



Department of the Army

RECORD OF DECISION

US Army Corps  
of Engineers  
Alaska District

Beaufort Sea Oil and Gas Development  
Northstar Project

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Applicant: BP Exploration (Alaska) Incorporated  
Permit Number: N-950372 Waterway Number: Beaufort Sea 441

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I. Decision

This document constitutes my Record of Decision (ROD) for the Beaufort Sea Oil and Gas Development, Northstar Project. This ROD is based upon the Beaufort Sea Oil and Gas Development/Northstar Project, Final Environmental Impact Statement (FEIS) dated February 1999. It is my decision to authorize the applicant's (BP Exploration (Alaska) Incorporated, BPXA) preferred alternative (Alternative 2, as stated in the FEIS), with special conditions that incorporate mitigation measures.

The Department of Army (DA) permit will authorize the following development of the Northstar Project oil and gas reservoir, as described in the DA Public Notice of Application for Permit dated February 5, 1999:

- Work and placement of structures in navigable waters of the United States under the authority of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403);
- The placement of dredged and/or fill material in waters of the United States under the authorities of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403), and Section 404 of the Clean Water Act (33 U.S.C. 1344); and,
- The transport of dredged material for the purpose of ocean disposal under the authority of Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. §1413).

The authorized project will consist of the following:

- Placement of gravel fill material, linked concrete blocks, and sheet pile walls to enlarge Seal Island;
- Construction of a buried subsea pipeline system involving:
  - Excavation (dredging) of a pipeline trench;
  - Temporary on-ice storage of excavation spoils (dredged material);
  - Transportation of excess dredged material for disposal in ocean waters; and
  - Placement of pipeline bedding (select gravel) material and dredged material over the pipeline as back-fill;
- Construction of two gravel pads onshore to support pipeline operations;
- Construction of a pipeline landfall trench, involving excavation, and backfilling of the trench with native overburden and select backfill gravel; and
- Temporary placement (stockpiling) of excavated material (overburden) and placement of overburden into the mine site excavation as part of mine site rehabilitation.

## OVERALL PROJECT PURPOSE

The overall project purpose is to develop reasonable access to the Northstar Reservoir in the Beaufort Sea for hydrocarbon recovery and its transport to market.

In light of the overall public interest, my decision to authorize Alternative 2 reflects the national concern for both resource protection and utilization of important resources with full consideration and appropriate weight given to: information contained in the FEIS; national policy; and, all comments including those of federal state and non-federal agencies and the Governor of the State of Alaska. My decision to issue a permit has been based on an evaluation of the probable impacts including cumulative impacts of Alternative 2 and its intended use on the public interest. Evaluation of the probable impacts which Alternative 2 may have on the public interest required a careful weighing of all those factors which are relevant to this particular case. The benefits which reasonably may be expected to accrue from Alternative 2 have been balanced against its reasonably foreseeable detriments. The decision to authorize Alternative 2, and the conditions under which it will be allowed to occur, have therefore been determined by the outcome of the general balancing process. My decision reflects the national concern for both protection and utilization of important resources. All factors which may be relevant to Alternative 2 have been considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. This general balancing process and consideration of comments are discussed below.

**SCOPE OF ANALYSIS:** The purpose of this section is to outline the authorities governing the scope of the Corps' decision.

The Scope of the Northstar EIS was based on combined federal controls as reflected in the "JOINT REVIEW AGREEMENT BETWEEN COOPERATING AGENCIES FOR THE NORTHSTAR PROJECT ENVIRONMENTAL IMPACT STATEMENT". A primary goal reflected in this document is that the EIS "satisfy all relevant National Environmental Policy Act responsibilities for each party". Comments received from all cooperating agencies, including the North Slope Borough, indicate that this goal was achieved. The geographic scope of the Northstar EIS is described in Section 1.1 and depicted in Figure 1-1 of the EIS.

The Northstar project is a private action subject to federal regulatory controls, rather than a federal action, per se. However the Corps determined that it had sufficient control to essentially federalize the project per its regulatory authorities discussed below. The additional controls of other federal agencies (See TABLE ES-2 or TABLE 1-2 in the Northstar FEIS) only serve to reinforce this determination. Final determinations rendered pursuant to these other agency authorities would be (or have been if the Corps has been notified of such) given full consideration by the Corps.

The Alaska District determined that the Northstar project may have a significant impact on the quality of the human environment, and therefore, required the preparation of an EIS.

**Corps Authorities:**

***Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972  
(33 U.S.C. 1413):***

Applies to the transportation of dredged material for the purpose of disposal in the ocean where it is determined that the disposal will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. The substantive evaluation requirements of this act are criteria developed by the Administrator of the EPA in consultation with the Secretary of the Army and published in 40 CFR Parts 220-229. However, similar to the EPA Administrator's limiting authority cited in paragraph (f) of this section, the Administrator can prevent the issuance of a permit under this authority if he finds that the disposal of the material will result in an unacceptable adverse impact on municipal water supplies, shellfish beds, wildlife, fisheries, or recreational areas. (See 33 CFR Part 324).

This act represents the least scope of authority for the Corps for the Northstar project. Although limited in scope, an ocean disposal activity that did not meet the criteria identified above would be prohibited. Section 103 applies to the proposed disposal of excess material excavated from the subsea pipeline trench and transported away from the trench and not used as backfill. EPA's concurrence with the Corps' analysis satisfies the requirements of this act.

***Section 404 of the Clean Water Act (33 U.S.C. 1344)***

Applies to the discharge of dredged or fill material into the waters of the United States at specified disposal sites. The substantive evaluation requirements of this act are guidelines developed by the Administrator of EPA in conjunction with the Secretary of the Army and published in 40 CFR Part 230 (referred to as the 404(b)(1) guidelines). As is the case with the § 103 criteria above these guidelines could prohibit the selection or use of a disposal site (subject to a potential override for the economic impact on navigation and anchorage which would not be applicable in this case). Furthermore, the Administrator can deny, prohibit, restrict or withdraw the use of any defined area as a disposal site whenever he determines, after notice and opportunity for public hearing and after consultation with the Secretary of the Army, that the discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas. (See 40 CFR Part 230).

Northstar activities directly subject to § 404 include the discharge of fill placed for the expansion of Seal Island (for the purpose of providing a drilling/production pad that can withstand expected ice forces), the discharge of dredged and fill material as backfill and bedding of the subsea pipeline from Seal Island to shore (to protect the pipeline from ice gouging and other natural forces), the discharge of fill material at a landfall site to protect the pipeline and provide a work platform), and the discharge of dredged (excavated) material at the proposed gravel source site (for temporary stockpiling of overburden, and reclamation activities). The overall project purpose described above, is the project purpose that is used in the 404(b)(1) analysis below.

**Section 10 of the Rivers and Harbors Act, (33 U.S.C. 403)**

Prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in, under, or over any navigable water of the United States, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been permitted by the Corps. (See 33 CFR Part 322.) The substantive evaluation criteria for this authority is the Corps' Public Interest Review [See 33 CFR Part 320.4(a)] and NEPA (See below). These blanket criteria are also extended to § 103 and § 404 discussed above.

§ 10 authority extends to the entire project waterward of the mean high water elevation of the Beaufort Sea and encompasses most construction and operational aspects of this portion of the project (excludes waste discharge activities; these activities were subject to § 13 of the Rivers and Harbors Act until passage of the CWA which transferred this authority to EPA under § 402 of the CWA pursuant to § 511).

**The National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)**

Declares the national policy to encourage a productive and enjoyable harmony between man and his environment. Section 102 of that Act directs that "to the fullest extent possible: (1) The policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall \* \* \* insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations \* \* \*". (See Appendix B of 33 CFR Part 325.)

The Corps, recognizing the breadth of its authorities above (and in consideration of the factors in NEPA regulations for selecting a lead federal agency for an EIS), agreed to be the Lead Federal Agency for the Northstar EIS. This determination recognizes the fact that without the necessary construction permits from the Corps the project could not be developed with current technology.

**II. Alternatives and Considerations Balanced in Making the Decision:**

Five alternatives were evaluated in detail in the FEIS. The beneficial and adverse effects were evaluated for all alternatives, including the no action alternative.

**Alternative 1 - No Action**

The No Action Alternative represents the case where Northstar Unit development/production would not occur at this time. The remains of Seal Island would continue to erode in accordance with approved abandonment plans. Potential impacts to the physical, biological, and human resources as described in the FEIS for alternatives 2, 3, 4, and 5 would be avoided. Potential significant impacts to marine mammals (bowhead whales and polar bears) and migratory birds (e.g., common and spectacled eiders, and oldsquaws) would be avoided. A nominally estimated 158 million barrels of recoverable reserves from the Northstar reservoir would remain in place and economic benefits to the state, federal government, NSB, and the Municipality of Anchorage (MOA) would not be realized.

## **Common Elements of the Action Alternatives (2, 3, 4, and 5)**

Alternatives 2, 3, 4, and 5 share many common elements. These include: water sources; the gravel source; ice roads for gravel hauling between the gravel mine site and Seal Island; reconstruction of Seal Island designed to withstand water and sea ice forces; installation of island facilities to support drilling and processing; use of buried subsea pipelines for transporting oil and gas; construction techniques for offshore and onshore pipelines (although alignments differ among alternatives); drilling activities; full processing of sales quality crude oil on the island; inspection and maintenance activities that would be carried out during the life of the project; construction seasons; waste water disposal; and abandonment options. The four action alternatives differ in offshore pipeline routes, landfall locations, onshore pipeline routes, and valve station locations. Alternatives 2, 3, 4, and 5 are presented with specific pipeline routes to allow the evaluation and comparison of impacts, but each pipeline route should be considered representative of possible variations which include the same general landfall location and approach to onshore routing.

### **Alternative 2 - Point Storkersen Landfall/BPKA's Proposed Action**

Alternative 2, the applicant's preferred alternative, includes a pipeline alignment straight from Seal Island to landfall near Point Storkersen. A gravel pad would be constructed approximately 110 ft (33.5 m) from the shoreline. The onshore oil pipeline follows a fairly direct path from Point Storkersen to Pump Station No. 1. The natural gas supply line from the Central Compressor Plant (CCP) would parallel existing pipelines to the vicinity of Dead Chicken Lake and then parallel the oil line north to Seal Island.

This alternative has no permanent road access to the pipeline or the valve station pad at the landfall. Surface access would be provided by soft tired vehicles and/or helicopters. In order to provide quick access to the valve station, the gravel pad would be sized (70- by 135-ft [21.3 by 41 m]) to accommodate helicopter landings. A gas-fired generator on this pad would receive its fuel from a tap off the gas line going to Seal Island. The generator would charge a battery bank, which would power all instrumentation for leak detection and monitoring, communications, and automated valve status and control. The actuated shut-in valves for the oil and gas pipelines would be fail safe (i.e. requires power to keep them open, with a spring return to close the valve in the event of power failure). These facilities would be contained within a small protective enclosure.

### **Alternative 3 - Point Storkersen Landfall to West Dock Staging Pad**

Alternative 3 also includes a pipeline alignment straight from Seal Island to landfall near Point Storkersen. The buried subsea pipeline would transition to aboveground pipelines in the same manner and location as that described for Alternative 2. A small gravel pad, approximately 50 by 50 ft (15.2 by 15.2 m) in size, surrounded by a protective gravel berm, would be constructed to accommodate transition from subsea to aboveground. From this point the oil and gas pipeline corridor turns east until it intersects the existing pipeline corridor between drill pad Point McIntyre 1 (PM1) and the West Dock staging pad. A check valve would be placed in the oil line at the landfall, and a small gravel valve pad (75 by 75 ft [23 by 23 m]) would be constructed adjacent to the point of intersection with the existing pipeline corridor between PM1 and the West Dock staging pad.

Quick closure, automated valves and instrumentation at this pad would be powered by electricity from the existing onshore power grid.

The oil and gas pipelines then parallel the existing pipeline corridor to the West Dock staging pad, where they turn south following an existing pipeline and roadway corridor to the CCP. The gas pipeline terminates at the CCP. The oil pipeline continues from the CCP to Pump Station No. 1 via a combination of existing and new pipeline and/or roadway corridors. Access to all but 6.7 miles (10.8 km) of the Alternative 3 onshore pipeline is possible year-round from existing roads.

Freshwater sources for ice road construction may vary from those for Alternative 2 (they would parallel the new pipeline alignments). Since the onshore pipelines are longer, construction time or manpower would be greater than for Alternative 2.

#### **Alternative 4 - Point McIntyre Landfall to West Dock Staging Pad**

Alternative 4 includes the same offshore pipeline corridor from Seal Island as does Alternatives 2 and 3 until it reaches the southern boundary of the Northstar Unit. The offshore corridor then turns southeast toward West Dock, staying north of Stump Island in water depths between 5 and 12 ft (1.5 and 3.6 m). As the corridor approaches West Dock at the east end of Stump Island, it turns in a southwest direction, making landfall approximately midway between PM1 and the West Dock staging pad. A small gravel pad (75 by 75 ft [23 by 23 m]) would be constructed approximately 110 ft (33.5 m) from the shoreline near an existing pipeline that extends between PM1 and West Dock staging pad to accommodate the buried subsea pipeline transition to aboveground. The valves and instrumentation on this pad would be powered by the existing onshore power grid.

The oil and gas pipelines then would parallel the Point McIntyre pipeline corridor to the West Dock staging pad. From the West Dock staging pad, the pipelines are routed to the CCP and on to Pump Station No. 1, the same as described for Alternative 3. Access to the entire onshore pipeline for Alternative 4 is possible year-round from existing roads. The valve station also is accessible by permanent road.

The onshore and offshore pipeline alignments would also require that ice road lengths and locations differ from those presented for Alternatives 2 and 3 (they would parallel the new onshore and offshore pipeline alignments). Freshwater sources for ice road construction may vary from those described for Alternatives 2 and 3. In addition, offshore pipeline staging areas and trench spoils disposal areas would be relocated along the offshore pipeline alignment. Since the offshore and onshore pipeline alignments are longer, construction time or manpower would be greater than those presented for Alternatives 2 and 3.

