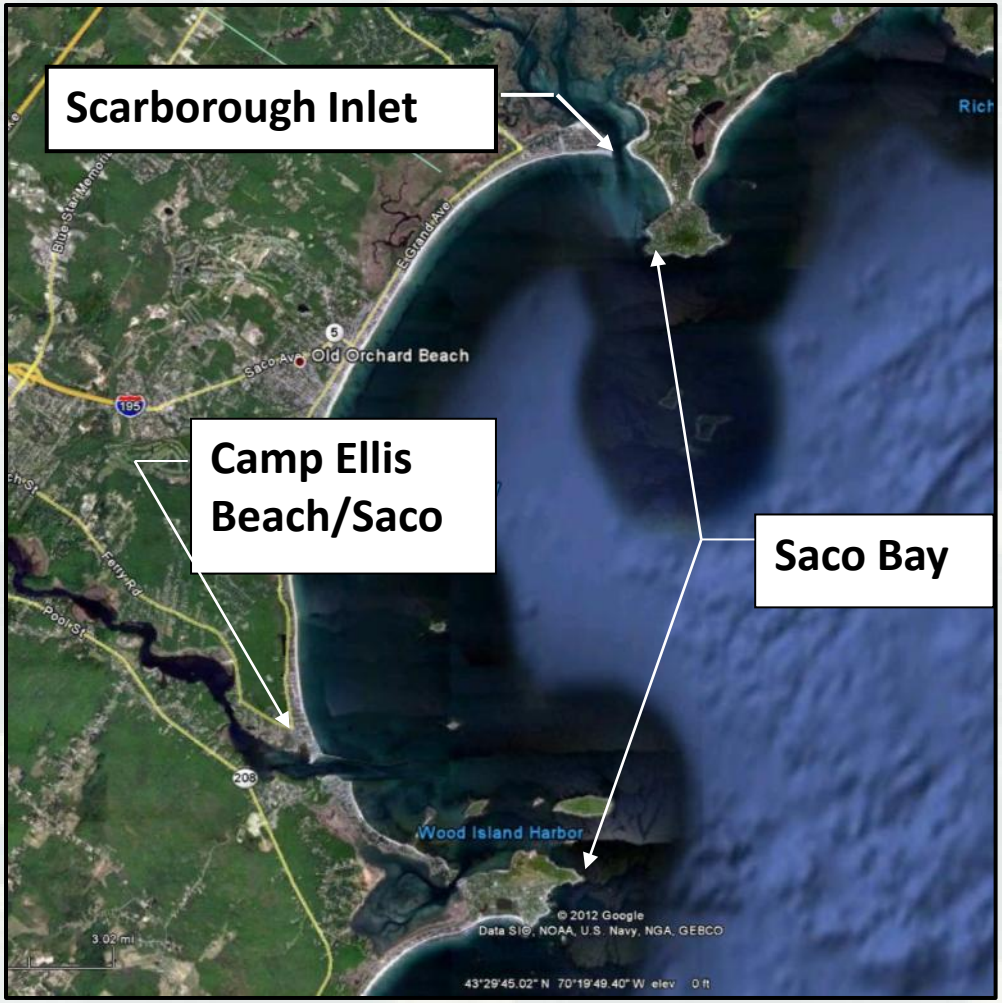
RSM FY14 IPR

New England District, Saco Bay Maine RSM Study

John Winkelman and Andrew Morang

Description/Challenge

- Need to manage sediment holistically and cost efficiently in Saco Bay
- Two Federal Navigation Channels
  - Saco River/Camp Ellis
  - Scarborough River Inlet
- Section 111 at Camp Ellis Beach requires sand for construction and maintenance of beach
- Uncertainty in the required sediment at the various locations to support a stable shoreline/system
- Towns/Cities all want sand



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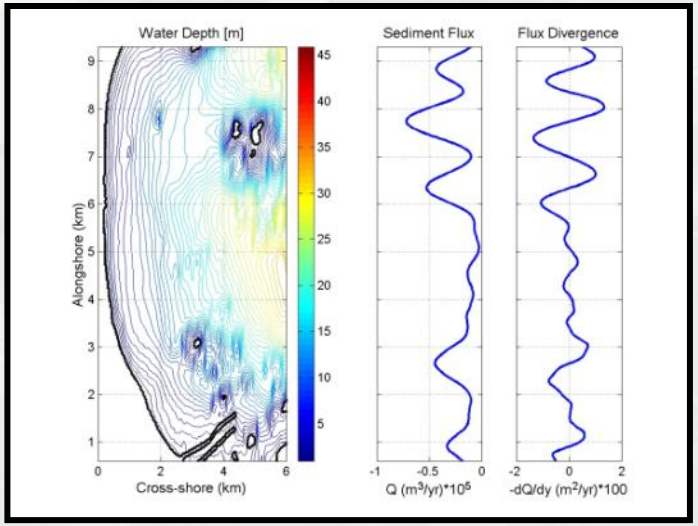
Goals/Issues to Address

