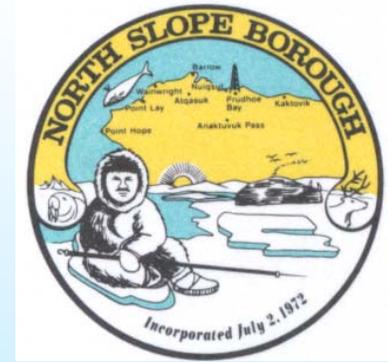




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Barrow Coastal Storm Damage Reduction Study

Scoping Meeting
June 12, 2003



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Presentation Outline

- 1. Purpose of Scoping Meeting**
- 2. Corps of Engineers/North Slope Borough Study Team**
- 3. Overview of Corps Study Process**
- 4. Storm Damage Reduction Feasibility Study**
- 5. Your Comments, Concerns, Questions, and Ideas**



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Scoping Meeting Purpose

The purpose of this meeting is to explain to the community of Barrow the feasibility study and the environmental impact statement the Corps and the North Slope Borough will be working on over the next few years and to ask you for your ideas regarding:

- What are the real water resources problems?
- What suggestions do you have to resolve these problems?
- What factors should the study team consider in developing, evaluating and comparing alternatives?
- What are the potential environmental effects caused by the alternatives?



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Barrow Study Team

- **The U.S. Army Corps of Engineers (Corps) is the lead Federal agency providing 50 percent of the study cost.**
- **The Corps is responsible for the study, which includes plan formulation, coastal engineering, economics, environmental studies and report/Environmental Impact Statement preparation.**
- **The North Slope Borough is the non-Federal sponsor. They provide the other 50 percent of the study cost in cash and in-kind services.**
- **In-kind services have been agreed upon, and include project management, surveying, GIS mapping, equipment and logistical support.**



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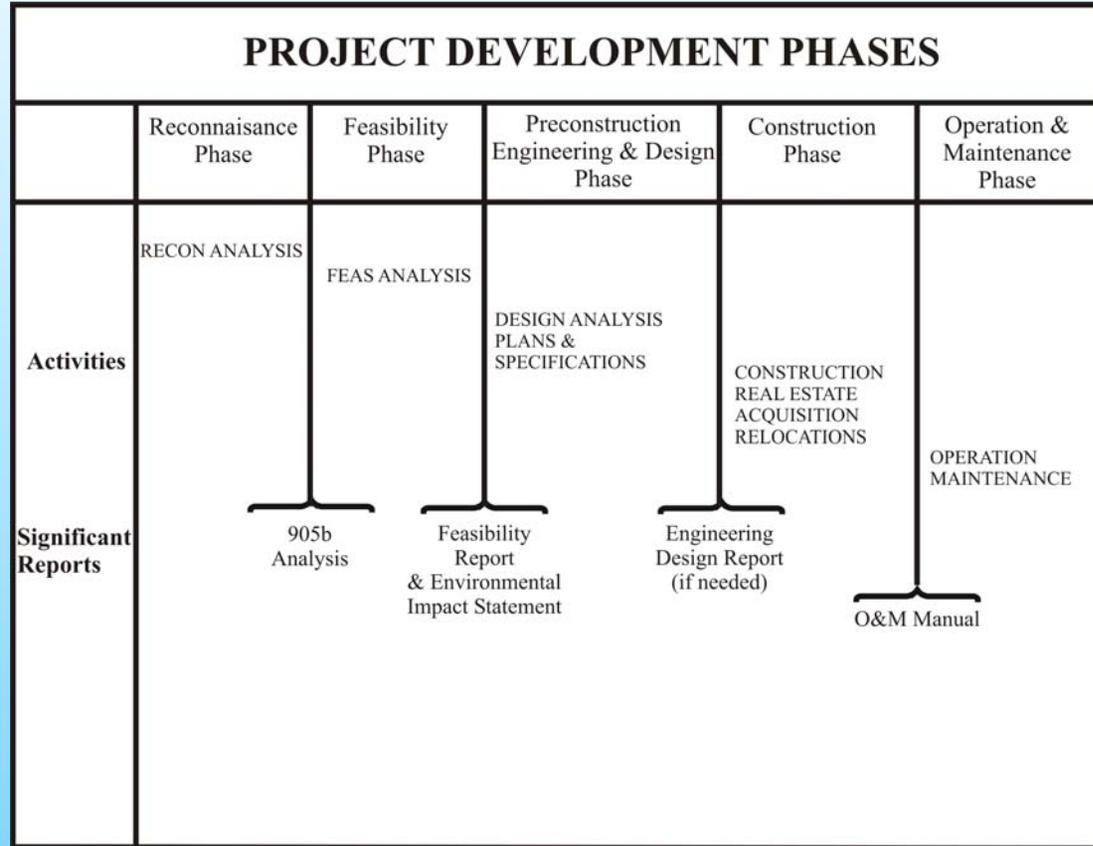
Barrow Study Team

