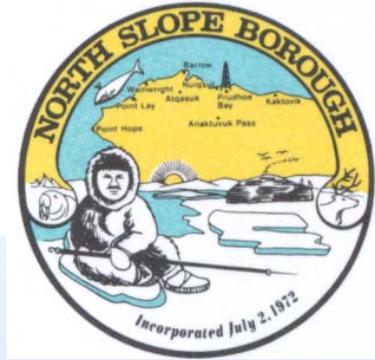




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# **Barrow Storm Damage Reduction Study**

*For the North Slope Borough*

*Barrow, Alaska*

*January 7, 2003*



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# *Presentation Outline*

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- 1. Overview of Corps Project Process**
- 2. Introduction: The Corps of Engineers**
- 3. Storm Damage Reduction Feasibility Study Roadmap**
- 4. Feasibility Study Benefits and Risks to the North Slope Borough**



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# ***1. Introduction: The Corps of Engineers***

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## Who We Are

**We are representatives of the Civil Works Program of the  
Alaska District of the Army Corps of Engineers**

**We are located on Elmendorf AFB in Anchorage**





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## *What We Do*

- **The Corps is the federal design and construction agency involved in many flood and storm damage reduction projects throughout the U.S.**

**Chena River  
Flood Control  
Project near  
Fairbanks**





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## *Intro to the Corps*

- **The Corps of Engineers' storm damage reduction authority is for reducing tidal flooding by building protective structures, and by raising the heights of natural beaches.**
- **Corps of Engineers process involves cost-shared funding for studies, construction, and operations and maintenance.**



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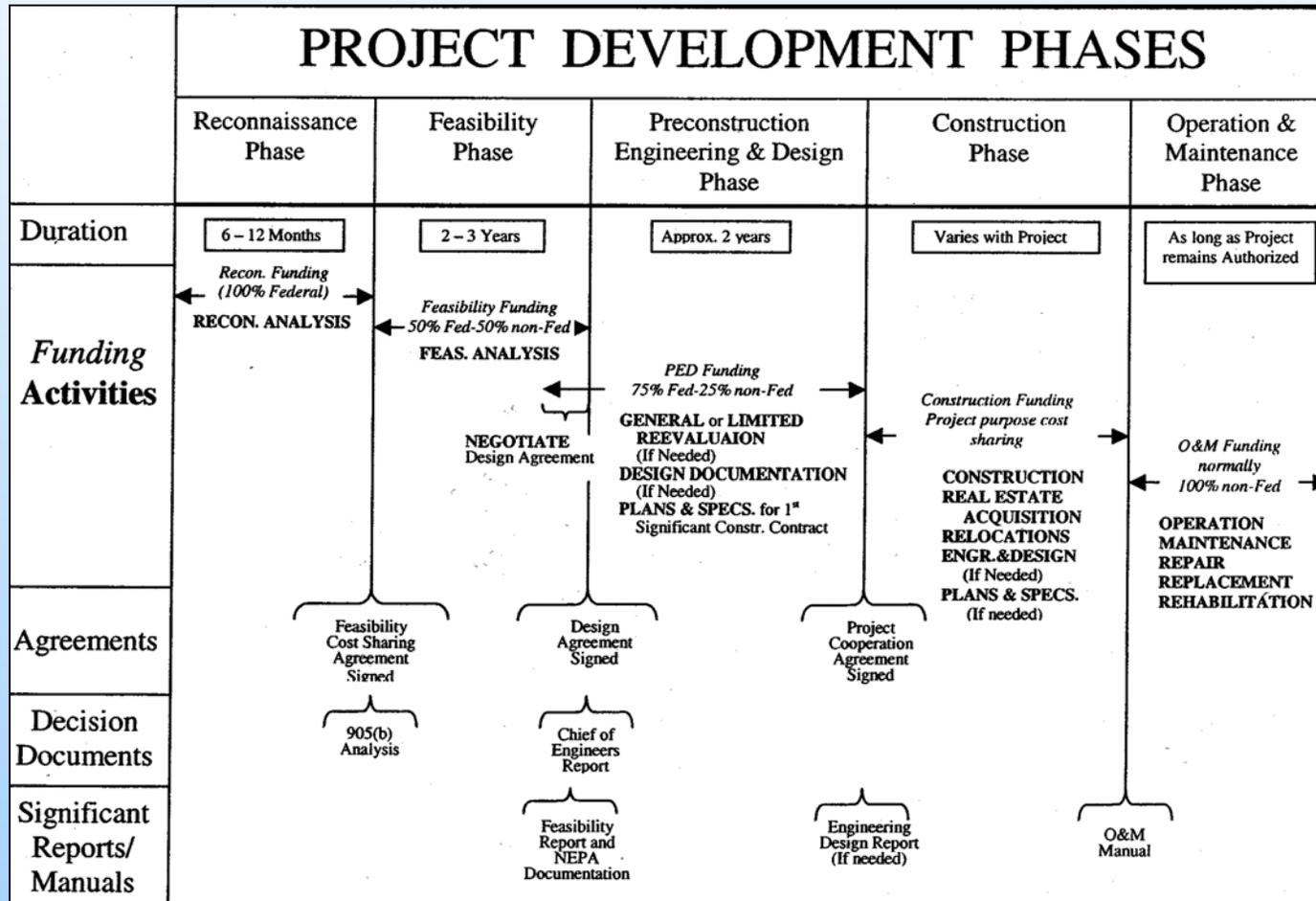
## ***2. Overview of Corps Project Process***