#### **Alternative 5 - West Dock Landfall**

Alternative 5 includes the same offshore pipeline corridor from Seal Island as Alternative 4, to the eastern end of Stump Island where it continues in a straight line to West Dock. Although landfall could theoretically be anywhere on the West Dock causeway, it is shown at Dock Head 2. The oil and gas pipelines then transition to aboveground approximately 40 to 50 ft (12.2 to 15.2 m) from the edge of the causeway, paralleling the causeway to the West Dock staging pad. From the West Dock staging pad, the pipelines are routed to the CCP and on to Pump Station No. 1 the same as described

for Alternatives 3 and 4. Access to the entire onshore pipeline for Alternative 5, and the valve station is possible year-round from existing roads and the causeway.

This alternative would require approximately 290,000 to 300,000 yd<sup>3</sup> (221,700 to 229,400 m<sup>3</sup>) of gravel fill material to be placed along the west side of the West Dock causeway to widen it by approximately 50 ft (15.2 m) between the landfall and the West Dock staging pad, a distance of approximately 0.9 miles (1.5 km). This fill would accommodate a valve pad (75 by 75 ft [23 by 23 m]) and VSMS for the oil and gas pipelines. This additional width is necessary because of conflicts with existing pipelines and cables.

The West Dock landfall does not require the 110-ft (33.5 m) shoreline setback because the area is a man-made structure that is protected by armoring from erosion. The site also does not require pipeline bedding backfill at the landfall or revegetation of disturbed tundra. The onshore and offshore pipeline alignments would require different ice road lengths and locations than Alternatives 2, 3, and 4 (they would parallel the new onshore and offshore pipeline alignment). Freshwater sources for ice road construction also differ from Alternatives 2, 3, and 4.

#### **The Environmentally Preferred Alternative**

Alternative 5 was identified as the environmentally preferred alternative in the DEIS by the Corps and all of the cooperating agencies and reconfirmed in the FEIS by the Corps and federal cooperating agencies (except for the Minerals Management Service [MMS]). The following rationale supported the identification of Alternative 5 as the environmentally preferred alternative in the FEIS:

- Although the offshore pipeline length is longer than Alternatives 2 and 3, and the corresponding probability of an oil spill is slightly higher (1.6%, 1.6%, 2.4%, and 2.4% from Alternatives 2, 3, 4, and 5, respectively), considering the level of uncertainty inherent in spill probability calculations, the calculated risk of an oil spill associated with all action alternatives would be similar (starts at 4.5%, 5.6%, 5.5%, and 5.4% for Alternatives 2, 3, 4, and 5, respectively, and ranges to 19% for all action alternatives). Additionally, pipeline design and maintenance considerations could reduce the probability of an oil spill for any of the action alternatives (See Section 8.5.3 of the FEIS).
- Although the potential offshore pipeline spill volume is greater for Alternative 5, as compared to Alternatives 2 and 3 (3,600, 3,600, and 5,200 barrels for a pipeline rupture of Alternatives 2, 3, and 5, respectively), even the smallest of the calculated offshore spill volumes of 3,600 barrels could be substantial enough to result in significant adverse impacts. Thus, the offshore pipeline spill volumes for all of the action alternatives could cause significant adverse impacts.
- The offshore pipeline route completely avoids Gwydyr Bay and the nearshore lagoon system, an important area for migrating, rearing, and feeding marine and anadromous fish; and for molting, staging, and brood-rearing migratory birds. In the unlikely event of an oil spill, Gwydyr Bay could be protected from oil contamination by booming off the lagoon (i.e., placing oil containment booms between West Dock and Stump Island, and between Stump and Egg Islands). In comparison, Alternatives 2 and 3 offshore pipelines would be routed directly through the heart of the

nearshore lagoon, while Alternative 4 would be routed through the eastern end of the lagoon.

- Oil spill response equipment would be staged at West Dock. In the event of an oil spill, this would allow for a more rapid response to the nearshore pipeline for Alternatives 4 and 5, as compared to spill response to the nearshore pipeline for Alternatives 2 and 3.
- The pipeline landfall on the West Dock causeway is intended to avoid the permafrost thaw bulb subsidence and shoreline erosion issues, which eliminates the permafrost thaw bulb subsidence hazard and shoreline erosion hazard common to all other action alternatives. This could be an advantage in terms of reduced risk of pipeline damage from differential thaw settlement that could result in an oil spill. In addition, this pipeline landfall on to West Dock would result in the elimination of maintenance activity that would otherwise be necessary in a natural shoreline area. In comparison, Alternatives 2, 3, and 4 would not avoid the natural shoreline issues of permafrost and erosion.
- Although approximately 5.5 acres (2.2 hectares) of shallow seafloor adjacent to West Dock causeway would be covered, this impact would be minor. Additionally, the causeway breach, a 650-ft (198 m) bridged opening, would not be affected and no additional impacts to local water circulation would be expected.
- Location of the onshore pipeline entirely within an existing industrial area and in proximity to roadway access would: increase the probability of leak detection, reduce oil spill response time, and reduce access-related damage associated with oil spill response and unplanned pipe maintenance during the summer.
- Routine inspections and maintenance of onshore pipelines would be performed from existing roads, as opposed to the use of helicopters for Alternatives 2, 3, and 4. This would decrease the disturbance to wildlife from helicopter overflights.
- Locating onshore pipelines in an existing corridor would likely decrease impacts to caribou moving through the area; other alternatives would require caribou to cross new onshore pipeline corridors.
- Onshore visual impacts would be reduced by routing the onshore pipeline within an existing industrial area.

Although Alternative 5 has been identified as the environmentally preferred alternative under the National Environmental Policy Act (NEPA, BPXA will be issued a DA permit for Alternative 2. Additional information on the rationale for this decision is presented in Section III.D below.

### III. Findings:

#### A. Other authorizations:

(1) The Alaska Department of Environmental Conservation (ADEC) issued a Certificate of Reasonable Assurance for Alternative 2, the applicant's preferred alternative, on February 17, 1999, with the inclusion of one condition, regarding sediment chemistry monitoring. The condition reads as follows:



"A sediment chemistry-monitoring program is required to address the following objective:

- Establish baseline values for key toxic and source diagnostic chemicals to use in evaluating potential impacts from crude oil production and transport associated with the Northstar Project.

Sediment samples shall be collected prior to any construction at the following 7 stations:

1. 2,000 feet from the production island in the down current direction of the predominant current,
2. Along the pipeline route between the 30 and 39 foot water depth,
3. Along the pipeline route between the 20 and 29 foot water depth,
4. Along the pipeline route between the 10 and 19 foot water depth,
5. Along the pipeline route in the channel formed between Egg and Stump Islands,
6. Along the pipeline within the nearshore lagoon, and
7. Offshore of the Kuparuk River Delta within the nearshore lagoon.

All sediment sampling stations shall be located by GPS to within 20 feet.

The permittee shall collect three replicate samples at each sediment-sampling station. All samples shall be analyzed for polynuclear aromatic hydrocarbons (PAH), total organic carbon (TOC), and sediment grain size distribution. Polycyclic Aromatic Hydrocarbons and their alkylated homologues shall be analyzed using GC/MS-selected ion monitoring, described by Geochemical and Environmental Research Group (GERG) Laboratory of Texas A&M University in College Station, Texas in GERG SOP-8905. Alternative methods may be used with prior approval by the department. Sediment chemistry data shall be normalized by dry weight to both organic carbon and sediment grain size.

In accordance with 33 U.S.C. 1341(d), the condition of the ADEC water quality certification will be incorporated into the DA permit.

Pursuant to 33 CFR 320.4(d) the certification of compliance with applicable effluent limitation and water quality standards required under the provisions of Section 401 of the Clean Water Act are considered conclusive with respect to water quality considerations unless the Regional Administrator, Environmental Protection Agency (EPA), advises of other water quality aspects to be taken into consideration.

(2) **The Alaska Division of Governmental Coordination** issued a conclusive Coastal Zone Management (CZM) Consistency Determination on February 4, 1999, for Alternative 2, the applicant's preferred alternative. The conclusive Consistency Determination contained 146 stipulations (see file copy for a complete listing of the stipulations).

(3) **The U.S. Fish and Wildlife Service** completed a Final Biological Opinion for the Northstar Project on March 11, 1999. It included six terms and conditions implementing the mandatory reasonable and prudent measures for spectacled and Stellar's eiders, three recommended conservation measures for spectacled and Stellar's eiders, and three terms and conditions implementing the mandatory reasonable and prudent measure for transportation corridor (Region 1) species.

**Mandatory Terms and Conditions for Spectacled and Stellar's Eiders:**

- (a) The applicant and Service will cooperatively develop a strategy for marking and/or lighting selected structures on Seal Island to improve visibility to migrants. A draft will be provided by the Service by 1 April 1999; the final plan must be approved by the Service, in consultation with the applicant and appropriate permitting agencies, by 1 June 1999.

- (b) The applicant and Service will cooperatively develop a strategy for reducing radiation of light outward from Seal Island. The intent of the strategy will be to use shading or light fixture placement to reduce diffusion of light but not the amount of light reaching work areas or the ground surface. The final plan must be approved by the Service, in consultation with the applicant and appropriate permitting agencies, by 1 June 1999.
- (c) Crane booms will be lowered and stored below the elevation of the sheet pile wall any time there are no construction activities requiring use of the crane. This restriction applies only when spectacled and Stellar's eiders may be present (15 May to 30 September).
- (d) To detect an oil spill under stable, solid ice (~1 December to 1 May), the applicant will conduct temporal and spatial sampling to ensure at least a 70% probability of detecting a 32.5 barrel per day chronic leak (which corresponds to 33% of maximum undetected chronic leak). To attain this detection probability, a 200 foot sampling interval is required (based on sampling every 30 days and two holes spaced 20-30 feet apart). The Service would support the development and use of alternative leak detection methods (satellite and aerial imaging techniques, ground penetrating radar, fiber optic cable sensing systems; see P. Hanley [BPXA] letter to B. Britt [ADNR], 17 December 1998) provided it results in an equal or higher probability of leak detection.
- (e) Surveys and/or radio-tracking studies will be conducted to identify areas in the Beaufort Sea that are important to spectacled and Stellar's eiders. The study plans and responsibilities will be developed cooperatively between the Service, the applicant, U.S. Geological Survey/Biological Resources Division, and MMS. The applicant has primary responsibility for funding these studies but this responsibility is limited to the project area (as described in the EIS) and the area west to Teshekpuk Lake (see R. Jakubczak [BPXA] letter to T. Swem [Service], 5 February 1999). Findings will be appended to the Alaska Clean Seas Manual, Northstar C-Plan and other applicable strategy documents that direct oil spill response. In particular, the information will be used to modify spill response so that important eider use areas and habitat types will be protected to the maximum extent possible.
- (f) To scare spectacled or Stellar's eiders from spilled oil, ten Breco buoys (Navenco Marine Company) or similar devices (to be approved by the Service) will be purchased and kept at Prudhoe Bay ready for immediate deployment. Training and maintenance of the Breco buoys will be done in compliance with the manufacturer's recommendations. Reporting requirements in the C-Plan will be modified to include relevant information on training and maintenance actions necessary for the Breco buoys.

**Recommended Conservation Measures for Spectacled and Stellar's Eiders:**

- (a) The minimum number of helicopter routes needed to facilitate construction and operation of the Northstar project will be identified and adhered to between 15 May and 15 September unless doing so would jeopardize human safety. It is not believed that any individual routes are significantly better or worse than others in regard to spectacled eiders; therefore, the routes will be defined in consultation with the Corps, Service, and National Marine Fisheries Service considering impacts to other resources and economic factors. The routes will be identified and must be approved by the Service prior to initiation of construction. The applicant will develop procedures to ensure compliance from pilots, and GPS or other navigational aids will be used to

minimize deviation from the identified routes. Prior to initiation of construction, a report will be submitted to the Corps and Service that includes: A) a map depicting the routes to be used; and B) an explanation of the procedures to be used by the applicant to ensure compliance by pilots, including the use of GPS or other navigational aids.

- (b) The applicant will comply with all relevant State of Alaska regulations governing the storage and disposal of refuse. The applicant will provide training to all employees and contractors that prevents all personnel from providing food for wildlife intentionally or unintentionally.
- (c) The applicant will assign one or more persons to be responsible for the monitoring refuse storage facilities such as dumpsters to determine if foxes, ravens, or gulls gain access to food. If predators are seen feeding on anthropogenic waste at facilities at Seal Island, it will be reported in writing to the Field Supervisor, U.S. Fish and Wildlife Service, Ecological Services, 101 12<sup>th</sup> Ave., Box 19, Fairbanks, AK 99701. In the event that predators are seen feeding at Northstar facilities, the applicant and Service will cooperatively develop a strategy to eliminate the problem.

**Mandatory Terms and Conditions for Transportation Corridor (Region 1)  
Species:**

- (a) BPXA must insure that Northstar oil is delivered only to shipping companies which use only ocean-going tankers that fully comply with the requirements of OPA 90 and other applicable provisions of law. OPA requirements, which currently apply to all tankers in United States waters, provide for double-hulled tankers being phased in between 1995 and 2015, installation of tank overfill warning devices, having oil spill response equipment on-board tankers, contingency and response plans in place, studies on ways to increase safety on tankers, more rigorous USCG licensing and pilot certification, increased navigation aids, and two tow vessels for tankers in Puget Sound.
- (b) If a spill occurs, BPXA shall immediately contact the Pacific Regional Office of the Service (Chief - Endangered Species; telephone 503/231-6241) to discuss the situation and the response with respect to listed species.
- (c) After any oil spill, BPXA shall prepare a report in coordination with the Service describing the incident, its effects on listed species, and any additional measures which will be taken by BPXA to reduce the impacts on any listed species.

In accordance with legal requirements to condition DA permits as specified in 33 CFR 325.4(a)(1), the DA permit will require the permittee to comply with all mandatory terms and conditions implementing the reasonable and prudent measures of the Biological Opinion. The rationale and discussion regarding whether to include the discretionary recommended conservation measures is found in Section V. (Means to Avoid or Minimize Adverse Environmental Effects) of this document.

**(4) The National Marine Fisheries Service completed a Final Biological Opinion for the Northstar Project on March 4, 1999. It included five recommended conservation measures for the Bering Sea stock of the bowhead whale.**

- (a) Vessel operations should be scheduled to minimize operations after August 31 of each year in order to reduce potential harassment of migrating bowhead whales. Vessel routes should be established which maximize separation with the bowhead whale migration corridor, remaining within the 18m depth contour and behind the

barrier islands when practicable. During fall broken ice conditions, supply and crew changes between Deadhorse and Seal Island should be accomplished with helicopters rather than vessels to the extent possible, especially if those vessels would employ ice breaking.