- **NSB Project Management – Curt Thomas**
- **Corps Project Management – Andrea Elconin**
- **Corps Project Formulation– Forest Brooks**
- **Corps Environmental Resources – Lizette Boyer**
- **Corps Cultural Resources – Diane Hanson**
- **Corps Hydraulic Design – Dee Ginter**
- **Corps Economics – Brian Harper**
- **Soils and Geology – Jim Robson**
- **U.S. Fish and Wildlife Service – Neesha Wendling**



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Corps Project Process





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Feasibility Study Purpose

- **The purpose of a feasibility study is to evaluate storm damage reduction measures and determine the plan that best meets the “Principles and Guidelines” of the Water Resources Council and other criteria.**
 - a. Based on evaluation of alternative plans**
 - b. Economically justifiable**
 - c. Environmentally acceptable**
 - d. Meets coastal engineering design standards**
- **Study makes a recommendation to Corps Headquarters and Congress on whether to spend federal funds to proceed with project construction.**



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Feasibility Study Phases

Phase 1 – Feb. 2003 to Sep. 2005

- **Develop basic information**
- **Define existing and without project conditions**
- **Identify alternatives**

Phase 2 – Oct. 2005 to Jan. 2007

- **Evaluate and compare detailed alternatives**

Phase 3 – Feb. 2007 to Dec. 2008

- **Public review of draft feasibility report and draft EIS**
- **Division Engineer notice with final report and final EIS**
Washington D.C. level review



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Preliminary Planning Objectives

- **Provide relief from storm damage and shoreline erosion that threatens homes, shoreline bluffs, and critical community infrastructure.**
- **Reduce flood damages to critical public and private facilities.**
- **If incidental to gravel excavation, improve navigation for lightering barge loading and unloading.**
- **Protect the sensitive arctic environment and mitigate significant project impacts where reasonable.**
- **Identify and develop practical ecosystem restoration opportunities.**