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# Project Phases



2000

2002

2008

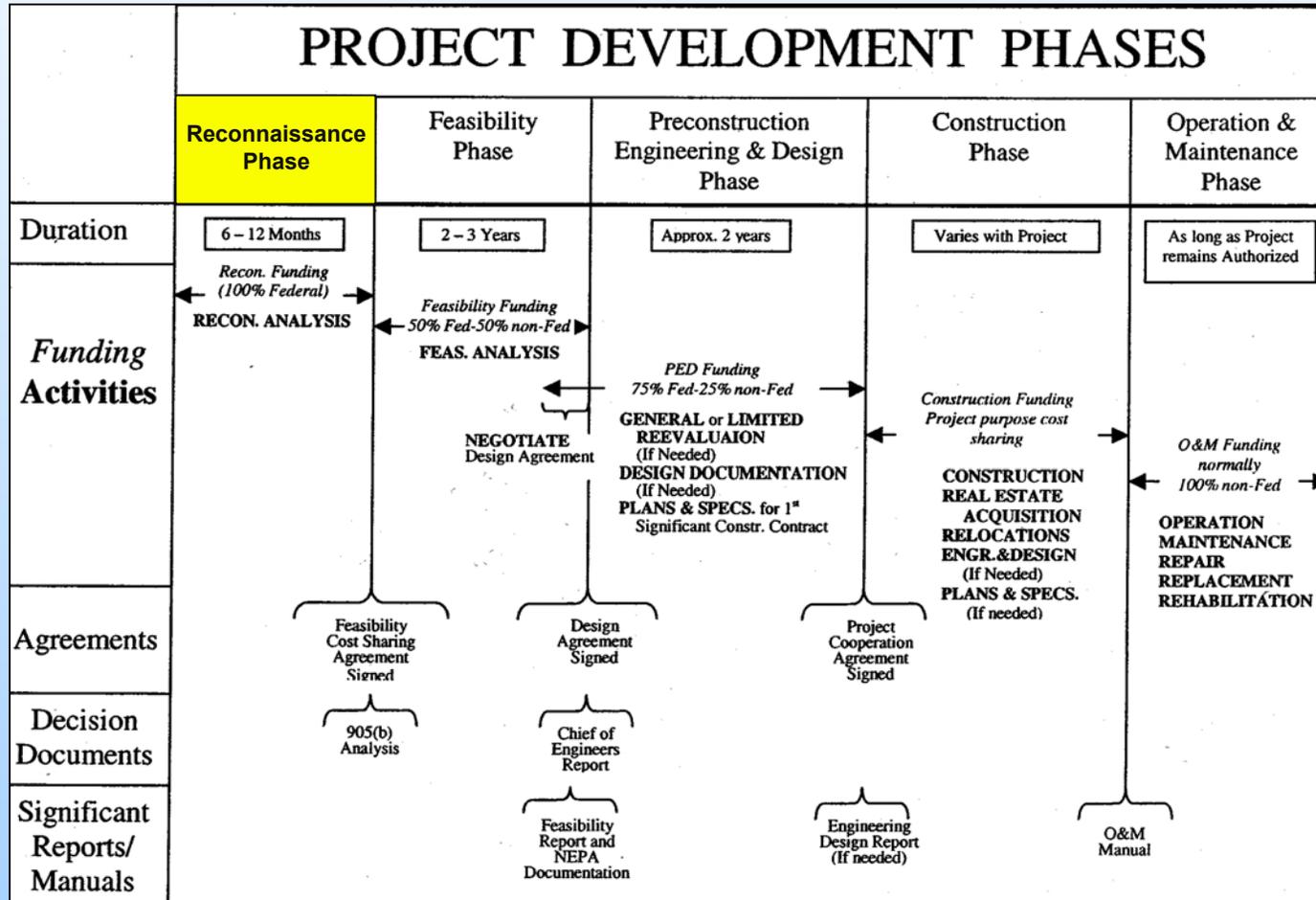
2010

2012



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# Project Phases



2000

2002

2008

2010

2012



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## *Project Phases*