- (b) Utilize agitation technique for placement of sheetpiling and piling instead of pile-driving whenever practicable.
- (c) Develop and conduct an acoustic monitoring study to measure the frequency composition of noise and noise levels as a function of distance from the Seal Island facility during construction and initial operation.
- (d) Conduct or support studies to describe the impact of the Northstar facility on the migrational path of the bowhead whale in the Beaufort Sea.
- (e) Should ice-maintenance be required to provide spill response capability for the Northstar project, ice breaking should not occur prior to October 15 of each year. The operator should investigate the use and effectiveness of nozzles to reduce vessel noise.

The rationale and discussion regarding whether to include the discretionary recommended conservation measures is found in Section V. (Means to Avoid or Minimize Adverse Environmental Effects) of this document.

(5) **The North Slope Borough (NSB) Assembly** approved the applicant's proposed project (Alternative 2) by rezoning the borough's master plan on December 1, 1998. The rezoning of the borough's master plan included conditions that addressed:

- (a) **Drilling Restrictions:** The first production well will not be drilled into target hydrocarbon formation(s) during defined broken ice periods. Drilling of subsequent development wells into previously untested hydrocarbon formation(s) will not occur during defined broken ice periods.
- (b) **Monitoring Program that includes:** Documentation of the noise put into the water by island activities (in particular frequency spectrums and received levels at various distances from the island, such as 1, 2, 4, 6, 8, 10, 12 miles) and, distribution of fall migrating bowhead whales within something like 15-20 miles of the island. The monitoring should exist for as many years as needed to clearly show that there is no impact. Design of the monitoring program and draft of the final report shall be subjected to peer review. Peer reviewers shall include representatives of the NSB and the Alaska Eskimo Whaling Commission (AEWC). The monitoring program and report shall be modified in accordance with peer reviewers' comments.
- (c) **Federal Compliance:** This approval shall not become effective until the final EIS is complete. Administrative approvals will be issued when the federal agencies have issued permits for this project.
- (d) **Emergency Counter Measures Plan:** Emergency transport shall be available for 110% of the number of occupants on the island at all times.
- (e) **Shoreline Protection Plan & 3 Barge Requirement:** This approval shall not become effective until a shoreline protection plan for the environmentally sensitive areas near Northstar is approved by ADEC. A 3 barge response system, as required by ADEC, shall also be required under this approval.
- (f) **Waiver of Lining and Diking:** The Planning Commission approves the use of a 2,800 bbl doubled walled and doubled bottomed tank and waives the requirement to provide lining and diking, in accordance with 18 AAC 75.075.

- (g) Revegetation of the excavated and disturbed areas is required to maintain the permafrost and vegetation.

Finally, the NSB Planning Commission recommended the formation of an Offshore Oil Oversight Committee.

**B. Public Involvement:**

1. A notice of intent to prepare an EIS was filed in the Federal Register on November 24, 1995. Public scoping meetings were held in March through May 1996 in Barrow, Kaktovik, Nuiqsut, Fairbanks, Anchorage, and Valdez. Details on scoping meetings, issues identified at meetings, and a full text of oral and written comments are included in the "Scoping Report - Beaufort Sea Oil and Gas/Northstar Project" dated July 15, 1996.

2. The draft EIS (DEIS) was published and released to the public on June 1, 1998, initially for a sixty-day comment period. The comment period was extended until August 31, 1998, resulting in a 92-day comment period for the DEIS. Public workshops were held in June and July, followed by five public hearings in July 1998 at Nuiqsut, Kaktovik, Barrow, Fairbanks, and Anchorage.

A total of 435 comment letters on the DEIS were received from federal, state and municipal, and federally-recognized tribal governments, businesses, organizations, and individuals. Public testimony during hearings was received from approximately 105 individuals. All comments (letters and testimony) were reviewed and, in accordance with NEPA, substantive comments were addressed in the FEIS. Copies of comments received (letters and testimony) were provided in Appendix K of the FEIS; response to comments were included in Appendix L of the FEIS. Substantive comments that affected elements of the EIS were incorporated into the FEIS.

3. The Final EIS (FEIS) was published and released to the public on February 5, 1999, for a 30-day comment period. A Department of the Army (DA) public notice describing the applicant's proposed project (Alternative 2) was issued on February 5, 1999, and was sent to all interested parties including appropriate State and Federal agencies. The comment period was originally scheduled to end on March 8, 1999. However, at the request of Department of Interior, the comment period for the FEIS and the DA public notice was extended to March 10, 1999. Comments received concerning the FEIS and the DA public notice for BPXA's application for DA permits are summarized below. For a listing of all commenters and a summary table of their concerns/issues see Appendix B of this Record of Decision.

**C. Comments received concerning the FEIS and the DA permit application public notice of February 5, 1999.**

**1. Federal Agencies and Congressional Delegation:**

(a) The National Marine Fisheries Service (NMFS) stated in a letter dated March 5, 1999, that their dominant concerns were the potential impacts of noise, risk of oil spills, and the possible adverse impacts to NMFS trust resources. Based on the review of the information for the proposed project, NMFS recognizes that the least environmental damaging alternative is Alternative 5, and supports this as the action alternative. In addition, NMFS believes that the length of the alignment of Alternative 5 could be reduced, as is depicted in the geotechnical boreholes taken by

Miller in Figure 5.3-5 of the FEIS. Additionally, NMFS strongly recommended that should the Corps decide to permit BPXA's proposed alternative, there should be collection of additional site specific geotechnical information on all alternative routes and landfalls. This would clearly demonstrate to NMFS that there are no problems associated with the ice-bonded permafrost sea/land transition zone. NMFS made the following recommendations regardless of the alternative selected. All conditions are meant to avoid or minimize impacts to NMFS trust resources. Conditions numbered 6-14 represent NMFS Essential Fish Habitat (EFH) Conservation Recommendations.

- (1) Coordinate with NMFS and USFWS to establish flight corridors for helicopter traffic, so as to reduce potential risks to species of concern.
- (2) Establish vessel corridors to maximize separation between vessels and migrating whales. Vessel operations should be scheduled to minimize operations after August 31 of each year. In particular, icebreaking barge operations related to maintaining a corridor between West Dock and Seal Island during broken/thin ice conditions cannot commence prior to October 15. In addition, the operator shall investigate the use of nozzles to reduce noise impacts to whales.
- (3) Utilize the agitation technique for pile and sheetpile installation whenever practicable.
- (4) Conduct or support studies that investigate the impact of noise from the project on bowhead whale migration. The intent is to understand the effects of the Northstar project and provide information necessary for consideration of future offshore development.
- (5) Develop and conduct an acoustic monitoring program to measure the frequency and noise level as a function of distance from Seal Island during the construction and initial operation of facilities on Seal Island. The program should be conducted for at least 3 years, beginning with initial construction. The intent is to better understand noise impacts to marine mammals and to determine the noise signature from project operations.
- (6) Redesign the sampling program to increase leak detection to 70% probability of detecting a 32.5 bbl per day chronic leak (or 33% of maximum undetected chronic leak), in order to improve winter leak detection capabilities. Additionally, because such a program has the potential to impact ring seals, in order to reduce such impacts, should the offshore portion of the pipeline be permitted as in Alternatives 2 and 3, any ice road which would provide winter access between West Dock and Seal Island as part of a shore-based response system, would be constructed only in the event of an emergency.
- (7) Schedule construction activities including: pile and sheetpile driving, pipeline trenching, offshore gravel placement, offshore spoil disposal, gravel hauling, offshore pipeline construction, and pipeline testing, to minimize impacts to resources.
- (8) Pre-stage oil spill response equipment to protect biologically important sites such as river deltas, lagoons, and barrier islands.
- (9) Reduce pipeline flow during periods when detection of chronic leaks is not possible by any other method.
- (10) Prohibit drilling of the first development well into the targeted hydrocarbon formations during broken ice conditions.
- (11) Prohibit drilling of exploration wells into untested formations during broken ice conditions.
- (12) Establish a monitoring program to track disposal material from trench excavation. This information will be used to determine how

far these sediments travel and the extent to which subsea mounding has occurred.

- (13) Conduct a monitoring program to address the question of whether the contaminants discharged by the Northstar project bioaccumulate, concentrate, or persist in sediments to significantly adverse levels. This information will be provided to NMFS to assist in assessing impacts to fisheries and EFH.
- (14) Monitor effluent discharges to quantitatively assess whether applicable water quality standards are being met at the edge of the mixing zone. This information will be provided to NMFS to assist in assessing impacts to fisheries and EFH.

NMFS also concurred with the Corps' EFH assessment.

Additionally, the NMFS stated that the FEIS has been changed as requested, and/or additional explanation has been provided as related to consistency in assessing impacts. The NMFS stated that the revised text provides the reader with a more complete overview of the project design, development alternatives, and potential impacts to resources, including indirect, direct, and cumulative effects of noise, and oil spills.

(b) The Department of the Interior (DOI) submitted comments on the FEIS in a letter dated March 10, 1999. The DOI complimented the FEIS as being well written, thorough, and forthcoming relative to project design, development alternatives, and potential impacts to resources. The DOI also stated that the EIS is a comprehensive environmental assessment document and decision making tool. Although the likelihood of an oil spill from the Northstar project is very small, the DOI remains concerned about the likely impacts of an oil spill in the project area. The DOI recommended that of the action alternatives, Alternative 5 would provide the greatest protection to nearshore and coastal areas and would enhance protection of these living resources. Furthermore, the Department stated that the proposed project (alternative 2) may result in substantial and unacceptable impacts to aquatic resources of national importance. The Department stated that Alternative 5 would:

- (1) route the offshore pipeline seaward of the barrier islands providing increased protection of nearshore lagoon and coastal habitats;
- (2) eliminate potential risks to the offshore pipeline due to permafrost thaw, subsidence and shoreline erosion;
- (3) improve offshore oil spill response and recovery because oil spill response equipment will be staged at West Dock;
- (4) improve leak detection, reduce oil spill response time, and reduce access-related habitat damage related to oil spill response and unplanned pipeline maintenance of onshore pipelines; and
- (5) consolidate onshore pipelines in existing infrastructure/corridors which minimizes issues of disturbance and habitat loss to caribou.

Additionally, the DOI stated that a modified Alternative 5 offshore pipeline could extend in a straight line from Seal Island to West Dock and would reduce the length of the offshore pipeline to approximately 7 miles. Compared to Alternative 5, a modified Alternative 5 would result in reduced materials and construction costs, and the risks associated with pipeline length, oil spill volume, and pipeline bends would be reduced or eliminated. Furthermore, a modified Alternative 5 would be closely comparable to Alternative 2 for length and spill volume, would not increase the risks of ice gouging, and could decrease the risks of strudel scour.

(c) The U.S. Fish and Wildlife Service (USFWS), representing the Department of the Interior (DOI), submitted a letter dated March 10, 1999, commenting on BPXA's application for a DA permit. The USFWS stated that the likelihood of an oil spill from the Northstar project is very small, however should a spill occur, the foremost concerns would be the resultant impacts to unique and significant fish and wildlife resources. Nearshore and offshore habitats in the project area provide foraging, rearing and migrating areas for anadromous and marine fish; migrating, molting, and brood-rearing habitats for migratory birds, including hundreds of thousands of waterfowl, shorebirds and other seabirds; and foraging and denning habitats for polar bears. Because of the national and international importance of the Beaufort Sea coast and adjacent areas to fish and wildlife, the USFWS stated they remain concerned about the potential impacts of an oil spill in the project area. Therefore, the USFWS recommended that of the action alternatives, Alternative 5 would provide the greatest protection to nearshore and coastal areas and would enhance protection of these living resources. The USFWS also recognized that species of importance also exist outside the barrier islands, including protected species and marine mammals. The USFWS as stated the area outside the barrier islands is a more dynamic physical environment, which would be challenging to pipeline construction outside the islands. Furthermore, because of these conditions and challenges, the USFWS stated they would want to ensure that a pipeline using the Alternative 5 route (or other route outside the barrier islands) could be constructed and operated to minimize the risk. The USFWS also noted they have recommended terms and conditions in the Biological Opinion for the Northstar Project that will minimize impacts of incidental take to spectacled and Stellar's eiders [see section III.A.(3), above].

Finally, the USFWS stated that the DOI believes that the risks associated with this project can be reasonably minimized if Alternative 5 is selected as the action alternative. The attachment to the USFWS letter provided the basis for their conclusion and recommendations which are summarized below:

- (1) the USFWS believes a large oil spill in the nearshore coastal-lagoon system would have greater impacts on fish and wildlife resources than a similar sized spill offshore of the barrier islands;
- (2) concerns for invertebrates, fish resources, migratory birds, marine mammals, threatened and endangered species, and cumulative impacts of future projects (e.g. Liberty and Sandpiper);
- (3) routing the offshore pipeline seaward of the barrier islands would provide increased protection of nearshore lagoon and coastal habitats by decreasing oil spill risks to anadromous fish and migratory birds in nearshore lagoons/bays;
- (4) a landfall at the West Dock causeway would eliminate potential risks to the offshore pipeline due to permafrost thaw subsidence and shoreline erosion;
- (5) the biological impacts of increased dredged and fill material required for Alternative 5 (relative to Alternative 2) would not be significant;
- (6) potential risks of ice gouge damage to the subsea pipelines between Alternative 5 and Alternative 2 would not be different;
- (7) proximity to West Dock would improve offshore oil spill response and recovery because oil spill response equipment will be staged at West Dock;
- (8) the differential spill volume between Alternative 5 and Alternative 2 is not significant relative to potential impacts to fish wildlife;
- (9) oil spill probabilities between Alternative 5 and Alternative 2 are approximately equal;



- (10) routing onshore pipelines in existing infrastructure/corridors would improve leak detection, reduce oil spill response time, and reduce access-related habitat damage related to oil spill response and unplanned pipeline maintenance of onshore pipelines; and
- (11) routing onshore pipelines in existing infrastructure/corridors decreases disturbance and habitat loss to caribou.

