK RANGES	1	43	37\17\13	41\72\12	38\60\12	37\0\12
PILLAR ROCK RANGES	2	43	32\38\12	40\53\12	41\90\12	41\37\12

eHydro - Metadata

FGDC or ISO Standard….

Identification_Information:
Citation:
Citation_Information:
Originator: U.S. Army, Corps of Engineers,
New England District (comp.)
Publication_Date: 20090306
Title: Boston Harbor, Boston, Massachusetts,
After Dredge/Condition Survey
Geospatial_Data_Presentation_Form: map
Series_Information:
Series_Name: N/A
Issue_Identification: N/A
Publication_Information:
Publication_Place: Concord, MA
Publisher: Navigation, Project M
Management Section, NE District

eHydro – Web Map Display



National map to show all channels and reaches with Framework and latest survey data

eHydro Deployment Status

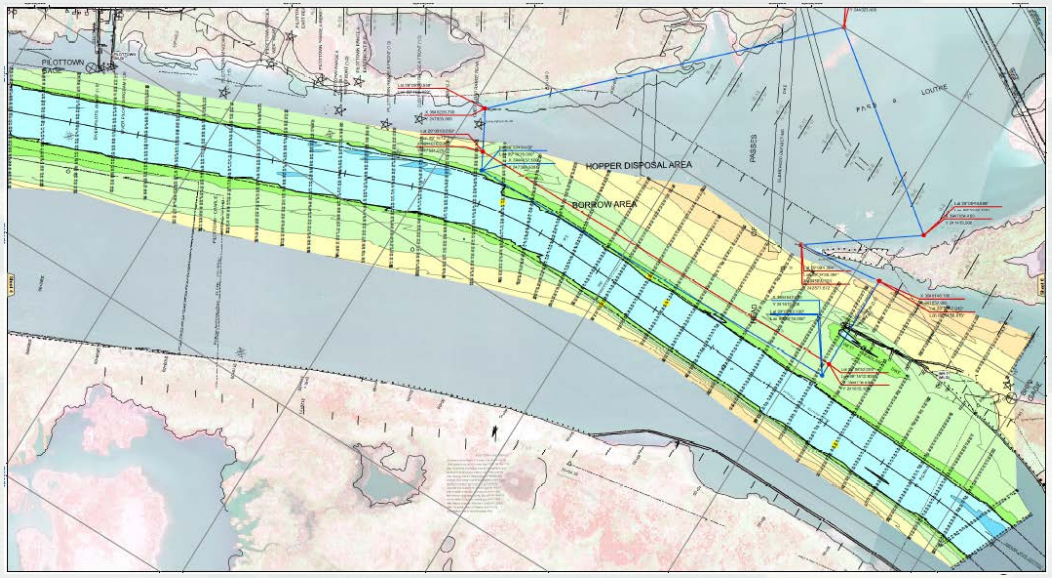
- 18 Districts ready to begin operational use on all High use channels
- 4 Districts need to develop channel templates
- Operational order to be issued this week
- All 22 districts to be operational with all High and Moderate use channels by the end of FY14.

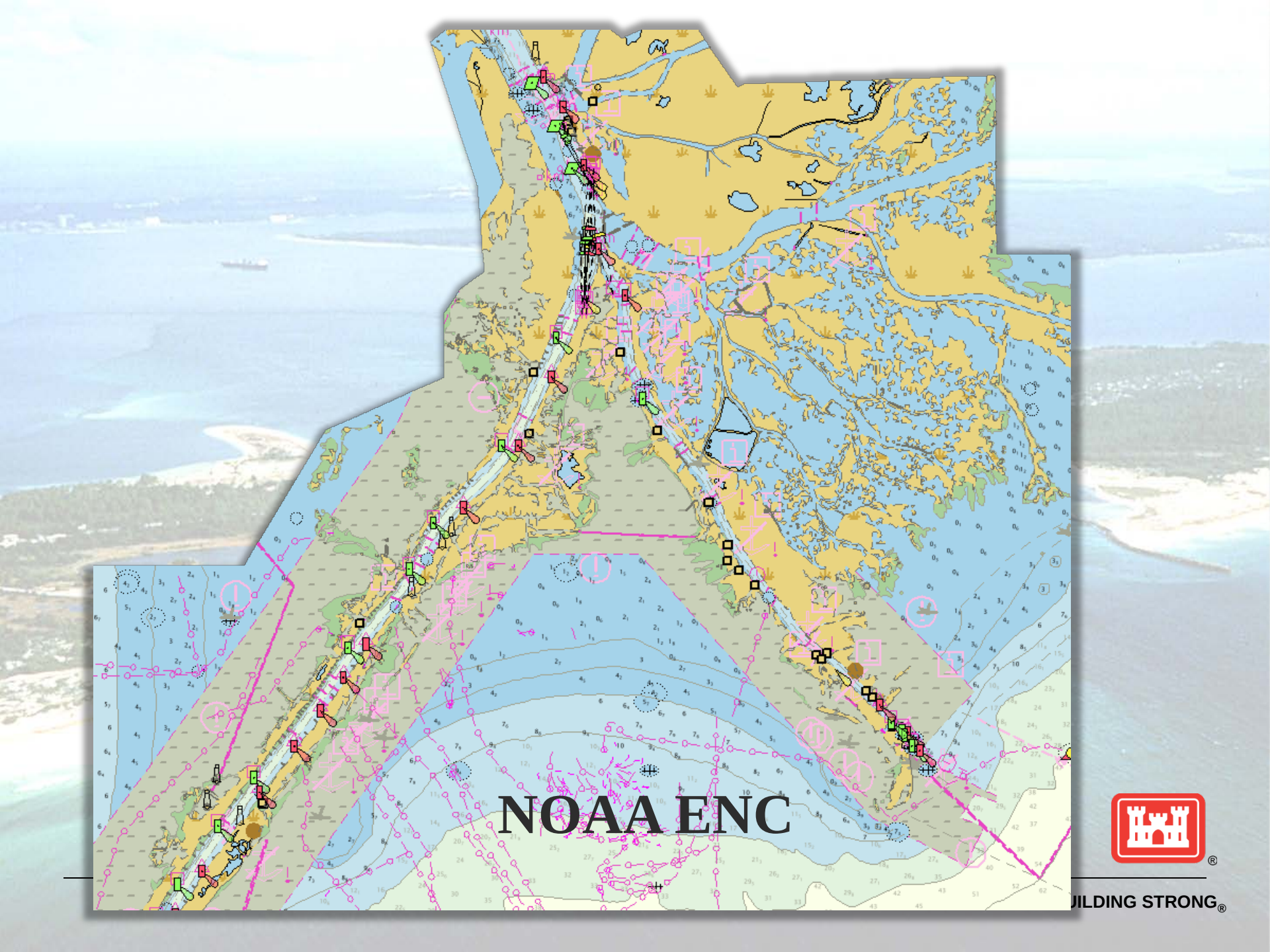
New Channel Product for Navigation Interests