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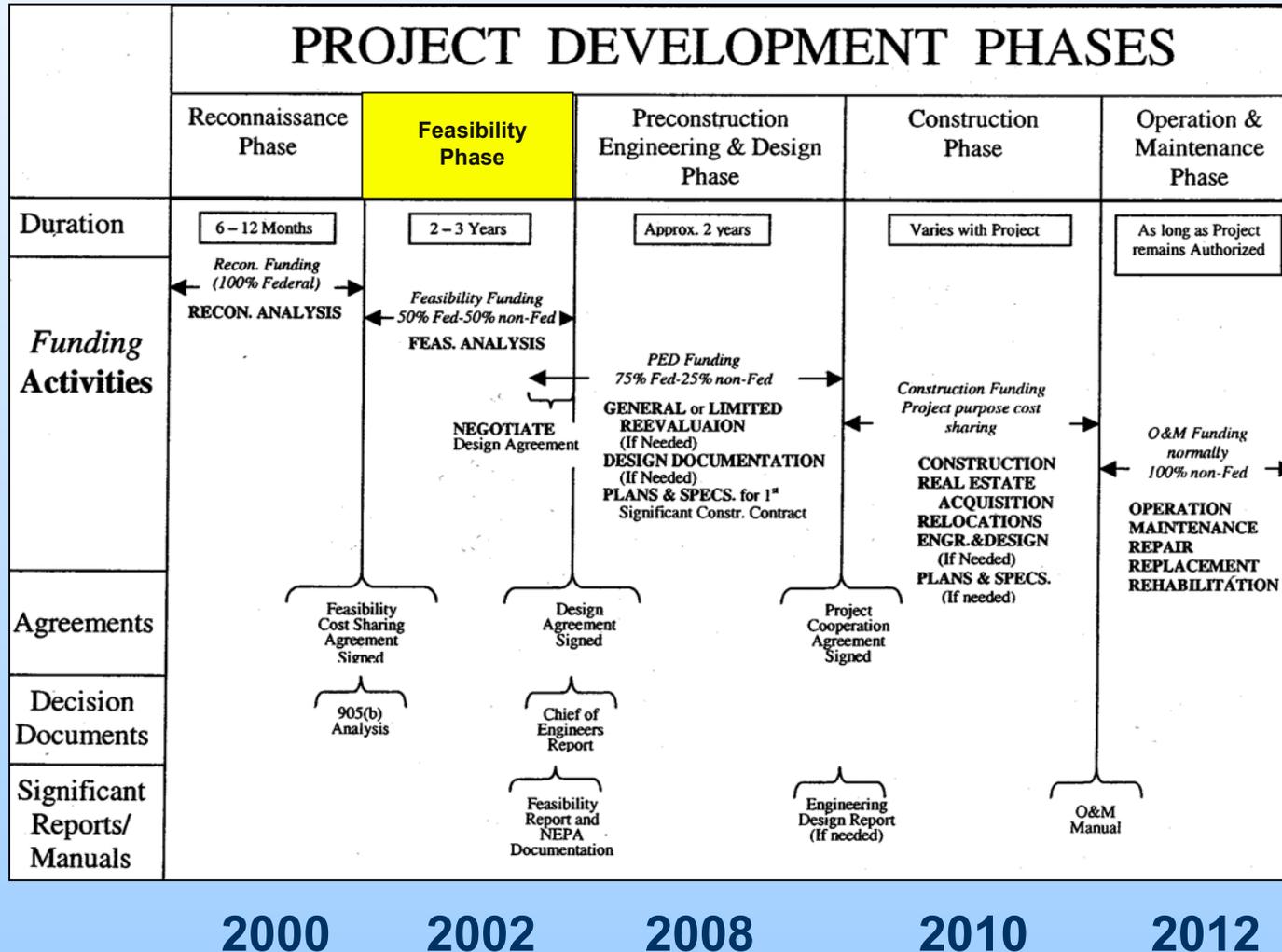
### *Reconnaissance Phase:*

- **Completed in October 2001, it showed a federal interest in continuing to the Feasibility Phase**
- **Result of this phase was the 905b Report, and preparation of a Feasibility Study Cost Sharing Agreement.**