Additionally, the USFWS stated that a modified Alternative 5 offshore pipeline could extend in a straight line from Seal Island to West Dock and would reduce the length of the offshore pipeline to approximately 7 miles. Compared to Alternative 5, a modified Alternative 5 would result in reduced materials and construction costs, and the risks associated with pipeline length, oil spill volume, and pipeline bends would be reduced or eliminated. Furthermore, a modified Alternative 5 would be closely comparable to Alternative 2 for length and spill volume, would not increase the risks of ice gouging, and could decrease the risks of strudel scour. Additionally, they noted that routing a subsea pipeline to West Dock is not expected to be affected by coastal erosion.

Therefore, the USFWS stated they did not object to the issuance of a DA permit for the Northstar Project, provided that the following conditions are included in the permit:

- (1) Alternative 5, as described in the FEIS or modified to maintain the offshore pipeline route north of the barrier islands with a landfall at West Dock, is selected as the permitted alternative.
- (2) All terms and conditions of the Service's Biological Opinion are incorporated as conditions of the permit.
- (3) The applicant shall prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to: (a) minimize attraction of bears to Seal Island; (b) warn personnel of bears near or on Seal Island and offshore/onshore pipeline sites and identify proper procedures to be followed; (c) if authorized, deter bears from Seal Island and offshore/onshore pipeline sites; (d) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (e) provide for proper storage and disposal of materials that may be toxic to bears; and (f) provide a systematic record of bears observed on the site and in the immediate area. The applicant shall develop or continue educational programs to improve awareness of polar bears and denning habitat awareness concurrently with operations plans. These plans shall be developed in consultation with appropriate Federal, State, and NSB regulatory and resource agencies.
- (4) Because polar bears are known to den predominantly within 25 miles of the coast, the applicant and the applicant's contractors shall consult with the Fish and Wildlife Service, Marine Mammals Management Office (907-786-3800), prior to initiating activities associated with the Northstar development in such habitat between October 30 and April 15. Because the use of forward looking infrared radar (FLIR) appears to be a valuable technique to detect the presence of active polar bear dens, the Service recommends BPXA use this method prior to conducting field operations in denning habitat.
- (5) All observed dens shall be reported to the Marine Mammals Management Office, Fish and Wildlife Service (907-786-3800) within 24 hours of discovery. A one-mile buffer zone will be established and will remain in effect from the time of detection until the female bear/cubs leaves the denning area in the spring. However, the Fish and Wildlife Service will evaluate these instances on a case-by-case basis to determine the appropriate

action. The applicant and their contractors are urged to apply to the Service for Letters of Authorization for incidental take of polar bears during project operations.

- (6) Because the proposed project will increase oil spill risks to polar bears, the applicant shall conduct or support studies to address the following: (a) likelihood of chronic and one-time release oil spill trajectories contacting one or more polar bears in the project area; (b) development of forward looking infrared radar (FLIR) to determine the distribution of maternal dens within the project area; and (c) conduct aerial surveys to determine the distribution of polar bears on barrier islands and along the coast within the Project Area during August through October. Study objectives, design and methods will be the responsibility of the Fish and Wildlife Service (Marine Mammals Management) and the U.S. Geological Survey (Biological Resources Division), in coordination with the Corps of Engineers.
- (7) Because project facilities (e.g., flare tower, pipe rack, sea wall) are potential hazards to migrating birds, including hundreds of thousands of sea ducks, the applicant shall conduct a post-construction monitoring study to evaluate whether Seal Island facilities result in avian injury and mortality. The monitoring study period will extend from 1 May through 15 November for a minimum of 5 years; methods and protocol will be developed between the applicant and the Service. Because the applicant is currently working with the Service to reduce potential impacts to spectacled eiders, a monitoring study will serve the dual purpose for reporting avian injury or mortality per requirements of the Endangered Species Act and the Migratory Bird Treaty Act.
- (8) The applicant shall consult with Alaska Departments of Natural Resources, Environmental Conservation, and Fish and Game and ARCO Alaska to conduct contaminant testing at the abandoned Kuparuk River State No. 1 airstrip and pad. Upon a finding of no contamination, BPXA will remove 20,000 - 25,000 cy of gravel from the abandoned Kuparuk River State No.1 airstrip and pad for construction of Seal Island. Removal of this gravel to supplement or decrease the amount of gravel mined from the new gravel site would mitigate some of the environmental impacts from earlier development.

(d) **The Environmental Protection Agency (EPA)** reviewed the FEIS and provided the following comments in a letter dated March 10, 1999:

- (1) EPA was pleased to see the FEIS included an expanded discussion of double-walled (pipe-in-pipe) undersea pipeline and associated issues. The EPA agreed that pipe-in-pipe technology appears to have merit and warrants further consideration and analysis for future projects,
- (2) the FEIS adequately details the oil spill prevention and response issues and helps to clarify the roles played by local, state, and federal agencies, and
- (3) the FEIS has taken a great step forward with the incorporation of Traditional Knowledge into decision making, as well as the inclusion, in the EIS process, of the government-to-government responsibilities that the federal agencies all share.

(e) **The EPA**, in response to the Corps public notice of application for permit by BPXA, stated in a letter dated March 5, 1999, that the least damaging practicable alternative appears to be Alternative 5 (identified in the EIS as the environmentally preferred alternative), followed by Alternatives 4, 3, and 2. The EPA stated that there is insufficient geotechnical information to determine that any one or all three of the

three offshore pipeline routes and landfall locations should or should not be used. EPA does not object to the issuance of authorization for the construction of the proposed gravel fill island at the Seal Island location provided the following conditions are included:

- (1) Sheet pile installation methods will minimize noise impacts to marine mammals and may require the use of agitation techniques during certain periods of time.
- (2) Construction and operations that may result in effects to marine mammals or endangered species will be limited in a manner acceptable to either the Fish and Wildlife Service or National Marine Fisheries Service as appropriate for the animal in question.
- (3) Monitor the area around the reconstructed gravel island to verify the assumption that there will not be a long term problem with erosion and sediment movement.
- (4) Monitor the work necessary to reconstruct the erosion protecting sacrificial gravel berms to determine both if they are functioning as needed and to determine if there is a better, less damaging solution to erosion protection.

EPA also recommended that the necessary geotechnical data be collected to determine which pipeline route and landfall should go forward. The EPA stated that this data should be collected first at the West Dock landfall, Alternative 5, which EPA stated has clearly been demonstrated to be the least damaging practicable alternative. Should that alternative be found to be unsound based upon the geotechnical information, then EPA recommends proceeding to the landfall locations for Alternatives 4, 3, and 2 until an acceptable route/location is found.

(f) The EPA submitted a letter dated March 26, 1999, concurring with the applicant's disposal site under Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972 for the transport of dredged material for the purposes of ocean disposal, provided the following condition be included on the DA Section 103 permit:

- (1) The permittee shall develop and conduct a sediment monitoring plan. The plan shall be submitted to the Corps and EPA for review and approval within 90 days of permit issuance. Inclosure 1 of EPA's letter of March 26, 1999, (attached to this permit) provides the objectives and a conceptual monitoring design. The conceptual monitoring design is tiered based on the monitoring objectives. Once those monitoring objectives are met, the monitoring requirement can be terminated. Baseline sampling must be completed prior to initiating trenching operations in the ocean. If a BPXA-proposed work plan has not been approved by the federal government 90 days before ocean trenching is scheduled to begin, the EPA and Corps will finalize the conceptual monitoring design and that plan will be provided to BPXA to conduct as a stipulated condition.

Additionally, the EPA requested that the Corps and EPA conclude a joint inspection procedure for the ocean construction and monitoring components of the Northstar Project within 120 days of permit issuance. Permit revisions or in-field adjustments that could potentially involve MPRSA authorities require consultation and agreement by EPA. The EPA suggested that to the extent practicable and allowable by law, EPA agrees to seek resolutions to conflicts with the MPRSA through revisions of the Corps permit rather than separate enforcement action.

(g) **The Alaska Congressional Delegation (Senator Stevens, Senator Murkowski, and Congressman Young)** jointly signed a letter in support of Alternative 2. Stated reasons for their support of Alternative 2 included: shortest offshore pipeline route, avoiding the expansion and complexities of construction on the West Dock causeway, improved spill response inside the barrier islands, and avoiding a longer offshore route outside the barrier islands. Additionally, they noted a smaller potential spill volume for Alternative 2 and other superior characteristics of Alternative 2 as noted in the MMS comments submitted to DOI. The delegation asked that the MMS views be considered, and urged that the interests of the State of Alaska and the North Slope Borough be taken into account.

## **2. Federally-Recognized Tribal Governments:**

(a) **The Inupiat Community of the Arctic Slope (ICAS)** submitted the following comments in a letter dated March 8, 1999:

- (1) ICAS incorporated by reference its comments on the DEIS;
- (2) ICAS remains concerned the executive orders for Government to Government relations and Environmental Justice were not implemented for the Northstar EIS, resulting in cultural and subsistence incompatibility of the project;
- (3) ICAS is very concerned that there has not been a demonstrated ability of the oil industry to clean up an oil spill in the offshore environment.
- (4) ICAS is very concerned that oil in the environment will adversely affect seals, eiders, and bowhead whales, and other important resources.
- (5) ICAS is concerned that there have been no studies of the effects of oil on baleen.
- (6) ICAS is very concerned that the subsistence users will suffer the costs of an oil spill.
- (7) ICAS opposes Northstar and Outer Continental Shelf (OCS) oil production until there is a demonstrated ability under realistic conditions to protect marine mammals, fish and waterfowl in the event of a spill.
- (8) ICAS believes the FEIS and DEIS were deficient in addressing these concerns.

## **3. State and local governments:**

(a) **The State of Alaska, Division of Governmental Coordination,** stated in a letter dated March 10, 1999, that they believe the FEIS provides comprehensive information that will be useful to federal agencies in making permit decisions. DGC stated that the State of Alaska continues to support Alternative 2 and has issued a Coastal Consistency Finding with 146 stipulations, a 401 Water Quality Certification, and other state permits for the applicant's proposal (Alternative 2). The State of Alaska believes that Alternative 2 is environmentally sound and the preferred alternative for the following reasons:

- (1) the shortest offshore pipeline segment is preferable;
- (2) the State has completed an exhaustive review of Alternative 2 pipeline route and design that included pressure design, flow analysis, limit strain criteria, material selection and sourcing, ice keel protection, strudel scour evaluation, cathodic protection, expansion stress analyses, vertical support member evaluation, trench and pipe stability evaluation, and other aspects of the pipeline design basis;
- (3) the State has completed an exhaustive review of the Oil Spill Discharge Prevention and Contingency Plan (ODPCP) and concluded approval was warranted; and

(4) the North Slope Borough has endorsed Alternative 2.

(b) The Governor of the State of Alaska, Tony Knowles, submitted a letter after the comment period dated March 17, 1999, supporting the State's selection of Alternative 2, provided his perspective on the elements of the State's decision, and asked for the Corps to recognize the conclusions these elements support. Governor Knowles summarized the State's review and decision regarding technical/engineering analyses and the evaluation of the industry record and current practices. He noted that Alternative 5 is 50 percent longer than Alternative 2 and lies completely outside the barrier islands, an area which presents a harsher ice and oceanographic regime. Governor Knowles stated that Alternative 5 exposes more of the pipeline to ice gouging forces and places the pipeline where spill response and cleanup is more challenging than in the more sheltered waters of the lagoon. Further, he stated concern that Alternative 5 would increase the risk to endangered species, the bowhead whale and the spectacled eider, concluding that clearly Alternative 2 is the environmentally preferable alternative. Additionally, the Governor stated the final element in the state's decision element was the guidance resulting from local knowledge, noting that the North Slope Borough reflected this preference in a zoning ordinance approving Alternative 2. Lastly, Governor Knowles emphasized the importance of timely construction of the Northstar project to the economic well being of the state. He stated that a delay of the Northstar project resulting from the selection of Alternative 5 would have a negative impact on the State's economic picture.

(c) The North Slope Borough (NSB) provided the following comments in a letter dated March 8, 1999:

- (1) The NSB prefers on-shore development over offshore development.
- (2) The NSB has reviewed and approved this project (BPXA's preferred alternative - Alternative 2) with conditions that included drilling restrictions, a monitoring program for noise impacts, an emergency countermeasures plan, shoreline protection and a three barge response system and additional on-shore revegetation. The NSB also noted that the only alternative submitted by BPXA to the NSB for review was Alternative 2.
- (3) The NSB stated it was regrettable the NSB was left with no choice but to process BPXA's request without the FEIS.
- (4) The NSB favors Alternative 2, and to a lesser extent Alternative 3, because of the NSB's familiarity with Alternative 2 and because these options keep the length of the subsea pipeline to a minimum. Additionally, the NSB believes a shorter pipeline length reduces the risk of an oil spill.
- (5) The NSB states they do not favor Alternative 3 because of the potential for a larger on-shore oil spill and its proximity to the Beaufort Sea.
- (6) The NSB states that Alternatives 4 and 5 greatly increases the length of the subsea pipeline and believes this would increase the likelihood of an oil spill. Additional concerns for these alternatives is the possible adverse impacts from coastal erosion and sediment transport along Stump Island, which is 80% owned by a NSB resident.
- (7) Alternative 5 raises additional concerns about increased turbidity in the water around the West Dock Breach possibly affecting Arctic Cisco.

(d) The City of Nuiqsut stated in a letter received on March 10, 1999, that they oppose the project for the following reasons:

- (1) this project will open all other prospects along the Beaufort Sea resulting in even more impact on the village and its subsistence resources,
- (2) it is impossible to clean up any potential oil spill from the project,
- (3) the great concern of an oil spill adversely affecting the fish and wildlife species that the residents of Nuiqsut are dependent upon,
- (4) the high potential of permanent damage to the sea and project area, an area vital to current and future Nuiqsut residents,
- (5) the effects of an oil spill would make it harder for subsistence users to successfully fish or hunt in his or her traditional grounds.

The City also noted that the avoidance agreement stipulation in the FEIS contains no clause for the protection of individual fishermen and hunters. And finally, the City applauded BPXA and the federal agencies for working with local people on implementing traditional knowledge and the City encouraged more traditional knowledge be put in place in future sales or leases for exploration and development.