- Develop a strategy to better manage the dredged sand, to minimize cost, maximize environmental benefits, and minimize down drift impacts.
- To optimize the use of maintenance dredge sand from the Saco River and Scarborough Inlets for the Camp Ellis Beach Section 111 project and to reduce operational costs.



Task 1: Update Saco Bay and Scarborough, Maine Shoreline Change Maps and Sediment Transport Potential

Task2: Compile Dredge Records and Develop Dredge Placement Maps

Task 3: Bathymetric Mapping/Change Analysis

Task 4: Coastal Geomorphology

Task 5: Sediment Budgets for the Saco River and Scarborough Inlets and for Saco Bay.

Task 6: RSM Strategy

Task 7: Project Summary Report

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Approach

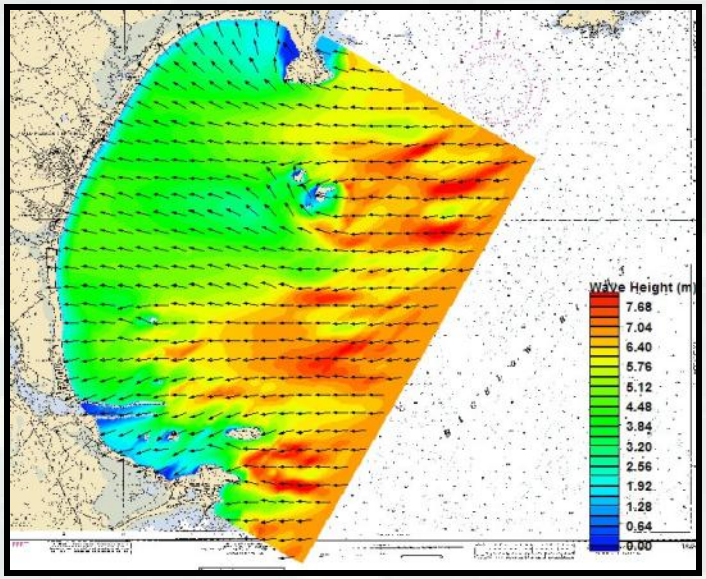
- Develop a sediment budget at each inlet and for the entire bay. This will lead directly to a RSM strategy.
- Update existing information
- Utilize in house, contracting, and ERDC expertise

Benefits to O&M, FRM, Environmental

- Cost savings to O&M will be sought through:
  - lower placement costs
  - more efficient operations
  - perhaps lessening dredge requirements
- Provide a plan to O&M for dredge material placement
- Provide greater certainty of down drift impacts of placing sand east of Scarborough Inlet (environmental and recreational navigation)
- Provide a more cost effective source of sand for the Camp Ellis Beach Section 111 Project

Models, Tools, Databases, etc Used

- Shoreline Mapping in ArcGIS and USGS DSAS
- Bathymetric mapping – SMS and ArcGIS
- Sediment transport pot. – STWAVE and non-linear sediment transport model (WHG)
- Sediment Budget - SBAS
- NCMP data
- WIS Hindcast data



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District and ERDC PDT Members

- John Winkelman – Engineering
- Mark Habel - Planning
- Ed O'Donnell – Navigation
- Mike Walsh – Navigation
- Andrew Morang – CHL (Sediment Budget Analysis)

Stakeholders and Partners

- State of Maine Geologic Survey
- City of Saco, ME
- City of Scarborough, ME
- Town of Biddeford, ME