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# Project Phases





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## *Project Phases*

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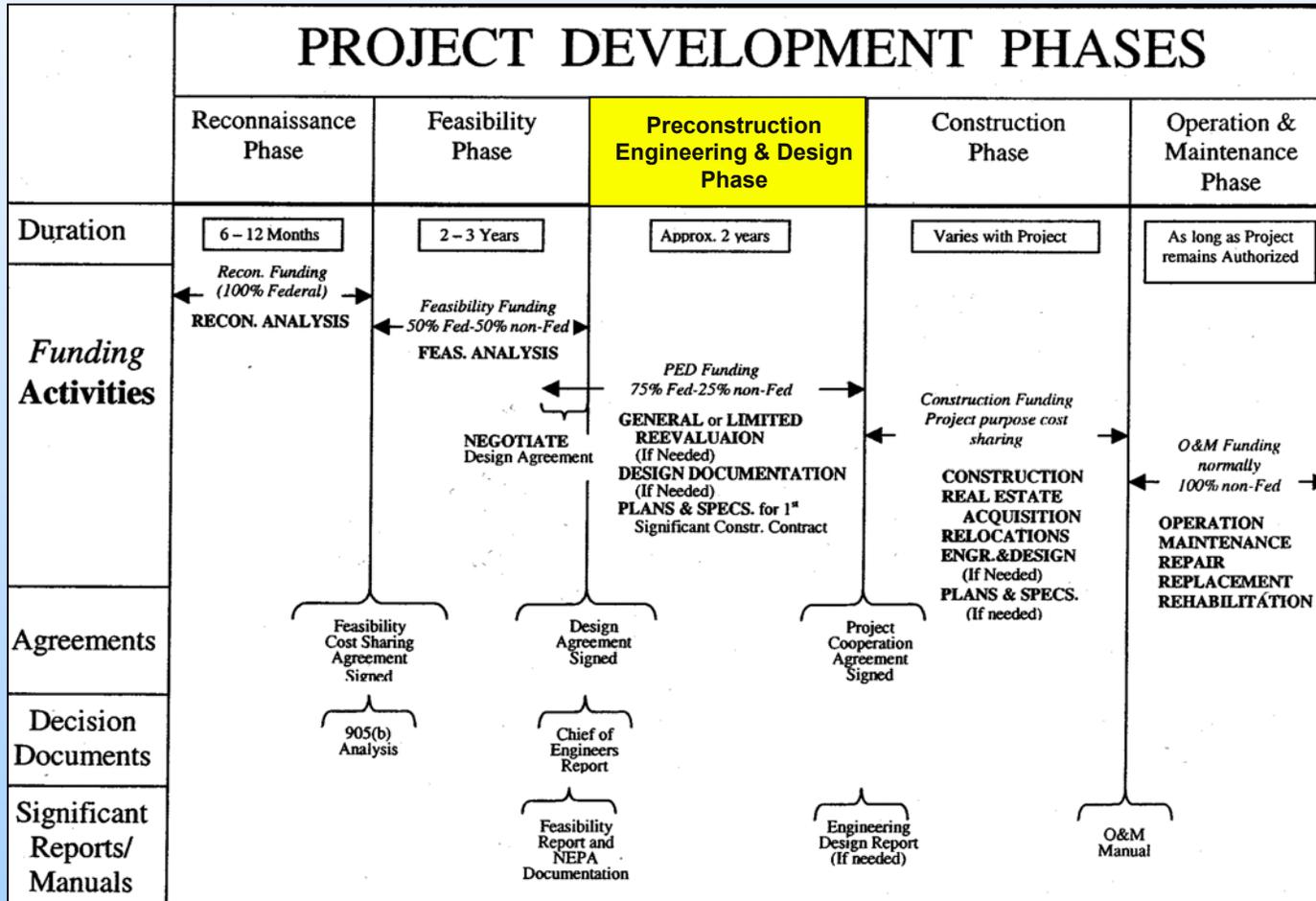
### ***Feasibility Phase:***

- **This phase would begin with the signing of the Feasibility Study Cost Sharing Agreement and end around January 2008, five years from now.**
- **It would result in a Feasibility Report, needed by Congress to authorize a federal project.**