#### 4. Organizations, Businesses, Individuals, and Others:

(a) BPXA, the permit applicant, submitted a letter dated March 1, 1999, supporting its proposal of Alternative 2. The letter included discussion of the following issues related to the Corps decision-making process:

- (1) Potential Mitigation Measures, Monitoring Programs and Studies,
- (2) Alternatives - General Comments,
- (3) Comparison of Project Alternatives,
- (4) Spill Risk - General Comments,
- (5) Alternatives Comparison - Maximum Volume of Spilled Oil,
- (6) Alternatives Comparison - Potential Oil Spill Impacts,
- (7) Comments on Disturbance to Migrating Whales,
- (8) Cumulative Effects/Climate Change,
- (9) Regulatory Process Issues,
- (10) Comments on the Corps Public Notice February 5, 1999, and
- (11) Section 103 Evaluation Comments.

BPXA submitted a letter dated March 4, 1999, which advised the permitting agencies the island footprint would be 23.3 acres, not 21.3 acres as stated in their previous letter of March 1, 1999. BPXA stated the reason for the revision was that the abandoned Seal Island continues to erode naturally, and as a result the relationship of that footprint to the overlying footprint of the proposed island has changed slightly. The acreage figure of 23.3 corresponds to the results of last summer's work.

BPXA provided a response letter of March 10, 1999, to EPA's 404 comment letter. In that letter BPXA addressed the integrity of the pipeline design and the adequacy of the geotechnical information supporting pipeline design. BPXA stated that EPA had incorrectly reached a conclusion that the geotechnical data is inadequate to assess BPXA's pipeline design in the lagoon. Additionally, BPXA stated that EPA had failed to take into account the three year detailed engineering review of the pipeline design by the State Pipeline Coordinator's Office.

BPXA submitted a letter dated March 18, 1999, that addressed their views on the requested conditions by the NMFS under Essential Fish Habitat consultation.

Additionally, BPXA submitted a letter dated March 22, 1999, and attachment responding to public and agency comments dated March 18, 1999. Therein, BPXA supported Alternative 2 and addressed the following concerns: (1) the consolidation of facilities, (2) lagoon impacts, (3) unprecedented technology, (4) oil spill issues and (5) proposed permit conditions.

BPXA provided two tables of comparison of alternatives on March 22 and 24, 1999, addressing the differences in practicability of Alternative 2 vs. Alternative 5 and Alternative 2 vs. a modified (straight line approach) Alternative 5. These tables contained information that BPXA believed supported their selection of Alternative 2 for Northstar development.

And finally, BPXA submitted an analysis of the relative oil spill impacts among alternative pipeline routes dated March 26, 1999.

(b) **Greenpeace, Inc. (GP)**, in letters dated February 18 and 26, 1999, requested that the FEIS be withdrawn because the FEIS did not contain the Oil Discharge Prevention and Contingency Plan (ODPCP). Also, in the February 26, 1999, letter, GP requested a time extension of at least 30 days in order to comment on the FEIS, if the FEIS was not withdrawn. In a letter dated March 10, 1999, GP opposed the project, stated the project would not be in the public interest, and requested that all permits associated with Northstar be denied. GP stated the following concerns with the FEIS and the project:

- (1) The alternatives analysis is inadequate and lacks key information,
- (2) The no action alternative is not adequately analyzed,
- (3) Not all reasonable alternatives were considered (e.g. double-walled pipelines, deeper pipeline burial, and seasonal production),
- (4) Risks of oil spills were inadequately analyzed,
- (5) The failure to include the ODPCP is an unacceptable segmentation of the environmental review process,
- (6) Environmental impacts of an oil spill are downplayed,
- (7) Traditional knowledge is inadequately integrated into the analysis of spills,
- (8) The environmental impacts of noise, pollution, and other forms of industrial disturbance on bowhead whales, other marine mammals, other species listed under the Endangered Species Act, and other wildlife and their habitats are underestimated in the FEIS,
- (9) Inadequate consideration is given to traditional knowledge regarding the impacts on subsistence and the concerns of the Native people,
- (10) Cumulative impacts of increased industrialization throughout the region and related onshore impacts across the North Slope were inadequately considered,
- (11) The scope of the DEIS (sic) is misleading regarding other new production and transportation facilities across the Beaufort Sea,
- (12) The public process was dramatically abbreviated,
- (13) The failure to include the Biological Opinions in the FEIS,
- (14) Unprecedented technology, and
- (15) The discussion on Environmental Justice is inadequate.

(c) **The Alaska Oil and Gas Association (AOGA)** submitted letters dated March 8 and 10, 1999, which strongly supported the Northstar project because it would provide substantial employment and economic benefits without detriment to the environment, wildlife or subsistence uses of the area. AOGA supported Alternative 2 and recommended the Corps adopt Alternative 2 as its preferred alternative for permit issuance. AOGA also

commended the extensive public process and believes the FEIS presents a comprehensive review of environmental issues associated with the Northstar Project. AOGA requested that a timely permit decision be made so the project can move ahead with island construction this winter.

(d) **The Sonoma Ecology Center** stated in a letter dated March 8, 1999, that they opposed the project because of serious concerns that an oil spill would have devastating consequences to marine organisms at all trophic levels and that the risk of an oil spill is too great to accept.

(e) **The Seattle Audubon Society** stated in a letter dated March 8, 1999, that they opposed the project for the following reasons:

- (1) perpetuating our nation's dependence on fossil fuels as a main fuel source;
- (2) untested use of subsea pipelines, oil spill danger and oil spill clean-up;
- (3) oil spill impacts to birds and the ecosystems they depend on;
- (4) expansion of development on Alaska's northslope (sic); and
- (5) incorporated by reference the comments of Green Peace (sic).

(f) **The Sierra Club** stated in a letter dated March 8, 1999, that they opposed the project for the following reasons:

- (1) dangerous technology;
- (2) that oil spills are virtually inevitable;
- (3) inadequate cumulative impact analysis; and
- (4) inadequacy of the FEIS regarding needs assessment, mitigation, alternatives analysis, and cost/benefit analysis. They also requested the FEIS be withdrawn because of the above-cited inadequacies.

(g) **Great Northwest, Inc.** stated their support for the project in a letter dated March 10, 1999, for the following reasons:

- (1) they are in agreement with the FEIS;
- (2) they support construction of the pipeline following the alignment proposed by BPXA (Alternative 2) because it will have the least interference with the migratory whale population and have significantly less cumulative impacts; and
- (3) the oil industry has made a strong commitment to utilize Alaskan contractors for this project and as such, this project is imperative to maintaining the health of Alaska's oil industry work force.

(h) **The University of Alaska Fairbanks Student Chapter of the Wildlife Society (UAF/WS)** submitted the following comments in a letter dated March 6, 1999:

- (1) They stated concerns regarding the low-flying helicopter flights associated with the project and requested flights avoid sensitive areas and maintain higher altitudes;
- (2) UAF/WS is concerned about the oil spill monitoring/clean up during spring break up and the ability to clean up an oil spill during broken ice conditions.
- (3) They were concerned about the pipe design and requested additional testing be performed on the integrity of the pipe.
- (4) The UAF/WS recommended selection of Alternative 5 because it would reduce the overflights and noise associated with the helicopter flights and would minimize impacts by utilizing existing structures.
- (5) They believe this type of oil development may be accomplished in an environmentally sound manner, and therefore do not advocate the no action alternative.



(i) **Era Aviation, Inc. (Era)** stated support for Alternative 2 in a letter dated March 11, 1999, for the following reasons:

- (1) it is the most technically and environmentally sound option;
- (2) the shorter offshore route is better because it minimizes pipeline exposure to sea ice and harsh oceanographic conditions;
- (3) the smaller footprint of Alternative 2; and
- (4) Era is confident of BPXA's proven ability to develop this project in a manner consistent with environmental standards.

(j) **The Resource Development Council for Alaska, Inc. (RDC)** submitted two letters dated March 10, 1999, commenting on the FEIS and BPXA's Northstar permit. The RDC had the following comments:

- (1) RDC supports timely permit for Alternative 2;
- (2) RDC supports Alternative 2 because it has the shortest offshore pipeline route and endorsed by the NSB, the MMS, and the State of Alaska.
- (3) Alternative 2 should be permitted because the pipeline design is safe, the maximum oil spill is reduced by 45% over Alternative 5, and Alternative 5 lies entirely outside the barrier islands and would require expansion of the West Dock causeway.
- (4) RDC is concerned about potential construction delays if Alternative 5 is permitted.
- (5) RDC favors the Northstar Project because of the economic benefits to the economy and the oil industry in Alaska. Additionally, Northstar has launched a new in-state fabrication industry.
- (6) RDC believes BPXA vast experience and ability to adapt technology from around the world will ensure that Northstar will stand as a model of "doing it right".
- (7) Finally, RDC believes Northstar will have minimal cumulative impact due to waste minimization and pollution controls.

(k) **The Sierra Club, on behalf of the Alaska Center for the Environment, Alaska Conservation Alliance, Alaska Forum for Environmental Responsibility, Alaska Wilderness League, Campaign to Safeguard America's Waters, Defenders of Wildlife, Oil Watch Alaska, LightHawk, Natural Resources Defense Council, Northern Alaska Environmental Center, and The Wilderness Society** submitted a letter dated March 10, 1999, opposing the project. These groups requested the Corps to deny all permits and to remand the FEIS for further analysis consistent with the following reasons and those submitted by Greenpeace, Inc. on August 31, 1998.

- (1) The proposal of a subsea pipeline in the arctic is unprecedented and relies on untried technology.
- (2) The possibility of an oil spill is unacceptably high and the efficacy of cleaning up an oil spill in solid or broken ice conditions poses a great threat to the coastal environment.
- (3) The project will set into motion the development of other offshore fields using this new and untested technology.
- (4) The FEIS does not adequately assess cumulative impacts.
- (5) The FEIS does not contain the findings required by the Executive Order 11,990 (sic) for the protection of wetlands.
- (6) The Corps should defer to the opinions of residents regarding the bowhead whale.
- (7) Concerns for polar bears, bowhead whales, and other species.
- (8) The FEIS does not include a worst case impact analysis from oil spills.
- (9) Concerns for adverse impacts to Native communities and culture.
- (10) The effects of climate change.
- (11) Inadequate pipeline design.

- (12) Inadequate leak detection.
- (13) Unknown oil spill probability.
- (14) Failure to incorporate the ODPCP in the FEIS.

(1) **The Alaska Eskimo Whaling Commission (AEWC)** submitted comments dated March 10, 1999. The AEWEC stated that they feel strongly that the proposed trench depth for the pipeline requires further discussion (they believe it should be buried deeper - however, no specified depth is presented). However, if a pipeline is ultimately laid, the AEWEC believes the only appropriate routing is Alternative 2, which would result in the shortest distance for a subsea pipeline. The AEWEC believes any other alternative would multiply the risk by adding to the length of the pipeline. In particular the AEWEC states that Alternative 5 is unacceptable because it would increase the length of the pipeline outside of the barrier islands. The AEWEC stated further that they believe the risk of an oil spill from a subsea pipeline is greater than indicated in the FEIS due to ice keel gouge. Additionally, the AEWEC stated that the potential harm from an oil spill to the bowhead subsistence hunt is much greater than indicated in the FEIS. Furthermore, the AEWEC provided additional support for their traditional knowledge regarding the effect of noise on the bowhead whale migration, and acknowledged that the FEIS had incorporated this information into the assessment. However, the AEWEC disagreed with the conclusions of the FEIS regarding Environmental Justice, stating that they believe the potential effects of the Northstar development on North Slope Inupiat would be disproportionately high. Finally, the AEWEC encouraged the Corps to provide for additional discussions on oil spill issues and the depth of burial for the pipeline be further reviewed.

The AEWEC also provided signed affidavits from three whaling captains that provided statements of their traditional knowledge regarding the effects of the circulating icepack, winds, waves, and tides resulting in ice keel gouging that is greater than 6 feet.

The AEWEC attached the statement of George N. Ahmaogak, Sr., as one of the heirs of Native Allotment FF11322A and FF11322B. Mr. Ahmaogak stated opposition to the Northstar project due to lack of official notice of the project and the lack of participation in the FEIS by the Bureau of Indian Affairs.

(m) **Mr. Charles A. Paskvan** submitted a letter dated February 27, 1999, in support of the project because the project would have the benefit of helping the Fairbanks community and other Alaskan communities by providing jobs and security. He expressed support for all oil and gas projects, both offshore and onshore.

(n) **Approximately 435 comment letters** (21 of which were received after the close of the comment period) were received from individuals by FAX and letter. The majority of these comments reflected the views expressed on the Greenpeace Internet site: (1) concern for what is believed to be dangerous technology, (2) an opinion that oil spills would be inevitable, (3) a belief that cumulative impacts were not adequately assessed, and (4) a stated concern for global climate change due to the release of greenhouse gases. Additionally, two petitions stating opposition to the project were received. The first petition contained a list of 11 names; the second contained a list of 34 names. Also, nine FAXes were illegible or did not state a position, and three FAXes were written in foreign languages. For a listing of all commenters and a summary table of their concerns/issues see Appendix B of this Record of Decision.

#### D. Consideration of Comments and Rationale for the Decision:

Please refer to Appendix A of this Record of Decision for the consideration of comments regarding the FEIS. The following discussion is focussed on key issues and the rationale for the decision.

1. **No Action - Alternative 1:** Numerous commenters (the Inupiat Community of the Arctic Slope, the City of Nuiqsut, Greenpeace, several other environmental groups and many individuals) were opposed to the project and requested that the DA permit be denied. The primary reasons stated for opposition to the project included the risk of an oil spill and the concern regarding effectiveness of spill response efforts in broken-ice and/or solid ice conditions, concern for the subsea pipeline, cumulative impacts, and global climate change.

The No Action Alternative represents the case where Northstar Unit development/production would not occur at this time. The remains of Seal Island would continue to erode in accordance with approved abandonment plans. Potential impacts to the physical, biological, and human resources as described in the FEIS for alternatives 2, 3, 4, and 5 would be avoided. Potential significant impacts from oil spills and noise to marine mammals (bowhead whales and polar bears) and migratory birds (e.g., common and spectacled eiders, and oldsquaws) would be avoided. An estimated 158 million barrels of recoverable reserves from the Northstar reservoir would remain in place and economic benefits to the state, federal government, NSB, and the Municipality of Anchorage (MOA) would not be realized.