Leveraging/Collaborative Opportunities

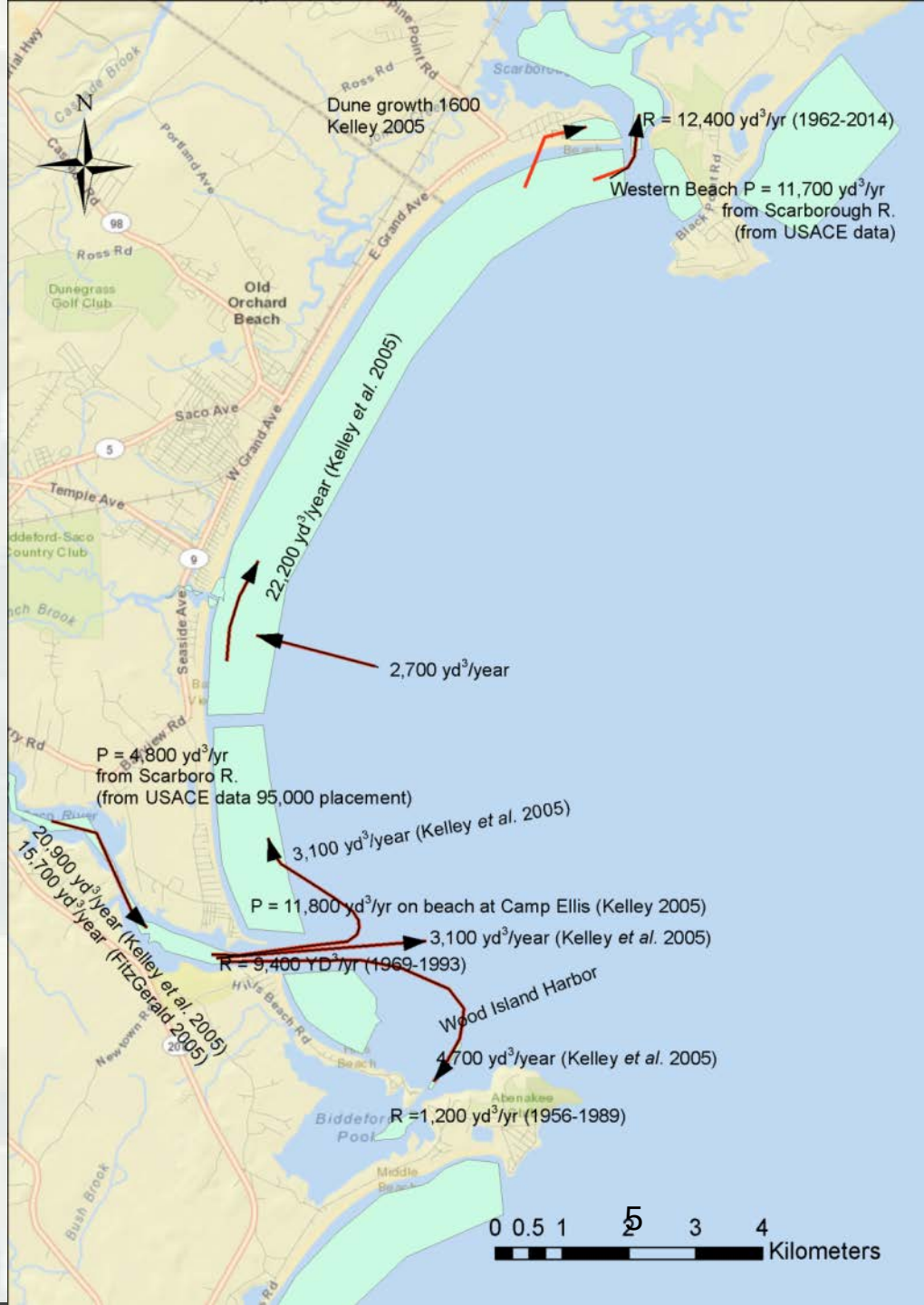
- Camp Ellis Beach, Saco, ME Section 111
- Scarborough, ME Inlet Maintenance Dredge Material Placement Study
- State of Maine research efforts through UMaine and Geologic Survey

Tasks Currently Being Worked by CHL in 2014

1. Reviewed literature and contractor reports

2. Tabulated Saco and Scarborough dredge data from NAE

3. Developed sediment budget cells in ArcMap software.



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Accomplishments

- Significant work done already in previous studies
- Contract to update shoreline movement mapping and sediment transport potential modeling has been completed
- Dredge records compiled
- **FY 14 –Tasks 4 and 5 are underway**
- **FY 15 - Tasks 6 and 7 are in FY 15 proposal to be submitted this week**

Volume of Sediment Moved

- 0.00 yds^3 moved

- Saco Inlet dredging estimated at 8,000 yds^3/yr
- Scarborough Inlet dredging estimated 20k to 25k yds^3/yr (100k cyds/5 yrs)
- Volume reduction to system caused by USACE – 13,000 to 22,000 yds^3/yr (based on UM Sediment Budget)
- Volume needed to support Section 111 beach fill maintenance - 15,600 yds^3/yr