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# Project Phases



2000

2002

2008

2010

2012



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## *Project Phases*

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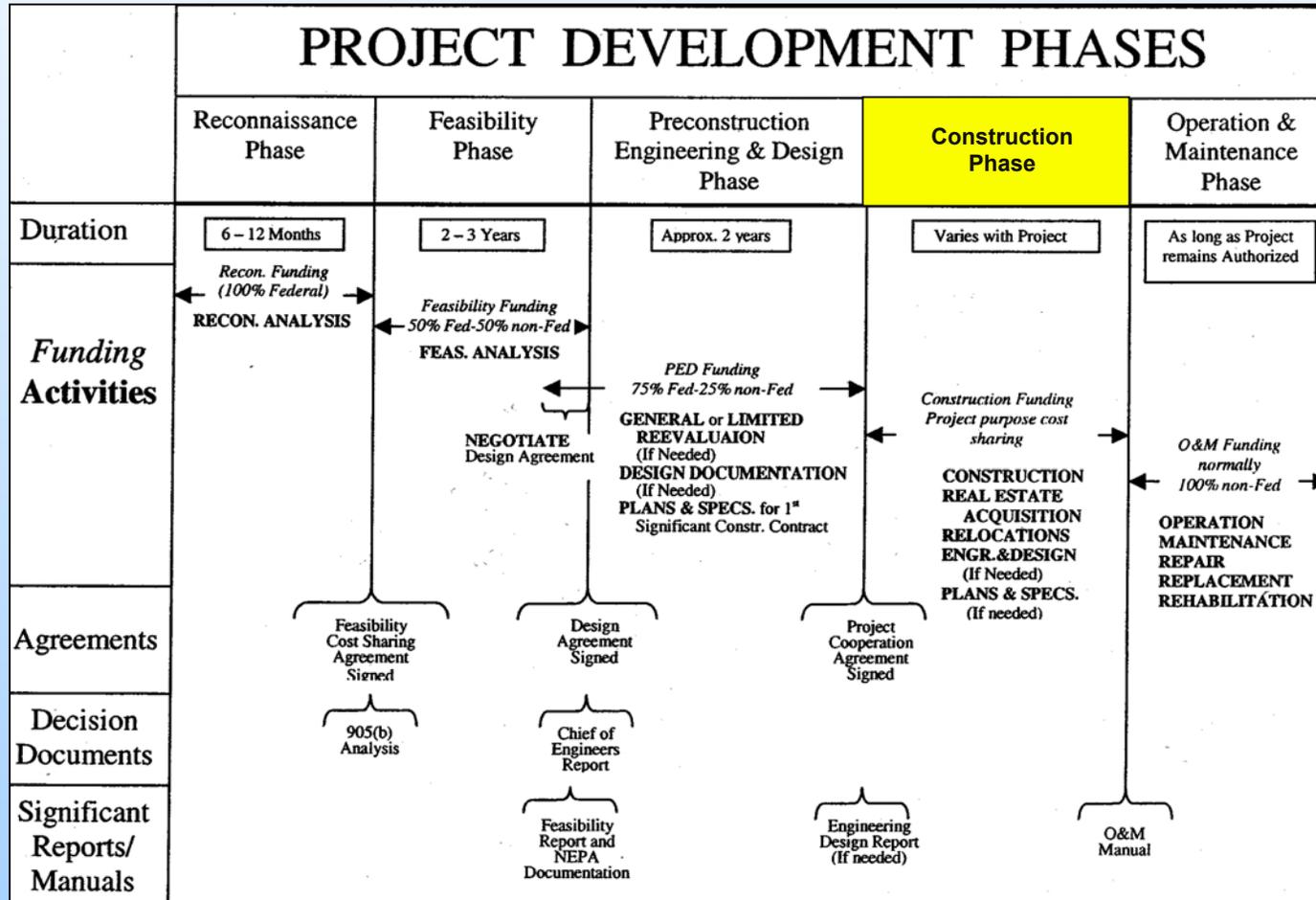
### ***Preconstruction Engineering and Design Phase:***

- **This phase would begin upon submittal of the Feasibility Report to Headquarters, if the report recommended a project.**