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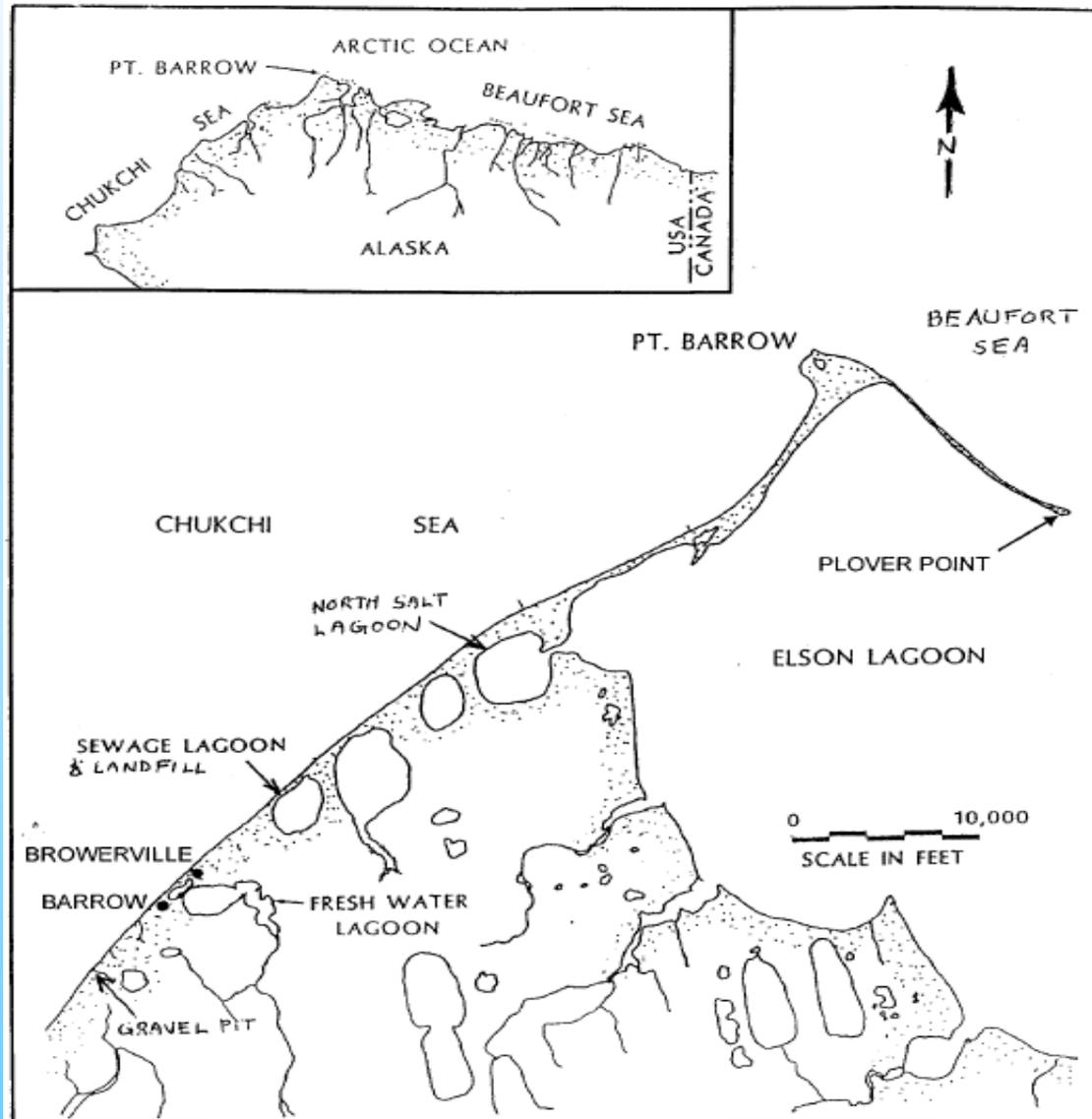


FIGURE 1. LOCATION MAP



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Preliminary Alternatives

Beach Nourishment Alone

- Add 100 feet of width to the beach southwest of Barrow to a point about 500 feet northeast of the Barrow landfill.
- Roadway along the shore would be raised to +16 MSL.
- Initial fill requirement: 2 million cubic yards (cy) for beach, 500,000 cy for road.
- Annual beach nourishment requirement: 10,000 cy /yr.



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Preliminary Alternatives

Beach Nourishment with Concrete Mattress Revetment

- Add 50 feet of width to the beach southwest of Barrow to a point about 500 feet northeast of the Barrow landfill.
- Revetment added to the seaward slope of roadway and bluffs.
- Revetment underlain with filter cloth; will extend from +16 feet to mean sea level.
- Initial fill requirements: 1 million cy for beach; 500,000 cy for road.
- Annual beach nourishment requirement: 10,000 cy/yr



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Geotech

Purpose: Identify gravel source locations in Barrow area.

Likely Sites: (1) BIA site—running south from the gravel pits west of Barrow for about 15 miles.

(2) Cooper Island—located on north side of Elson Lagoon, about 38 miles east of Barrow.

