

FY16 RSM-EWN IPR

Philadelphia District (NAP), RSM Data Management Initiative, Colleen Rourke

BLUF: The primary goal is to leverage the capabilities offered through the web-based Sediment Analysis and Geo Application (SAGA) as a data management tool to manage Philadelphia District's sediment data for the major navigation projects.

Problem Statement/Issue: Multiple navigation projects are ongoing in NAP; however, a central data management tool does not exist to catalog sediment characteristics in each project area.

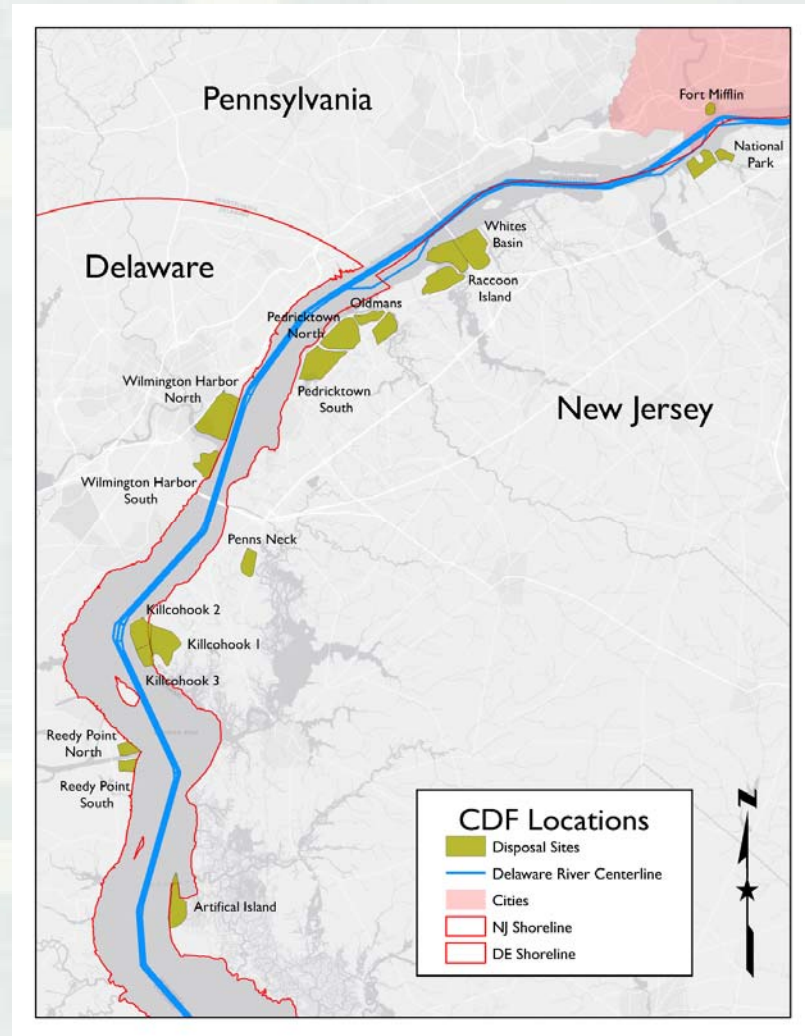
Significance of Problem: Data trends are lost. Historical data is not captured. Similarities between sample locations difficult to discern.



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How much data?

Federal maintenance dredging of the 40 foot channel has historically generated approximately 3,000,000 cubic yards of dredged material annually!



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NAP RSM Data Management Initiative

Approach to Address Problem (Non-Technical)

- Data Search
- Gather Existing and Historic Sediment Data
 - ✓ CDF Inspection Reports
 - ✓ O&M Reports
 - ✓ Geotech
 - ✓ Environmental

Approach to Address Problem (Tools, Models, Technologies)

- Data Entry in Excel – Data in ALL formats
- Uploaded to SAGA
- Geographic Information Systems (GIS)

The screenshot displays the 'Sediment Analysis' web application. At the top, there is a navigation bar with 'ABOUT', 'SEDIMENT ANALYSIS', and 'RESOURCE DISCOVERY' tabs. The main content area features a 'Project List' dropdown and a 'Search Sample Name' input field. Below this is a 'Layer Control' section with checkboxes for 'Borehole', 'Grab', 'Well', 'USGS Riverline', 'USACE Riverline', and 'District Boundaries'. The central part of the interface is a map showing a blue line representing a river or stream. An information popup window is open over the map, displaying details for a specific sample: 'Name: AF-1-92', 'Date: 11/03/1992', and 'Type: Borehole'. The popup also includes a 'Description: Philly to the Sea' and buttons for 'Location', 'Stratigraphy', 'Subsamples', 'Test Results', and 'Documents'. The bottom right corner of the map area shows the text 'Esri, HERE, DeLorme, NGA, USGS | Esri, HERE'.