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# Project Phases



2000

2002

2008

2010

2012



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## *Project Phases*

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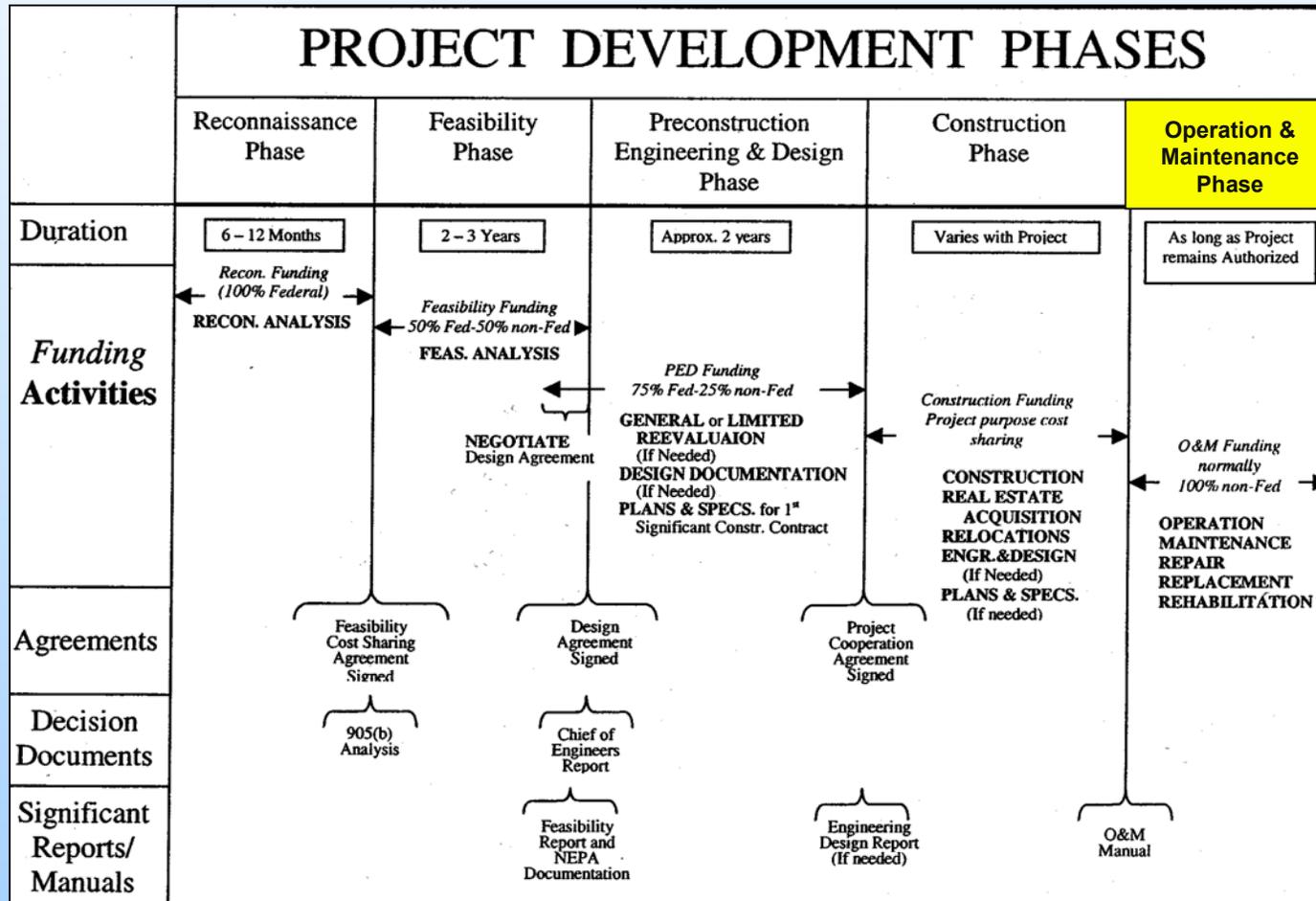
***Construction Phase:*** This phase would tentatively begin in 2010.

- **Congress** must **authorize the start of construction** and **appropriate funds** before the Corps can proceed with construction.
- A construction agreement called a “Project Cooperation Agreement” must be signed by the Borough and Assistant Secretary of the Army.
- Local sponsor must acquire lands, easements, and rights-of-way before advertising a construction contract.



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# Project Phases



2000

2002

2008

2010

2012



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## *Project Phases*

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### *Operation and Maintenance Phase:*

- **This phase would begin after construction completion in approximately 2012.**
- **The level of O&M required would depend on the project constructed.**



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## **Cost Sharing**

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**Reconnaissance: 100% Federal**

**Feasibility Study: 50% Federal, 50% Local with in-kind services**

**Preconstruction, Engineering, and Design: 75% Federal and 25% Local with in-kind services limited to design team participation**



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## ***Construction Cost Sharing***

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- **100% credit for lands, easements, and rights of way against Borough's portion of construction cost.**
- **Remaining costs assigned by ownership of lands being protected**

**Federal Property: 100% Federal Cost**

**Private Property: 100% Local**

**Private Developed Land where criteria for access to shores met: 65% Federal & 35% Local**

**Non-Federal Public Shores used for parks and recreation: 50% Federal and 50% Local**



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## ***Cost Sharing, Continued***

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### **Operation and Maintenance:**

**Federal Property: 100% Federal Cost**

**Private Property: 100% Local**

**Private Land where criteria for access to shores met: 50% Federal & 50% Local**

**Non-Federal Public Shores used for parks and recreation: 50% Federal and 50% Local**



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### ***3. Storm Damage Reduction Feasibility Study Roadmap***



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## *Feasibility Phase Purpose*

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- **Purpose of feasibility study is to evaluate storm damage reduction measures and determine the plan which 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. Environmental 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 Cost Sharing Agreement*

The Feasibility Study Cost Sharing Agreement has three parts:

- Legal Agreement (7 pages)
- Project Management Plan (40 pages) – Scope of work and schedule
- Cost Estimate (16 pages)





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## Terminology Federal Agencies

- The US Army Corps of Engineers (**Corps**) is the lead Federal agency providing 50 percent of the cost of the study.
- The **Corps** is responsible for the study which includes plan formulation, coastal engineering, economics, environmental studies, and report/Environmental Impact Statement preparation.
- The **Non-Federal Sponsor** is the North Slope Borough which provides input to the study through cash contributions and “in-kind” services.
- **In-Kind services** have been agreed upon, and include surveying, GIS mapping, equipment and logistical support.