In rejecting the No Action Alternative, I have considered the thorough and detailed analyses concerning the pipeline structural integrity and its ability to withstand environmental forces. I base this in part on the State Pipeline Coordinator's Office (SPCO) review of the numerous pipeline design documents, the SPCO involvement in project enhancements, and the SPCO observing and reviewing of the pipeline performance testing. Independent engineering review has confirmed that the pipeline meets or exceeds U.S. Department of Transportation regulations. Additionally, I am requiring mitigation measures as conditions of the DA permit, such as (1) the drilling of additional geotechnical boreholes along the pipeline route to verify the thaw settlement sediment data used for the pipeline design, and (2) a prototype external oil spill leak detection for the subsea pipeline (see Section V of this document). Moreover, project specific design features have been incorporated by the applicant that will enable the pipeline to withstand loads from environmental forces greatly exceeding those actually predicted to occur. The conservative pipeline design and thorough regulatory review by Federal, state, and local governments provide protective measures that address the unique nature of the project (subsea pipeline in the Beaufort Sea) and the sensitivity of biological resources in the arctic environment.

Many commenters made assertions that "major spills are expected" and "inevitable". The estimated oil spill probabilities presented in the FEIS indicate that an oil spill is unlikely. Pipeline design features that would likely reduce these probabilities are described in the FEIS and summarized below:

- The depth of subsea pipeline burial is over twice the 100-year predicted ice gouge depth and 3.5 times the deepest ice gouge observed in the project area. This depth of burial provides a sufficient measure of safety against pipeline damage due to ice gouging or strudel scour.

- The subsea pipe wall thickness is approximately 2.8 times that required for internal pressure containment.
- The subsea section of the pipeline is an all-welded design. There are no flanges, valves or fittings underwater that could become the source of a leak.
- The pipeline will transport sales-quality crude oil with minimal water content so that internal corrosion will be minimized. Additionally, corrosion inhibitor will be injected into the oil line as a preventive measure.
- Internal electronic inspection tools (commonly called smart pigs) will periodically inspect the pipelines. The smart pigs are capable of detecting changes in the pipe condition and will provide advanced warning of any problems with the pipeline.
- The pipeline system includes two independent, state-of-the-art leak detection systems that will be continuously monitored by the Supervisory Control and Data Acquisition (SCADA) system. Additionally, I am requiring an external prototype leak detection system for the subsea pipeline to detect leaks below the detection limits of the above systems as a permit condition of the DA permit. This is intended to provide an early warning should a small chronic leak occur.
- The pipeline will utilize remote controlled (fail-safe) isolation block valves on the production island and at the shore crossing. These facilities will be able to isolate pipeline sections for maintenance. The Putuligayuk River crossing will also include manually operated valves on either side of the river. These valve systems will limit the potential amount of oil that could enter the environment should a spill occur.
- The thicker wall subsea pipe in combination with the dual layer fusion bonded epoxy coating will minimize external corrosion.
- The cathodic protection system provides additional protection against corrosion if the external coating is damaged locally. Annual cathodic protection surveys for the oil pipeline will also be conducted.

The FEIS estimates that the probability of an oil spill for the offshore subsea portion of the project, among all of the action alternatives, ranges from 1.6% to 5%. A quantitative assessment of the reduction of oil spill probability is not possible due to lack of historic data for the specific design features incorporated into the Northstar design. However, professional judgement, that takes into consideration the above design and maintenance features, can be used to qualitatively conclude that oil spill probabilities for the Northstar project would be lower than the estimates provided in the FEIS.

Several commenters also noted the lack of the Oil Discharge Prevention and Contingency Plan (ODPCP) for review in its final form in the FEIS. However, the inclusion of a final ODPCP in an EIS is not required. Nevertheless, we discussed various aspects of the ODPCP during the FEIS development, reviewed material from its draft as it was developed, and incorporated appropriate elements and materials from the draft ODPCP into the FEIS. Moreover, the State recently issued its Final Consistency Determination for the Northstar Development Project; included in Attachment C of the State's Determination are the State's responses to comments raised with respect to the ODPCP. Thus, regulatory agencies with jurisdiction

over the ODPCP have concluded that the applicant can meet the response standards set by the State of Alaska. I have reviewed the applicant's ODPCP with the conditions of approval by the State of Alaska, and have taken into consideration its protective measures in my decision. Further discussion regarding the ODPCP can be found in Appendix A of this ROD.

For a summary of the issues raised by commenters and responses to these comments, see Appendices A and B of this document. Specifically, in Appendix A of this document is a discussion and consideration of comments by Greenpeace and others that stated opposition to the project because of concern for:

- Issue #1 Oil Spills
- Issue #2 Noise
- Issue #3 Subsistence
- Issue #4 Impact Analysis and Cumulative Impact
- Issue #5 Need of Project
- Issue #6 Technology, Engineering, and Cost
- Issue #7 Alternative Analysis and Preferred Alternative
- Issue #8 Threatened and Endangered Species
- Issue #9 Public Process
- Issue #10 Environmental Justice
- Issue #11 Government to Government Coordination
- Issue #12 Traditional Knowledge
- Issue #13 EIS Scoping Process and NEPA Compliance
- Issue #16 Mitigation Measures
- Issue #17 Marine Mammals (Not Threatened/Not Endangered)
- Issue #18 Permits, Authorizations, Certifications, Opinions, and Plans
- Issue #24 FEIS Consistency.

I have given these concerns and the stated reasons for opposition to the project full consideration, and on balance, I believe the project can go forward safely and with full sensitivity to the physical, biological, and human environment.

**2. Alternative 2 vs. Alternative 5:** The applicant, the State of Alaska, the North Slope Borough (NSB), and the Alaska Congressional Delegation all stated a strong preference for supporting Alternative 2 as the permitted action alternative. They all cited the following reasons:

- (a) the shortest subsea pipeline minimizes the risk of an oil spill;
- (b) the extensive engineering design and review of the project by technical and regulatory experts;
- (c) the approvals (permits) by the State of Alaska for the project;
- (d) the approval in the form of a rezoning by the NSB; and
- (e) the concern for delay in construction, operation, and revenues should Alternative 2 not be selected.

Additionally, the Alaska Eskimo Whaling Commission (AEWC) stated that they generally do not favor offshore development, but if a subsea pipeline is to be built, the AEWC favors Alternative 2 as the only alternative they could support. Furthermore, the Minerals Management Service (MMS) selected Alternative 2 as its environmentally preferred alternative in the FEIS.

The Department of Interior (DOI), the U.S. Fish and Wildlife Service, the Environmental Protection Agency (EPA), and the National Marine Fisheries Service (NMFS) all stated that the Gwydyr Bay/Simpson Lagoon area was an

aquatic resource of national importance and recommended Alternative 5 should be selected as the permitted action alternative. These recommendations were based on the following factors of the Alternative 5 alignment:

- (a) routing the offshore pipeline seaward of the barrier islands would provide increased protection of nearshore lagoon and coastal habitats;
- (b) the West Dock landfall would eliminate potential risks to the offshore pipeline due to permafrost thaw, subsidence and shoreline erosion;
- (c) offshore oil spill response and recovery would be improved because oil spill response equipment will be staged at West Dock;
- (d) the onshore pipeline routing would improve leak detection, reduce oil spill response time, and reduce access-related habitat damage related to oil spill response and unplanned pipeline maintenance; and
- (e) consolidation of the onshore pipelines in existing infrastructure/corridors would minimize issues of disturbance and habitat loss to caribou.

The reasons above are similar to the rationale stated in the FEIS for the identification of Alternative 5 as the environmentally preferred alternative. Additionally, the USFWS provided a more detailed basis for their conclusion and recommendations which are summarized below:

- (a) the USFWS believes a large oil spill in the nearshore coastal-lagoon system would have greater impacts on fish and wildlife resources than a similar sized spill offshore of the barrier islands;
- (b) concerns for invertebrates, fish resources, migratory birds, marine mammals, threatened and endangered species, and cumulative impacts of future projects (e.g. Liberty and Sandpiper);
- (c) routing the offshore pipeline seaward of the barrier islands would provide increased protection of nearshore lagoon and coastal habitats by decreasing oil spill risks to anadromous fish and migratory birds in nearshore lagoons/bays;
- (d) a landfall at the West Dock causeway would eliminate potential risks to the offshore pipeline due to permafrost thaw subsidence and shoreline erosion;
- (e) the biological impacts of increased dredged and fill material required for Alternative 5 (relative to Alternative 2) would not be significant;
- (f) potential risks of ice gouge damage to the subsea pipelines between Alternative 5 and Alternative 2 would not be different;
- (g) proximity to West Dock would improve offshore oil spill response and recovery because oil spill response equipment will be staged at West Dock;
- (h) the differential spill volume between Alternative 5 and Alternative 2 is not significant relative to potential impacts to fish wildlife;
- (i) oil spill probabilities between Alternative 5 and Alternative 2 are approximately equal;
- (j) routing onshore pipelines in existing infrastructure/corridors would improve leak detection, reduce oil spill response time, and reduce access-related habitat damage related to oil spill response and unplanned pipeline maintenance of onshore pipelines; and
- (k) routing onshore pipelines in existing infrastructure/corridors decreases disturbance and habitat loss to caribou.

As explained in the FEIS, the environmentally preferred alternative for the purposes of NEPA is the alternative that causes the least damage to the biological and physical environment, and best protects, preserves, and

enhances historic, cultural and natural resources. This conclusion, however, is not necessarily dispositive of the Corps' permit decision under section 404 of the Clean Water Act, which requires application of the 404(b)(1) guidelines and consideration of the public interest.

For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

It is my determination that Alternative 2 complies with the 404(b)(1) guidelines and is not contrary to the public interest. An important aspect of the guidelines is that, "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." After evaluating and considering the following factors:

- the rationale in the FEIS for the environmentally preferred alternative;
- comments received in response to the FEIS and the DA Public Notice of Application for DA Permits, including those of the applicant, the Governor of the State of Alaska, the North Slope Borough, federal and non-federal agencies, and the AEWC;
- re-evaluation of the ability to protect the nearshore lagoon system at Gwydyr Bay; and,
- my assessment of the difference between the predicted potential for an oil spill and the actual oil risk,

I have determined that there is no practicable alternative to the applicant's proposal which would have less adverse impact on the aquatic ecosystem. Specifically, I conclude that there is no clear and meaningful difference between the potential adverse impacts on the aquatic ecosystem between Alternative 5 and the applicant's proposal (Alternative 2), and thus Alternative 5 would not have a less adverse impact on the aquatic ecosystem than does Alternative 2. The applicant's proposal also complies with the remainder of the 404(b)(1) guidelines (see Section IV below of this document). Moreover, the public interest, on balance, weighs in favor of the applicant's proposal, Alternative 2.

My decision is based on the following:

- (a) Review, comparison and evaluation of the rationale presented in the FEIS for the selection of Alternative 5 as the environmentally preferred alternative (page 11-34, FEIS). Specifically:
  - Alternative 2 has an estimated probability of an oil spill of 1.6% compared to Alternative 5 of 2.4%. It is my evaluation that these probabilities are conservative estimates that do not take into consideration the pipeline monitoring requirements being incorporated into the operation plans, or the advances in pipeline technology. Therefore, I do not consider these differences in probability to be meaningful. Also, based on the professional judgement of pipeline, oil spill, and regulatory experts, the actual oil spill risk is expected to be lower, such that either alternative has a similar, acceptable risk. Further, to the extent that there is any correlation between spill risk and pipeline length, I note that only about 1.7 miles of Alternative 2 is located within the lagoon system.

- Alternative 2 has an estimated potential pipeline spill volume of 3,600 barrels for a pipeline rupture, compared to 5,200 barrels for Alternative 5. Although it is my evaluation that either spill volumes, in the unlikely event that a large spill greater than 1,000 barrels should occur, are likely to have significant impacts, Alternative 5 has the potential to spill 44% more oil into the environment and under certain circumstance would result in a longer containment and clean-up time, with the potential of greater adverse impacts.
- The pipeline route of Alternative 5 would avoid Gwydyr Bay and the nearshore lagoon system. Additionally, the FEIS states that Gwydyr Bay could be protected from oil contamination under Alternative 5, by booming off the lagoon. I agree there would be some conditions under which Gwydyr Bay could be protected. However, given the environmental variables (broken ice, wind velocities, current velocities and direction), containment equipment limitations, and response times, there is also a probability that oil could enter Gwydyr Bay. In all likelihood, a large oil spill of greater than 1,000 barrels outside the barrier islands would be more mobile due to the more dynamic nature of the offshore environment, could tend to smear the barrier islands, and despite the presence of containment booms, would likely enter the coastal lagoon/bay waters under some circumstances given the prevailing east to northeast winds and wind speeds.
- Should a spill occur inside the barrier islands, the protection afforded by the barrier islands could allow more effective and timely containment and recovery operations. The protection provided by the barrier islands means that there is a reduced fetch distance over which waves could be generated, allowing favorable containment conditions approximately 90% of the time during open water periods. I have also considered ice and weather conditions for spring break-up and initial freeze-up patterns inside the barrier islands compared to seaward of the islands. Break-up (transition from winter to summer seasons) conditions generally began around May 29 (+/- 7 days) with the overflowing of the sea ice by the Kuparuk River. Since the west side of West Dock forms the eastern perimeter of the normal overflow zone of the Kuparuk River, most of the ice inside of the barrier islands will melt in place around mid-June. Seaward of the barrier islands, the ice remains until late June to mid-July (median date July 6, +/- 6 days). During this time, ice remaining would be floating, 3-4 feet thick with many cracks and melt through holes that would affect clean-up efforts due to unsafe ice conditions. In addition, I have included special condition #22, which requires that site-specific data on currents and bathymetry be collected for inside the barrier islands from the Kuparuk River Delta to West Dock and that a site-specific response strategy (including the pre-deployment of boom anchors) be developed in consultation with the U.S. Coast Guard to enhance response times for inside the barrier islands (i.e. Gwydyr Bay).
- The Alternative 5 pipeline landfall on the West Dock causeway would avoid the permafrost thaw bulb subsidence and shoreline erosion issues that could occur under Alternative 2. However, the inclusion of permit conditions for Alternative 2 would require additional validation and design modifications, if necessary, that would result in adequately mitigating the subsidence and erosion concerns.