Sediment Analysis

Project List ▾

Search Sample Name:

Layer Control:

- Borehole Grab Well USGS Riverine USACE Riverine District Boundaries



Map interface showing a river network with a selected point. The map includes zoom controls (+, -) and a home button. A pop-up information window is displayed over the selected point.

Information

Name: DRV-14-91
Date: 07/28/1991
Type: Borehole

Description: Philly to the Sea

Location Stratigraphy

Subsamples Test Results

Documents

State of New Jersey, VITA, Esri, HERE, DeLorme, NGA, USGS | Esri, HERE



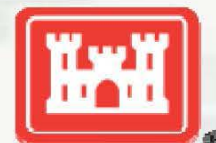
Sediment Analysis

Site Name: **DRV-14-91** 29-JUL-91 to (No End Date Specified)



Location **Stratigraphy** Sub Samples Testing Results Documents

Top Elev	Top Elev Conv	Bottom Elev	Bottom Elev Conv	Top Depth	Top Depth Conv	Bot Depth	Bot Depth Conv	Mat Code	Mat Description	Remarks
No Data	No Data	No Data	No Data	0.00	No Data	7.40	No Data	No Data	Silty Clay sand faces- few sand pockets scattered shells	No Data
No Data	No Data	No Data	No Data	7.40	No Data	10.70	No Data	No Data	Grey firm silt	No Data
No Data	No Data	No Data	No Data	10.70	No Data	12.20	No Data	No Data	Grey silty clay, shell layer, interbedded organic layers	No Data
No Data	No Data	No Data	No Data	12.20	No Data	19.70	No Data	No Data	Firm clay, scattered shells	No Data
No Data	No Data	No Data	No Data	19.70	No Data	19.80	No Data	No Data	fine sand pockets	No Data
No Data	No Data	No Data	No Data	19.80	No Data	20.00	No Data	No Data	No recovery	No Data



B142 =VLOOKUP(A142,SDSID,3,FALSE)