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# Legal Agreement

## Legal Agreement (7 pages)

- **Commits to Cost Sharing**
  - 50 % Federal
  - 50 % Non-Federal thru cash and in-kind services
- **Payment of Funds – Funds must be deposited in escrow or send check to Corps **in advance** of each fiscal year**
- **Termination – Either party can terminate with **30 days notice****
- **Final Accounting – At the end of the study period, accounting must show funds are **shared 50/50**.**



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# *Project Management Plan*

## **Project Management Plan (40 pages)**

- **Divides work tasks between Corps and Sponsor**
- **PMP assures study is well thought-out and planned**
- **Schedules checkpoint meetings allowing all parties to evaluate progress of study**
- **Sets milestones and deadlines to keep study moving**



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# *Project Management Plan*

## **Cost Estimate (16 pages)**

- **Breaks down the costs**
  - **Corps costs vs. Sponsor costs**
  - **Divides money among various branches at the Corps**
- **Serves as tool for Corps and Sponsor to track costs and changes**



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## PMP Cost Estimate

<b>Fiscal Year</b>	<b>Federal Cash (\$)</b>	<b>Sponsor Cash (\$)</b>	<b>Sponsor In-Kind (\$)</b>	<b>Total Study (\$)</b>
<b>2003</b>	900,000	550,000	350,000	1,800,000
<b>2004</b>	850,000	550,000	300,000	1,700,000
<b>2005</b>	650,000	350,000	300,000	1,300,000
<b>2006</b>	500,000	250,000	250,000	1,000,000
<b>2007</b>	500,000	250,000	250,000	1,000,000
<b>2008</b>	215,941	59,225	156,716	431,882
<b>Total</b>	<b>3,615,941</b>	<b>2,009,225</b>	<b>1,606,716</b>	<b>7,231,882</b>



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## *PMP Cost Estimate*

<b>Breakout by Organization</b>	<b>Total Cash (\$)</b>	<b>Sponsor In-Kind (\$)</b>
<b>Environmental</b>	660,498	0
<b>Economics</b>	779,496	400,000
<b>Engineering Services</b>	744,273	150,000
<b>Hydraulics &amp; Hydrology</b>	1,562,276	291,000
<b>Project Management</b>	500,482	521,700
<b>Project Formulation</b>	894,466	0
<b>Real Estate</b>	47,396	125,000
<b>Construction</b>	10,000	0
<b>Contracting</b>	9,600	0



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## *Funding Concerns*

- **FY 2003 President's Budget is \$200,000**
  - **Can reprogram an additional \$125,000 for a total of \$325,000 in federal funds this fiscal year.**
  - **Corps would probably request the Borough match the \$325,000 this fiscal year.**
- **FY 2004 Budget amount cannot be released by Corps until the President's Budget is released to Congress, usually the first Monday in February.**
- **To Proceed on the schedule and funding level shown, the Corps will need to get Congressional approval to reprogram funds in the study.**
- **The Borough can lobby the Congressional Delegation to increase funds once the budget is released; the Corps cannot do this.**



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## *Tasks in FY2003*

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- **Given a reduced level of funding from the budget, the tasks to get started this year include:**
  - **Instrumentation deployment in the Chuckchi Sea this summer for current and wave data.**
  - **EIS kickoff scoping meeting.**
  - **Draft list of potentially effected property and identification of property owners.**