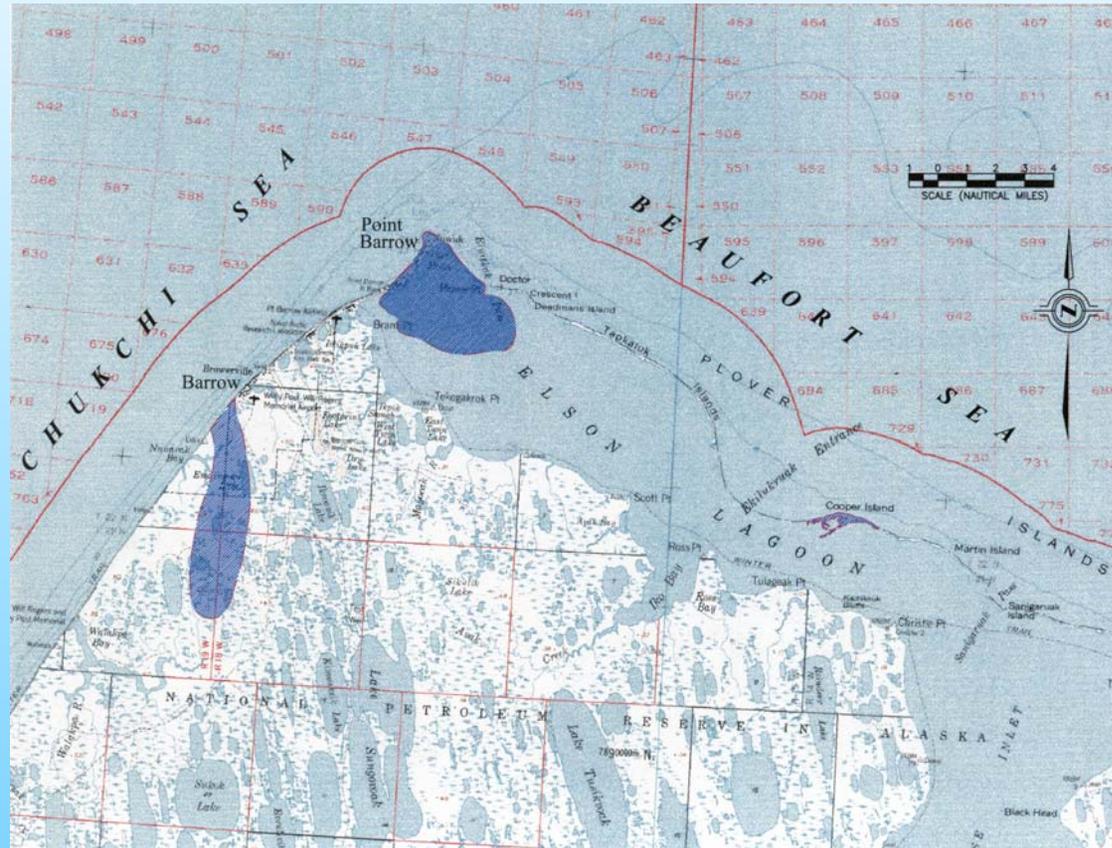
Program: 2003—after September 1, drill holes to define BIA site and map surface desposits on Cooper Island.

2004—drill holes to define Cooper Island gravels.