1	Site Sample Name	SDSID	LAYER_TOP_DEPTH	LAYER_BOTTOM_DEPTH	LAYER_TOP_ELEVATION	LAYER_BOTTOM_ELEVATION	LAYER_BOTTOM_CONV_DATUM	MATERIAL_CODE	MATERIAL_DESCRIPTION	REMARKS
2	DRV-14-91	{7B5CBCFD-6A80-4EFE-B1D4-290EA3683087}	0.0	7.40					Silty Clay sand faces-few sand pockets scattered shells	
3	DRV-14-91	{7B5CBCFD-6A80-4EFE-B1D4-290EA3683087}	7.4	10.70					Grey firm silt	
4	DRV-14-91	{7B5CBCFD-6A80-4EFE-B1D4-290EA3683087}	10.7	12.20					Grey silty clay, shell layer, interbedded organic layers	
5	DRV-14-91	{7B5CBCFD-6A80-4EFE-B1D4-290EA3683087}	12.2	19.70					Firm clay, scattered shells	
6	DRV-14-91	{7B5CBCFD-6A80-4EFE-B1D4-290EA3683087}	19.7	19.80					fine sand pockets	
7	DRV-14-91	{7B5CBCFD-6A80-4EFE-B1D4-290EA3683087}	19.8	20.00					No recovery	
8	DRV-85-04	{D8294449-9A99-49CD-B761-3A4BA568CA4E}	0.0	5.00				SM	Tan, brown, orange fine sand, little silt/clay, trace medium sand	
9	DRV-85-04	{D8294449-9A99-49CD-B761-3A4BA568CA4E}	5.0	10.00				SM	Tan, brown, orange fine sand, little silt/clay, trace medium sand	
10	DRV-85-04	{D8294449-9A99-49CD-B761-3A4BA568CA4E}	10.0	15.00				SM	Tan, gray, orange fine sand, little silt/clay, trace medium sand	
11	DRV-85-04	{D8294449-9A99-49CD-B761-3A4BA568CA4E}	15.0	16.00				SM	Tan, gray, orange fine sand, little silt/clay, trace medium sand	
12	DRV-85-04	{D8294449-9A99-49CD-B761-3A4BA568CA4E}	16.0	16.80				ML	Dark gray silt, little fine sand	
13	DRV-85-04	{D8294449-9A99-49CD-B761-3A4BA568CA4E}	16.8	20.00				SM	Dark gray fine sand, little silt/clay, trace medium sand	
14	DRV-58-R1-99	{63E3DA18-98E7-46B4-A4A4-4FBF66853351}	0.0	3.70				SW	Brown fine to medium SAND and gravel, trace coarse sand, trace silt/clay, trace shell fragments	
15	DRV-58-R2-99	{62AFB8E7-2FF7-42B3-845A-BE0FCF3B10C}	0.0	0.00					NO SAMPLE RECOVERED IN VIBROCORE LINER	
16	DRV-58-R3-99	{FFC0B179-CE56-40CB-B89F-754F319F882A}	0.0	3.00					JET TO 3.0 FEET THEN START VIBRATION	
17	DRV-58-R3-99	{FFC0B179-CE56-40CB-B89F-754F319F882A}	3.0	3.30				SP-SM	BROWN COARSE SAND AND GRAVEL, SOME FINE SAND, LITTLE MEDIUM SAND, TRACE SILT/CLAY	
18	DRV-58-R3-99	{FFC0B179-CE56-40CB-B89F-754F319F882A}	3.3	8.20				SP-SM	ORANGE/TAN FINE SAND, LITTLE SILT/CLAY, TRACE MEDIUM SAND TRACE COARSE SAND	
19	DRV-58-R3-99	{FFC0B179-CE56-40CB-B89F-754F319F882A}	8.2	13.20				SM	ORANGE/TAN FINE SAND, LITTLE SILT/CLAY, TRACE MEDIUM SAND TRACE COARSE SAND	
20	DRV-58-R3-99	{FFC0B179-CE56-40CB-B89F-754F319F882A}	13.2	18.20				SM	ORANGE/TAN FINE SAND, LITTLE SILT/CLAY, TRACE MEDIUM SAND TRACE COARSE SAND	
21	DRV-58-R3-99	{FFC0B179-CE56-40CB-B89F-754F319F882A}	18.2	22.60				SM	ORANGE/TAN FINE SAND, LITTLE SILT/CLAY, TRACE MEDIUM SAND TRACE COARSE SAND	
22	DRV-86-04	{4E89056C-39EE-406D-84A6-95DAC8B143A8}	0.0	2.00				GP	Brown, gray gravel, some medium sand, little coarse sand, trace fine sand, trace silt/clay	
23	DRV-86-04	{4E89056C-39EE-406D-84A6-95DAC8B143A8}	2.0	5.00				SM	Orange, brown, tan fine sand, little silt/clay, trace medium sand	
24	DRV-86-04	{4E89056C-39EE-406D-84A6-95DAC8B143A8}	5.0	7.50				SM	Gray, orange fine sand, little silt/clay, trace medium sand	
25	DRV-86-04	{4E89056C-39EE-406D-84A6-95DAC8B143A8}	7.5	10.00				SM	Orange, brown, tan fine sand, some silt/clay, trace medium sand	
26	DRV-86-04	{4E89056C-39EE-406D-84A6-95DAC8B143A8}	10.0	15.00				SM	Brown, orange fine sand, little silt/clay, trace medium sand, trace coarse sand	
27	DRV-86-04	{4E89056C-39EE-406D-84A6-95DAC8B143A8}	15.0	16.70				SM	Dark gray fine sand, little silt/clay, little medium sand, trace coarse sand, trace gravel	

READY SITE_SAMPLE_LOCATIONS SITE_SAMPLE_STRATIGRAPHY SITE_SAMPLE_SUBSAMPLE PHYSICAL_DISTRI... PHYSICAL_ANALYTES_RESULTS P1 ... 100%