- I consider the fill placement at the landfalls for Alternative 2 and 5 minor. Additional placement of fill material would be required adjacent to the West Dock causeway (approximately 5.5 acres) vs. the placement of fill material for a new valve pad of 0.2 acres at the Point Storkersen landfall.
- My evaluation of the potential effects of a 5-foot elevated, onshore pipeline for either Alternative 2 or 5 is that either routing would have minor impacts on caribou movement and distribution. The use of elevated pipelines having a minimum above ground clearance of 5 feet from the bottom of the pipe has been highly effective for facilitating the movements of caribou. For alternative 2, the presence of an elevated pipeline without an adjacent road is expected to have minor effects to caribou movements because traffic related disturbances would be absent and would not result in any appreciable loss of caribou habitat.
- Helicopters overflights associated with Alternative 2 or 5, in my assessment, can be adequately mitigated by the inclusion of a special condition, which limits the number of flight corridors and would avoid sensitive habitat areas.
- Additional mitigation measures to further minimize or avoid adverse impacts have been imposed since the FEIS.

In addition, the following public interest factors have been considered in my decision in accordance with 33 CFR 320.4:

- (b) The position of the Governor State of Alaska, supported by the state's extensive review process that Alternative 2 will not result in unacceptable impacts. "The state's position is based on technical/engineering analyses, an evaluation of the industry record and current practices, and the recommendations from local residents."
- (c) The North Slope Borough (NSB) reviewed Alternative 2 and approved it with conditions. These conditions included drilling restrictions, a monitoring program for noise impacts, an emergency countermeasure plan, shoreline protection and a three-barge response system. The Borough believes that the shortest possible subsea pipeline in the marine environment has the fewest risks associated with its construction, operation and maintenance.
- (d) The Alaska Eskimo Whaling Commission (AEWC) prefers no offshore oil development. However, if a pipeline is ultimately laid, the only appropriate alternative is Alternative 2, which presents the shortest distance for the subsea pipeline. AEWC considers Alternative 5 to be unacceptable. From subsistence and an "environmental justice" standpoint the AEWC cited that "No other human population will experience direct adverse effects as a result of this proposed development."
- (e) No North Slope local entity supported Alternative 5.
- (f) North Slope native interests disagreed with the FEIS determination regarding Environmental Justice, claiming that if there were a large spill, only they would be affected from a subsistence/cultural perspective (especially related to whaling). As noted above, the AEWC supported Alternative 2 as the only acceptable action alternative. I find this argument persuasive and it provides further support for Alternative 2.
- (g) Extensive mitigation measures have been included in State of Alaska approvals, in North Slope Borough permits for Alternative 2, in the applicant's proposal, and in the special conditions that I shall

require for inclusion in the DA permit. One of these conditions requires the applicant to develop, construct and implement a prototype external leak detection system for the subsea pipeline to provide for early detection of oil spills, should they occur..

- (h) Any of the action alternatives would satisfy the public interest criteria of helping to satisfy national energy needs. However, I find that Alternative 2 best satisfies this factor.

Finally, I do not have the authority to deny authorization for the applicant's proposal unless it fails the 404(b)(1) guidelines, or is found to be contrary to the public interest. It is my determination that Alternative 2 is in compliance with the 404(b)(1) guidelines (see Section IV below) and is not contrary to the public interest.

In their letter of March 5, 1999, EPA objected to the issuance of a DA permit for Alternative 2 unless additional geotechnical information was collected. I am requiring the additional collection of geotechnical data to verify the thaw settlement sediment data used for the pipeline design. Additionally, I am requiring that the review of the additional data be subjected to an open process with the cooperating agencies to ensure we are in agreement with the proposed sampling scheme, and to openly and interactively evaluate and interpret the sampling results. On March 22, 1999, EPA notified me that with the inclusion of the additional geotechnical data to support the adequacy of the pipeline design, they would not object to permit issuance for Alternative 2.

In their letter of March 5, 1999, NMFS also objected to the issuance of a DA permit unless Alternative 5 was selected as the action alternative. On March 29, 1999, NMFS notified me that with the inclusion of the mitigation measures incorporated as DA permit conditions, they would not object to permit issuance for Alternative 2. NMFS concludes that "full implementation of these conditions will provide adequate protection under Alternative 2."

The USFWS, in their letter of March 10, 1999, also objected to the issuance of a DA permit unless Alternative 5 was selected as the action alternative. On March 29, 1999, I forwarded a draft Record of Decision which supported my proposed decision to issue a DA permit with 21 special conditions for Alternative 2 to the USFWS in accordance with provisions of the 404(q) Memorandum of Agreement (MOA) between the Department of the Army and the Department of the Interior (DOI). Subsequently, the DOI requested review of the proposed permit decision by the Assistant Secretary of the Army for Civil Works (ASA/CW). On April 29, 1999, the ASA/CW notified DOI the subject permit case would not be elevated and that I may proceed with the final permit decision.

**3. Alternatives 3 and 4:** None of the comments (except for the EPA's comments) received in response to the review of the FEIS and the DA permit public notice provided support or favored Alternative 3 or Alternative 4. The EPA provided a ranking of the Alternatives, stating in their letter of March 5, 1999, that Alternative 5 was the least damaging practicable alternative, followed by Alternatives 4, 3, and 2 in that order. Given that the applicant's proposal of Alternative 2 does not fail the 404(b)(1) guidelines and is not contrary to the public interest, and there is no supporting rationale presented by any interested or commenting party that favored either Alternative 3 or Alternative 4, I have determined that Alternatives 3 and 4 do not warrant further consideration in my permit decision. Neither Alternative 3 or 4 would have less adverse impact on the aquatic ecosystem than does Alternative 2.

**IV. Evaluation of the Discharge of Dredged and Fill Material in Accordance with Section 404 (b)(1) Guidelines (40 CFR 230):**

**A. Evaluation of Compliance with 404(b)(1) Guidelines**  
 [restrictions on discharge, 40 CFR § 230.10 (a)-(d)]

(An \* is marked above the answer that would indicate noncompliance with the guidelines. No \* marked signifies the question does not relate to compliance or noncompliance with the guidelines. An "X" simply marks the answer to the question posed.) All chapter and section references are made to the Final Environmental Impact Statement (FEIS), Beaufort Sea Oil and Gas Development/Northstar Project dated February 1999 (Chapter and/or Section).

**1. Alternatives Test:**

- |  | Yes                                 | No                                  |
|--|-------------------------------------|-------------------------------------|
| (i) Based on the FEIS and other discussions in this ROD, are there available, practicable alternatives having less adverse impact on the aquatic ecosystem and without other significant adverse environmental consequences that do not involve discharges into "waters of the United States" or at other locations within these waters? | *<br><input type="checkbox"/>       | <input checked="" type="checkbox"/> |
| (ii) Based on the FEIS and other discussions in this ROD, if the project is in a special aquatic site and is not water dependent, has the applicant clearly demonstrated that there are no practicable alternative sites available?  | <input checked="" type="checkbox"/> | *<br><input type="checkbox"/>       |

**2. Special restriction. Will the discharge:**

- |   |                               |                                     |
|---|-------------------------------|-------------------------------------|
| (i) violate state water quality standards? No, the State of Alaska issued a Certificate of Reasonable Assurance dated February 17, 1999, in accordance with Section 401 of the Clean Water Act.   | *<br><input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (ii) violate toxic effluent standards (under Section 307 of the Act)? No, Section 307 has been implemented by EPA under 40 CFR Part 129, which lists toxic pollutants with effluents standards that have been promulgated. The Northstar discharge does not contain any toxic pollutants and therefore is in compliance with Part 307 of the Act. | *<br><input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (iii) jeopardize endangered or threatened species or their critical habitat? No, the NMFS and the USFWS finalized Biological Opinions on March 4 and March 11, 1999, respectively. Both agencies concluded a finding of no jeopardy.  | *<br><input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (iv) violate standards set by the Department of Commerce to protect marine sanctuaries? No, there are no marine sanctuaries so designated within the project area.  | *<br><input type="checkbox"/> | <input checked="" type="checkbox"/> |

- |  | Yes                                 | No                       |
|--|-------------------------------------|--------------------------|
| (v) evaluation of the information in the FEIS indicates that the proposed discharge material meets testing exclusion criteria for the following reason(s):   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| (X) based on the above information, the material is not a carrier of contaminants.   |                                     | *                        |
| (X) the levels of contaminants are substantially similar at the extraction and disposal sites and the discharge is not likely to result in degradation of the disposal site and pollutants will not be transported to less contaminated areas. |                                     | *                        |
| ( ) acceptable constraints are available and will be implemented to reduce contamination to acceptable levels within the disposal site and prevent contaminants from being transported beyond the boundaries of the disposal site.             |                                     | *                        |

**3. Other restrictions. Will the discharge contribute to significant degradation of "waters of the United States" through adverse impacts to:**

- |  | Yes | No                                  |
|--|-----|-------------------------------------|
| (i) human health or welfare, through pollution of municipal water supplies, fish, shellfish, wildlife and special aquatic sites? Chapters 6 and 7.   | *   | <input checked="" type="checkbox"/> |
| (ii) life stages of aquatic life and other wildlife? Chapters 6 and 7.   | *   | <input checked="" type="checkbox"/> |
| (iii) diversity, productivity and stability of the aquatic life and other wildlife or wildlife habitat or loss of the capacity of wetland to assimilate nutrients, purify water or reduce wave energy? Chapters 5, 6, and 7. | *   | <input checked="" type="checkbox"/> |
| (iv) recreational, aesthetic and economic values? Chapter 7.   | *   | <input checked="" type="checkbox"/> |

- |   |                                     |   |
|---|-------------------------------------|---|
| <b>4. Actions to minimize potential adverse impacts (mitigation). Will all appropriate and practicable steps (40 CFR § 230.70-77, Subpart H) be taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem? Yes, see Section V of this Record of Decision.</b> | <input checked="" type="checkbox"/> | * |
|---|-------------------------------------|---|

**B. Factual Determinations**  
(40 CFR § 230.11)

The determinations of potential short-term or long-term effects of the proposed discharges of dredged or fill material on the physical, chemical and biological components of the aquatic environment included items 1-8, below, in making a findings of compliance or non-compliance. There is minimal potential for short-term or long-term environmental effects (in light of Subparts C-F) of the proposed discharge as related to:

	(Chapter and Section Reference)	Yes	No
1. Physical substrate determinations	Section 5.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Water circulation, fluctuation and salinity determinations	Section 5.3 and 5.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Suspended particulate/turbidity determinations	Section 5.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Contaminant determinations	Section 5.3, Appendix I	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Aquatic ecosystem structure and function determinations	Chapters 5 and 6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Proposed disposal site determination (disposal sites and/or size of mixing zone are acceptable)	Section 5.3, 5.5 and 6.6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Determination of cumulative effects on the aquatic ecosystem	Chapter 10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Determination of secondary effects on the aquatic ecosystem	Chapters 5 and 6	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**C. Technical Evaluation Factors**

40 CFR § 230  
Subparts C-F

(Chapter and Section Reference)

1. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)	Chapter 5, Affected Physical Environment and Impacts
a. Substrate	Section 5.3 and 5.5
b. Suspended particulates/turbidity	Section 5.3 and 5.5
c. Water Column	Sections 5.3 and 5.5
d. Alteration of current patterns and water circulation	Sections 5.2, 5.3 and 5.5
e. Alteration of Normal Water fluctuations/hydroperiod	Section 5.3 and 5.5
f. Alteration of salinity gradients	Section 5.5

<b>2. Potential Impacts on the Biological Characteristics of the Aquatic Ecosystem (Subpart D)</b>	<b>Chapter 6. Affected Biological Environment and Impacts</b>
a. Threatened and endangered species	Sections 6.2, 6.9, 9.7 and 9.8 and Appendix B
b. Aquatic Food Web	Sections 6.2, 6.3, 6.4, and 6.6
c. Other wildlife	Sections 6.2, 6.5, 6.7, 6.8, and 6.9
<b>3. Potential Impacts on Special Aquatic Sites (Subpart E)</b>	
a. Sanctuaries and refuges	N/A
b. Wetlands	Section 6.6
c. Mud Flats	Section 6.6
d. Vegetated Shallows	Section 6.6
e. Coral reefs	N/A
f. Rifle and pool complexes	N/A
<b>4. Potential Effects on Human Use Characteristics (Subpart F)</b>	<b>Chapter 7. Affected Human Environment and Impacts</b>
a. Effects on municipal and private water supplies	Sections 7.2 and 7.5
b. Recreational and Commercial fishing impacts	Sections 6.4, 7.2, 7.3 (Subsistence fishing)
c. Effects on water-related recreation	Sections 6.4, 7.2 and 7.9
d. Aesthetics	Sections 7.2 and 7.8
e. Effects on parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves	Section 7.5

**D. Evaluation of Dredged or Fill Material (Subpart G, 40 CFR § 230.60)**

1. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material: (checked boxes apply)

- a.  Physical characteristics
- b.  Hydrography in relation to known or anticipated sources of contaminants
- c.  Results from previous testing of the material or similar material in the vicinity of the project
- d.  Known, significant, sources of persistent pesticides from land runoff or percolation
- e.  Spill records for petroleum products or designated (§311 of CWA) hazardous substances
- f.  Other public records of significant introduction of contaminants from industry, municipalities or other sources
  
- g.  Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities

References: Section 5.3 and 5.5, and Appendix I

2. An evaluation of the information above indicates that there is reason to believe the proposed dredged or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites. The material meets the testing exclusion criteria.  Yes  No

**E. Disposal Site Delineation**  
40 CFR §230.11(f)

1. The following factors as appropriate, have been considered in evaluating the disposal site. Chapters 5 and 6

- |   |                                     |
|---|-------------------------------------|
| a. Depth of water at the disposal site  | <input checked="" type="checkbox"/> |
| b. Current velocity, direction, and variability at disposal site  | <input checked="" type="checkbox"/> |
| c. Degree of turbulence   | <input checked="" type="checkbox"/> |
| d. Water column stratification  | <input checked="" type="checkbox"/> |
| e. Discharge vessel speed and direction   | <input type="checkbox"/>            |
| f. Rate of discharge  | <input checked="" type="checkbox"/> |
| g. Dredged material characteristics   | <input checked="" type="checkbox"/> |
| h. Other factor affecting rates and patterns of mixing:<br>Placement of dredged and/or fill material during ice cover, through an open trench | <input checked="" type="checkbox"/> |

2. An evaluation of the appropriate factors in V. a. above indicates that the disposal site and/or size of mixing zone are acceptable. Chapters 5 and 6  Yes  No

**F. Actions to Minimize Adverse Effects**  
(Subpart H, 40 CFR § 230.70)

- All appropriate and practicable steps would be taken, through application of recommendation of §230.70 – 230.77 to ensure minimal adverse effects of the proposed discharge.  Yes  No

**Actions taken:**

- Northstar Unit Lease Stipulation summaries and applicable Alaska Regulations (see Appendix D of the FEIS).
- Mitigation measures proposed by applicant, as stated in Chapter 1 (Table 1-1) of the FEIS and in the DA public notice for N-950372, Beaufort Sea 441.
- See also consideration of Mitigation Measures in this document in Section V. Means to Avoid or Minimize Adverse Environmental Effects of this documents.