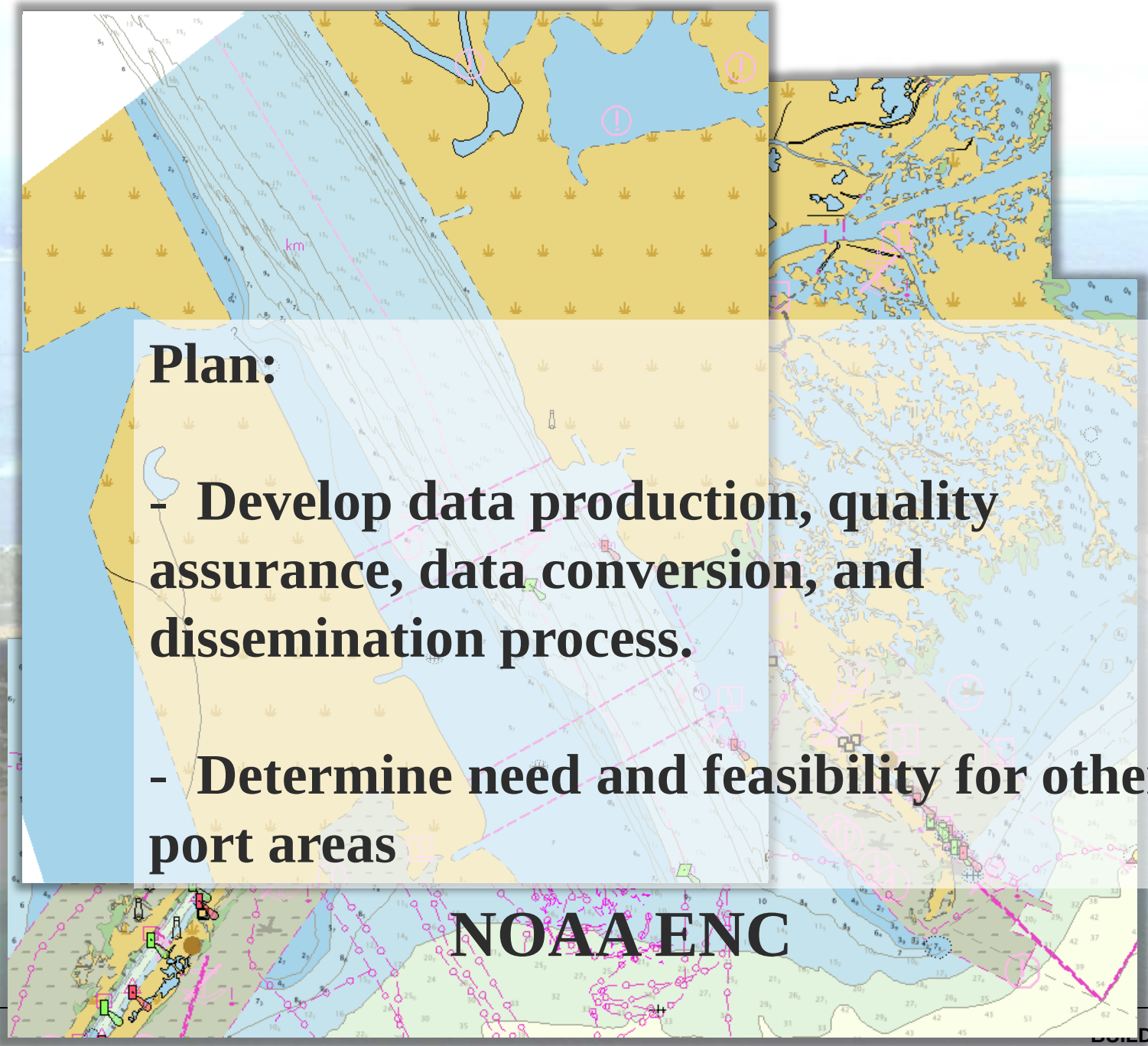
Goal: S-57 overlay of latest channel condition data for Southwest Pass.

Result:

- **Channel survey data that can be overlayed on the NOAA ENC.**
- **No modification or preparation needed by the ECS vendor.**
- **Compatibility with data and display standards.**




NOAA ENC



Plan:

- **Develop data production, quality assurance, data conversion, and dissemination process.**

- **Determine need and feasibility for other port areas**

NOAA ENC

Channel condition and Framework data that is;

- quantitative
- objective
- repeatable
- consistent
- usable

Questions??