Hole No. DEV-16

DRILLING LOG		DIVISION	INSTALLATION	SHEET OF	SHEETS	
1. PROJECT Delaware River Comprehensive Study			10. SIZE AND TYPE OF BIT Vibracore	1	1	
2. LOCATION (Coordinates or Station) 30° 20' 49.15" 75° 25' 50.09"			11. DATUM FOR ELEVATION SHOW (TM or MSL)			
3. DRILLING AGENCY Buchart-Horn, Inc.			12. MANUFACTURER'S DESIGNATION OF DRILL NA			
4. HOLE NO. (As shown on drawing title and file number) DEV-16			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN 1 DISTURBED 1 UNDISTURBED			
5. NAME OF DRILLER Ocean Survey, Inc.			14. TOTAL NUMBER CORE BOXES NA			
6. DIRECTION OF HOLE VERTICAL INCLINED DEG. FROM VERT.			15. ELEVATION GROUND WATER NA			
7. THICKNESS OF OVERBURDEN NA			16. DATE HOLE STARTED 07/29/91 COMPLETED 07/29/91			
8. DEPTH DRILLED INTO ROCK NA			17. ELEVATION TOP OF HOLE -42.7 ft. MGD			
9. TOTAL DEPTH OF HOLE 20 ft.			18. TOTAL CORE RECOVERY FOR BORING 20 ft.			
19. SIGNATURE OF INSPECTOR						
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	S CODE RECON-ERT	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	a	b	c	d	e	f
	1					Sample 0 - 5 ft.
	2					
	3					
	4					
	5					
	6					
	7					
	8		Grey fine silt			Sample 7.4 - 10 ft.
	9					
	10					
	11		Grey silty clay, shell layer Interspersed organic layers 11.25 to 12.25			
	12					
	13		Fine clay, scattered shells			Sample 12.2 - 15.0 ft.
	14					
	15					
	16					
	17					
	18					Sample 15 - 20 ft. Sand lenses in sample
	19					
	20		19.7 to 19.8 fine sand pockets			

PROJECT Delaware River Comprehensive Study

HOLE NO. DEV-16



A60

Appendix A Delaware Main Channel Sediment Data



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RSM Data Management Initiative

UPs – 3 Positives from effort

- Promotes integration of individual projects and actions into a systems approach by identifying overlapping data between individual projects
- A regional GIS-based data management and decision support tool will greatly enhance project management and communication on the major navigation projects and projects related to the navigation projects
- Data management tool could be shared with other agencies and stakeholders to better communicate project operations and the USACE/NAP navigation, FRM and ER missions



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RSM Data Management Initiative

DOWNs – 3 Negatives from effort

- Difficult to justify the regional approach at the project level during feasibility
- Human error is a concern with data entry. Some data is handwritten on field sheets, 20-25 years ago. Excel spreadsheet is cumbersome with thousands of rows on some sheets.
- Time consuming effort



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RSM Data Management Initiative

NAP RSM PDT

Scott Sanderson – Project Manager
Colleen Rourke – GIS Coordinator
Eric Majusiak – Civil Engineer

Stakeholders/Partners

- Delaware Estuary Regional Sediment Management Implementation Workgroup
 - USEPA, NOAA, USGS & NRCS
 - NJDOT & NJDEP
 - DNREC,
 - Philadelphia Water Department
 - Delaware River Basin Commission
 - Partnership for the Delaware Estuary
 - Philadelphia Regional Port Authority

What key leveraging opportunity(s) did stakeholders/partners provide?

- August 2013 – Developed Delaware Estuary RSM Plan
- Extend the useful life of existing CDFs
- Coordinate projects/management activities with complementary and additive benefits to environment and economy
- Clarify and streamline regulatory review process for sediment management and dredged material beneficial use activities
- Develop shared regional data management systems, models, and other tools.
- Local outreach/collaboration



FY16 RSM-EWN IPR RSM Data Management Initiative

Value to the Nation

- Data management tool could be shared with other agencies and stakeholders to better communicate project operations and the USACE navigation, FRM and ER missions
- Incorporation of RSM into standard business practices via development of RSM strategies/implementation practices will improve life cycle costs and project benefits
- Promotes combining and coordinating Federal projects from multiple business lines (as well as multiple agencies) to achieve greater environmental and economic benefits