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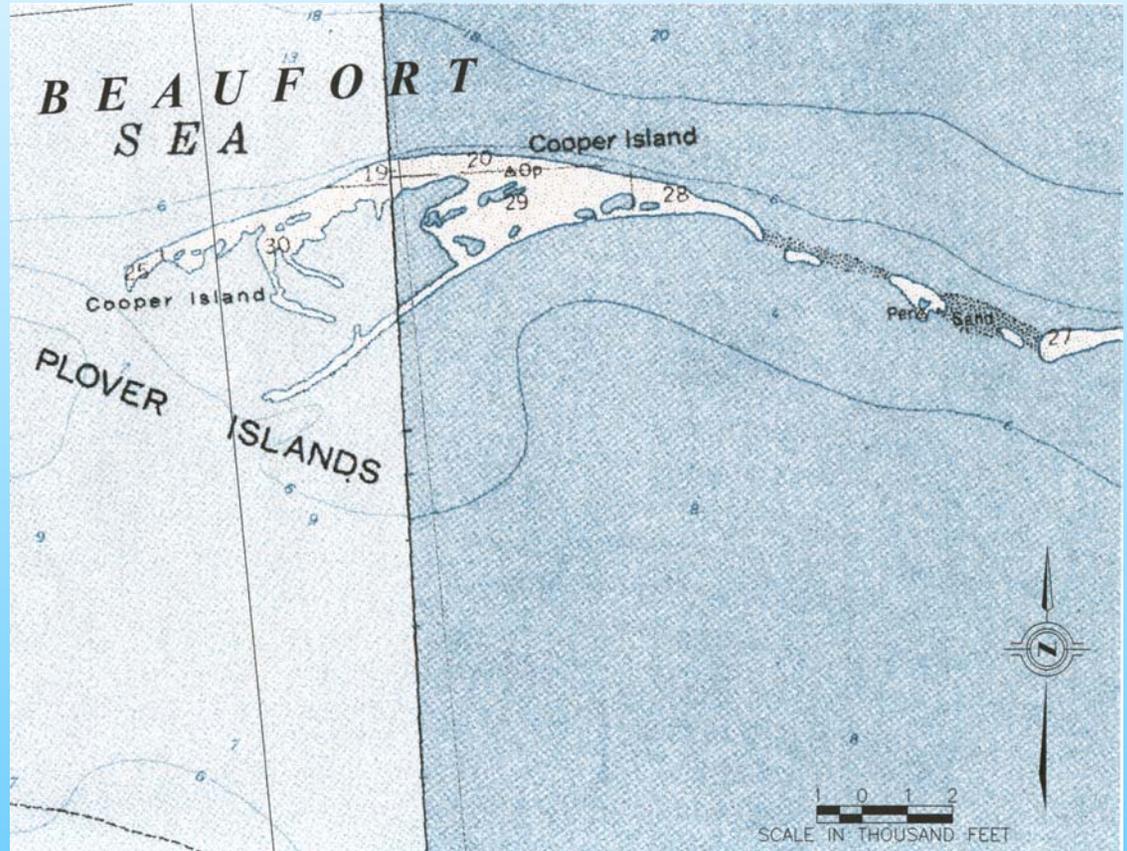
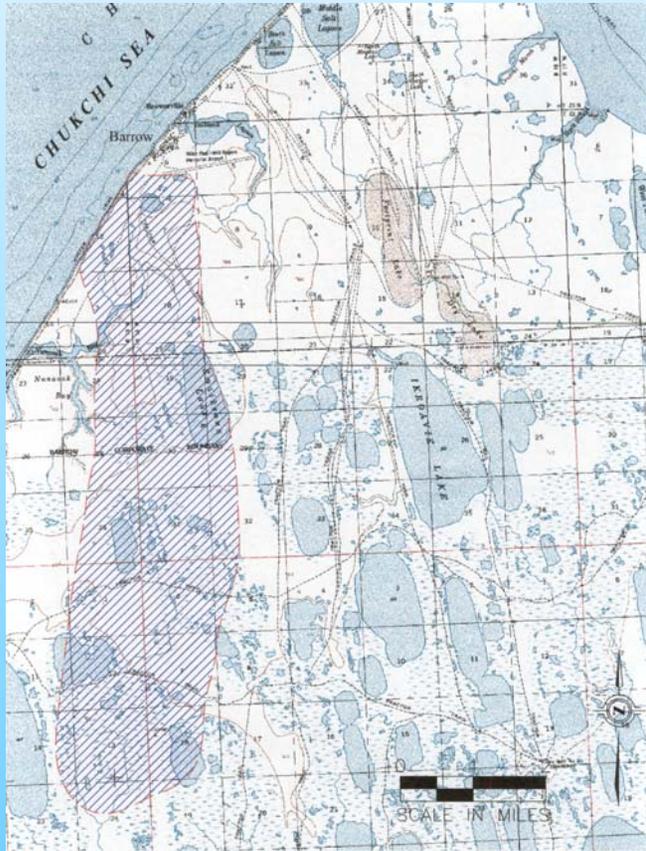
Geotech





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Geotech





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Economics

NED Benefits and Costs:

- **Average Annual Costs**
- **Benefits**
- **Benefits-Cost Ratios**
- **Net Benefits**