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## *Project Objectives*

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- **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.**
- **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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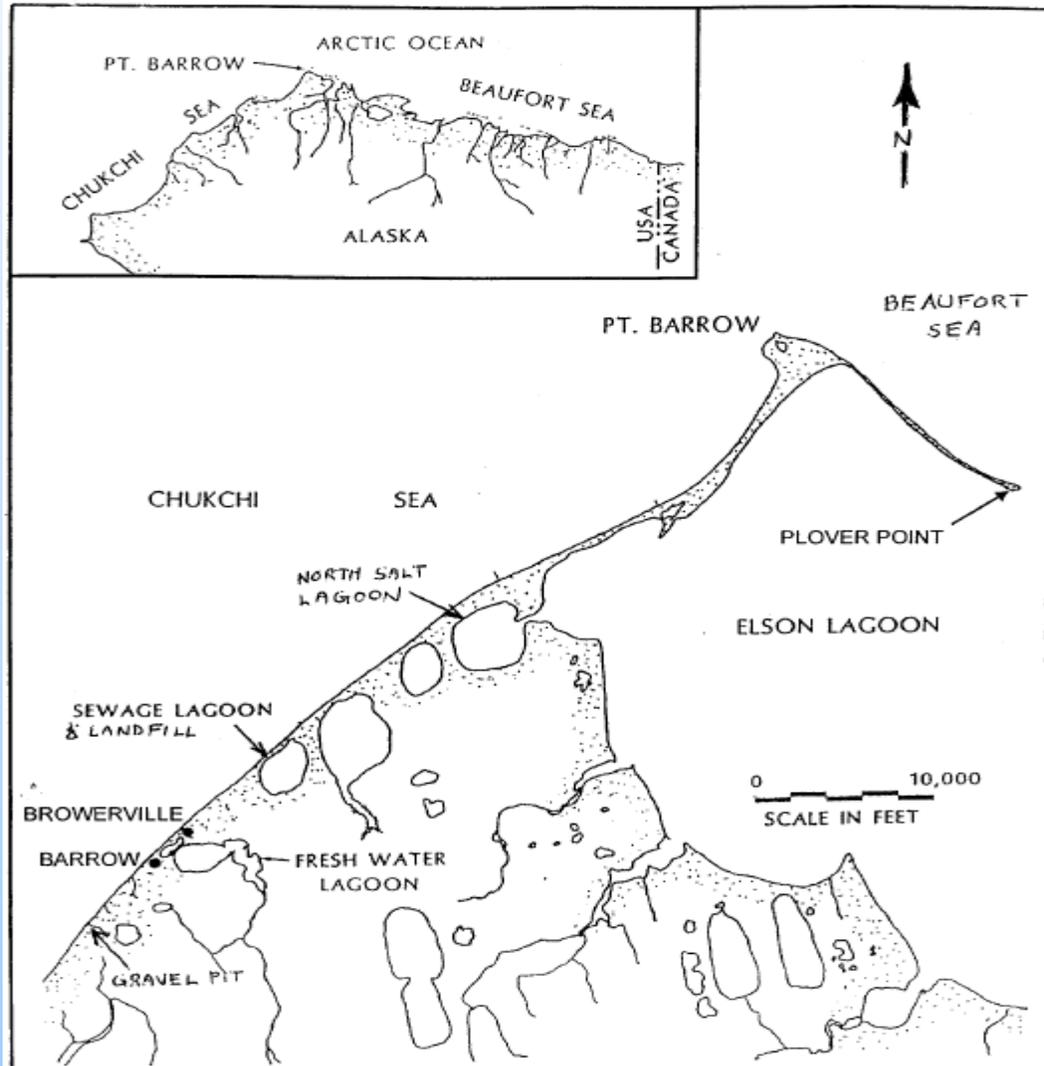


FIGURE 1. LOCATION MAP



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## *Initial Alternatives*

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### **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 CY for beach, 500,000 CY for road.**
- **Annual beach nourishment requirement: 10,000 CY per year.**
- **Borrow material may be taken from Elson Lagoon, creating a navigation channel for lightering barges.**



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## *Initial Alternatives*

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### **Beach Nourishment with Concrete Mattress Revetment**

- **Plan identical to Beach Nourishment Alone with following additions:**
  - **Revetment added to the seaward slope of roadway and bluffs.**
  - **Revetment underlain with filter cloth; will extend from +16 feet to mean sea level.**



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## ***4. Feasibility Study Benefits & Risks to North Slope Borough***

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## **Benefits**

- **Study could lead to a project:**
  - **Federal government would pay a portion of construction costs, depending on the ownership of the land being protected.**
  - **Corps construction involvement impossible without Feasibility Study.**
- **Project would protect the utilidor, lagoon and other infrastructure from the 100-year storm event.**



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## *Risks and Constraints*

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- **Study might not lead to a project.**
- **Project would not make any special accommodations to protect South Salt Lagoon. Roadway near the lagoon would get same treatment as the rest of the roadway.**
- **A suitable local gravel source must be found, or unlikely for a Corps project to show positive economic benefits. An estimated 4 Million cubic yards of gravel is needed.**
- **Archaeological sites must be located and preserved during all phases of the project.**
- **Plans must taken in to account local needs for public beach access yet provide continuous protection. Gaps in protection measures usually lead to increased erosion at the gap.**



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**Thank You**