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Economics

Determine:

- **Existing Conditions**
- **Without-Project Conditions**
 - a. **Cost of breach to the sewage lagoon**
 - b. **Erosion to other areas**
 - c. **Damages to the utilidor**
 - d. **Destruction of homes and businesses**
 - e. **Damages to public and private facilities**
 - f. **Damages to road**



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Economics

Evaluate Existing and Without Project Conditions:

- **Recreation Analysis**
- **Subsistence Analysis**
- **Operating and Opportunity Cost Savings**
- **Marine Assessment**
- **Moorage Demand Analysis**



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Economics

Benefit Analysis:

- **Beach Nourishment benefits**
- **Storm damage reduction benefits**
- **Flood damage reduction benefits**
- **Other benefits**



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Hydraulics and Hydrology

Work to be Performed by the Corps

Instrumentation/Data Collection

- **Two current meters/wave gages to be deployed summer 03 and 04**
- **Deployment depths – approximately 16 feet and 33 feet**



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Hydraulics and Hydrology

Work to be Performed by the Corps

- **20-Year Wind and Wave Hindcast for the Open Water Months.**
 - a. Provides information on typical open water wind and wave climate.
 - b. Provides data for sediment transport analysis.
- **50-Year Extreme Wind and Wave Event Analysis.**
 - a. Provides information on severity of storms.
 - b. Provides data for sediment transport analysis.
- **Circulation Study to Simulate Along Shore Currents.**
 - Provides information for sediment transport analysis.



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Hydraulics and Hydrology

Work to be Performed by the Corps

- **Water Level Analysis for Extreme Storm Analysis**
 - a. Provides information for sediment transport analysis.
 - b. Provides information on flood analysis.
- **Sediment Transport Study**

Provides information on beach fill longevity and maintenance requirements.
- **Beach Fill Study**

Study performed to determine the steady state shape of the beach with the beach fill material available – profiles specific to grain size can increase beach longevity and reduce maintenance.



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Hydraulics and Hydrology

Work to be Performed by the Corps

- **Analysis of Rate of Beach Loss**

Provides data on the severity of the problem.

- **Evaluate Flood Potential**

Provides the possible extent of damages that could occur in an extreme event.

- **Evaluate Beach Maintenance Options**

Analysis to perform beach maintenance in the most efficient manner.



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National Environmental Policy Act

Purpose of Law

- To ensure that all project and environmental information is known to citizens before decisions are made.
- To report to the public in the EIS the significant environmental consequences of the project alternatives.
- To give the public the right to comment on and be involved in the project.



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National Environmental Policy Act

Scoping

- **Process to define affected public and agency concerns and issues.**
- **Determines scope and significance of issues to be analyzed in the EIS.**
- **Is ongoing process that continues throughout planning of project.**
- **Identifies resources and planning issues.**
- **Initiates preparation of the EIS.**



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National Environmental Policy Act

The EIS will assess, analyze and compare the environmental effects of project alternatives, including effects on natural resources, social values, and cultural resources.

- **Direct effects—caused by action.**
- **Indirect effects—occurring as a result of the action, but in another place or at a later time, such as changes in land use.**
- **Action can require significant mitigation.**



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National Environmental Policy Act

Significant Resources Recognized by Law

- **Cultural Resources**
- **Endangered Species**
- **Wetlands**
- **Essential Habitat**
- **Marine Mammals**
- **Migrating Birds**



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National Environmental Policy Act

Environmental Questions

- **Impact of beach nourishment on:**
 - a. **Beach access, boat launching.**
 - b. **Beach ecology—invertebrate and plant life, shorebird feeding, near shore fish-capelin spawning.**
- **Borrow source impacts:**
 - a. **Barrier Islands—impacts to nesting sea birds, sediment stability, protection of lagoon, haul out for marine mammals.**
 - b. **Elson Lagoon—bowhead whale feeding, fish habitat.**
 - c. **Tundra—damage to tundra vegetation, permafrost, and impacts to tundra ponds, nesting waterfowl, songbirds, snowy owls, threatened Steller's eider, and polar bear denning sites.**