**G. Findings of Compliance or Non-compliance**  
(40 CFR§ 230.12)

1.  The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.
2.  The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the mitigation and monitoring conditions, as discussed in Section V of this document.

3.  The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reasons:
- a. There is a less damaging practicable alternative .....
  - b. The proposed discharge will result in significant degradation of the aquatic ecosystem .....
  - c. The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem .....
  - d. There does not exist sufficient information to make a reasonable judgement as to whether the proposed discharge will comply with these Guidelines.

**V. Means to Minimize or Avoid Adverse Environmental Effects:**

1. **Lease Stipulations:** Measures that are already in place as lease stipulations can be found in Appendix D, Northstar Unit Lease Stipulation summaries and applicable Alaska Regulations.

2. **Mitigation incorporated by the Applicant:** Mitigation measures incorporated into the project design or that are committed to by the applicant, can be found in Chapter 1 (Table 1-1) of the FEIS, in the DA public notice for N-950372, Beaufort Sea 441, and in correspondence dated March 31, 1999, to the Corps, in which BPXA requested a permit condition regarding oil spill response be added to the DA permit.

3. **Potential Mitigation and Monitoring Identified in the FEIS:** The FEIS listed several potential mitigation measures and potential monitoring studies that are under active consideration by one or more of the lead and cooperating agencies. These potential measures and studies are discussed below. The potential measure or study as stated in Section 11.10.2 of the FEIS is in bold, followed by the Corps' consideration of each potential measure and study.

a. **Avoid potential injury and mortality to migratory birds, especially sea ducks (including threatened spectacled eiders), the applicant will lower and orient in an east-west direction, the construction crane (and any additional equipment of significant height) when equipment is not in use.** This mitigation measure was determined to be a mandatory reasonable and prudent measure by the USFWS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of this condition in the B.O. reads as follows: "Crane booms will be lowered and stored below the elevation of the sheet pile wall any time there are no construction activities requiring use of the crane. This restriction applies only when spectacled and Stellar's eiders may be present (15 May to 30 September)." In accordance with legal requirements of the Endangered Species Act, the Corps will incorporate the mandatory terms and conditions of the B.O. into the Department of the Army permit.

b. **Modify (via paint or lighting) structures or facilities to decrease the potential of bird strikes because Seal Island is within the migratory corridor of spring, fall, and molt-migrating waterfowl (king, common, and spectacled eiders, oldsquaw, black brant) and other birds (Pacific, red-throated, and yellow-billed loons, red and red-necked phalaropes).** This mitigation measure was determined to be a mandatory reasonable and prudent measure by the USFWS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of the above condition resulted in two mandatory conditions incorporated in the B.O. as follows: "The applicant and Service will cooperatively develop a strategy for marking and/or lighting selected structures on Seal Island to improve visibility to



migrants. A draft will be provided by the Service by 1 April 1999; the final plan must be approved by the Service, in consultation with the applicant and appropriate permitting agencies, by 1 June 1999" and "The applicant and Service will cooperatively develop a strategy for reducing radiation of light outward from Seal Island. The intent of the strategy will be to use shading or light fixture placement to reduce diffusion of light but not the amount of light reaching work areas or the ground surface. The final plan must be approved by the Service, in consultation with the applicant and appropriate permitting agencies, by 1 June 1999." In accordance with legal requirements of the Endangered Species Act, the Corps will incorporate the mandatory terms and conditions of the B.O. into the Department of the Army permit.

c. **Require the purchase of Breco buoys (Navenco Marine Company) or other similar acoustic scaring devices to disperse sea ducks and other migratory birds from an oil spill area to augment secondary oil spill response capabilities.** This mitigation measure was determined to be a mandatory reasonable and prudent measure by the USFWS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of this condition in the B.O. reads as follows: "To scare spectacled or Stellar's eiders from spilled oil, ten Breco buoys (Navenco Marine Company) or similar devices (to be approved by the Service) will be purchased and kept at Prudhoe Bay ready for immediate deployment. Training and maintenance of the Breco buoys will be done in compliance with the manufacturer's recommendations. Reporting requirements in the C-Plan will be modified to include relevant information on training and maintenance actions necessary for the Breco buoys." In accordance with legal requirements of the Endangered Species Act, the Corps will incorporate the mandatory terms and conditions of the B.O. into the Department of the Army permit.

d. **Prepare and implement bear-interaction plans to minimize conflicts between bears and humans.** These plans shall include measures to: (a) minimize attraction of polar bears to Seal Island; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on Seal Island and along offshore/onshore pipeline routes and identify proper procedures to be followed; (d) if authorized, deter bears from Seal Island and along offshore/onshore pipeline routes; (e) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The applicant shall develop educational programs and camp layout and management plans as they prepare operations plans. These plans shall be developed in consultation with appropriate federal, state, and NSB regulatory and resource agencies. This condition is similar to a recommended condition by the USFWS/DOI in their letter to the Corps of March 10, 1999, which reads as follows: "The applicant shall prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to: (a) minimize attraction of bears to Seal Island; (b) warn personnel of bears near or on Seal Island and offshore/onshore pipeline sites and identify proper procedures to be followed; (c) if authorized, deter bears from Seal Island and offshore/onshore pipeline sites; (d) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (e) provide for proper storage and disposal of materials that may be toxic to bears; and (f) provide a systematic record of bears observed on the site and in the immediate area. The applicant shall develop or continue educational programs to improve awareness of polar bears and denning habitat awareness concurrently with operations plans. These plans shall be developed in consultation with appropriate Federal, State, and NSB

regulatory and resource agencies." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts to polar bears. Therefore, it will be included as a special condition of the DA permit.

e. Because polar bears are known to den predominantly within 25 miles (40 km) of the coast, operators shall consult with the USFWS (907-786-3800) prior to initiating activities in such habitat between October 30 and April 15. This condition is similar to a recommended condition by the USFWS/DOI in their letter to the Corps of March 10, 1999, which reads as follows: "Because polar bears are known to den predominantly within 25 miles of the coast, the applicant and the applicant's contractors shall consult with the Fish and Wildlife Service, Marine Mammals Management Office (907-786-3800), prior to initiating activities associated with the Northstar development in such habitat between October 30 and April 15. Because the use of forward looking infrared radar (FLIR) appears to be a valuable technique to detect the presence of active polar bear dens, the Service recommends BPXA use this method prior to conducting field operations in denning habitat." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts to polar bears. Therefore, it will be included as a special condition of the DA permit.

f. Establish flight corridors for helicopter traffic to and from Seal Island. The objective of this measure is to minimize the impact of helicopter noise on nesting spectacled eiders, nesting brant, common eiders on the barrier islands, and molting waterfowl in nearshore lagoons. It is also intended to minimize noise impacts on denning seals, polar bears, and migrating whales. This mitigation measure was a recommended conservation measure by the USFWS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of this condition in the USFWS B.O. reads as follows: "The minimum number of helicopter routes needed to facilitate construction and operation of the Northstar project will be identified and adhered to between 15 May and 15 September unless doing so would jeopardize human safety. It is not believed that any individual routes are significantly better or worse than others in regard to spectacled eiders; therefore, the routes will be defined in consultation with the Corps, Service, and National Marine Fisheries Service considering impacts to other resources and economic factors. The routes will be identified and must be approved by the Service prior to initiation of construction. The applicant will develop procedures to ensure compliance from pilots, and GPS or other navigational aids will be used to minimize deviation from the identified routes. Prior to initiation of construction, a report will be submitted to the Corps and Service that includes: A) a map depicting the routes to be used; and B) an explanation of the procedures to be used by the applicant to ensure compliance by pilots, including the use of GPS or other navigational aids." Additionally, the NMFS recommended a similar condition in a letter to Corps dated March 5, 1999, which reads as follows: "Coordinate with NMFS and USFWS to establish flight corridors for helicopter traffic, so as to reduce potential risks to species of concern." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts to wildlife resources. Therefore, the condition as worded in the USFWS B.O. will be included as a special condition of the DA permit.

g. Establish vessel corridors to maximize separation between vessels and migrating whales. These would likely be seasonal restrictions and would apply during the fall whale migration. In particular, icebreaking barge operations related to maintaining a corridor between West Dock and Seal Island during broken/thin ice conditions cannot commence in the fall

prior to October 15. This condition resulted in two recommended conservation measures of the NMFS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of the conditions in the NMFS B.O. read as follows: "Vessel operations should be scheduled to minimize operations after August 31 of each year in order to reduce potential harassment of migrating bowhead whales. Vessel routes should be established which maximize separation with the bowhead whale migration corridor, remaining within the 18m depth contour and behind the barrier islands when practicable. During fall broken ice conditions, supply and crew changes between Deadhorse and Seal Island should be accomplished with helicopters rather than vessels to the extent possible, especially if those vessels would employ ice breaking," and "Should ice-maintenance be required to provide spill response capability for the Northstar project, ice breaking should not occur prior to October 15 of each year. The operator should investigate the use and effectiveness of propellor nozzles to reduce vessel noise." Additionally, the NMFS recommended a similar condition in a letter to Corps dated March 5, 1999, which reads as follows: "Establish vessel corridors to maximize separation between vessels and migrating whales. Vessel operations should be scheduled to minimize operations after August 31 of each year. In particular, icebreaking barge operations related to maintaining a corridor between West Dock and Seal Island during broken/thin ice conditions cannot commence prior to October 15. In addition, the operator shall investigate the use of propellor nozzles to reduce noise impacts to whales." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts to bowhead whales. Therefore, the two conditions from the NMFS B.O. will be included as special conditions of the DA permit.

h. Activities shall not be conducted nor pass within 1 mile (1.6 km) of any known polar bear dens and all observed dens shall be reported to the Marine Mammals Management Office, USFWS (907-786-3800) within 24 hours. This buffer zone will remain in effect from the time of detection, until the female bear/cubs leaves the denning area in the spring. The USFWS will evaluate these instances on a case-by-case basis to determine the appropriate action. Potential responses may range from cessation or modification of work to conducting additional monitoring. This condition is similar to a recommended condition by the USFWS/DOI in their letter to the Corps of March 10, 1999, which reads as follows: "All observed dens shall be reported to the Marine Mammals Management Office, Fish and Wildlife Service (907-786-3800) within 24 hours of discovery. A one-mile buffer zone will be established and will remain in effect from the time of detection until the female bear/cubs leaves the denning area in the spring. However, the Fish and Wildlife Service will evaluate these instances on a case-by-case basis to determine the appropriate action. The applicant and their contractors are urged to apply to the Service for Letters of Authorization for incidental take of polar bears during project operations." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts to polar bears. Therefore, it will be included as a special condition of the DA permit.

i. Require the preparation of an agency approved plan that demonstrates: 1) a reduction in oil spill risk, 2) increased leak detection under ice, and 3) increased oil spill response capability. The parts of this mitigation measure requiring increased leak detection and spill response capability were determined to be mandatory reasonable and prudent measures by the USFWS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of the conditions in the B.O. read as follows: "To detect an oil spill under stable, solid ice (~1 December to 1 May), the applicant will conduct temporal and spatial sampling to ensure at least a 70% probability of detecting a 32.5 barrel per day chronic leak (which

corresponds to 33% of maximum undetected chronic leak). To attain this detection probability, a 200 foot sampling interval is required (based on sampling every 30 days and two holes spaced 20-30 feet apart). The Service would support the development and use of alternative leak detection methods (satellite and aerial imaging techniques, ground penetrating radar, fiber optic cable sensing systems; see P. Hanley [BPXA] letter to B. Britt [ADNR], 17 December 1998) provided it results in an equal or higher probability of leak detection" and "Surveys and/or radio-tracking studies will be conducted to identify areas in the Beaufort Sea that are important to spectacled and Stellar's eiders. The study plans and responsibilities will be developed cooperatively between the Service, the applicant, U.S. Geological Survey/Biological Resources Division, and MMS. The applicant has primary responsibility for funding these studies but this responsibility is limited to the project area (as described in the EIS) and the area west to Teshekpuk Lake (see R. Jakubczak [BPXA] letter to T. Swem [Service], 5 February 1999). Findings will be appended to the Alaska Clean Seas Manual, Northstar C-Plan and other applicable strategy documents that direct oil spill response. In particular, the information will be used to modify spill response so that important eider use areas and habitat types will be protected to the maximum extent possible." Additionally, the NMFS requested a similar condition as above to improve leak detection in their Essential Fish Habitat (EFH) Conservation Recommendations of March 5, 1999. In accordance with legal requirements of the Endangered Species Act, the Corps will incorporate the mandatory terms and conditions of the B.O. into the Department of the Army permit.

**j. Require use of the agitation technique for pile installation instead of pile driving during certain periods. Such a measure is intended to reduce noise impacts on marine mammals. This condition was a recommended conservation measure of the NMFS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of this condition in the NMFS B.O. reads as follows: "Utilize agitation technique for placement of sheetpiling and piling instead of pile-driving whenever practicable." Additionally, the NMFS recommended a similar condition in a letter to the Corps dated March 5, 1999, which reads as follows: "Utilize the agitation technique for pile and sheetpile installation whenever practicable." And, the EPA recommended a similar condition in a letter to the Corps dated March 5, 1999, which reads as follows: "Sheet pile installation methods will minimize noise impacts to marine mammals and may require the use of agitation techniques during certain periods of time." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts of noise on marine mammals. Therefore, the condition as worded in the NMFS B.O. will be included as a special condition of the DA permit. Additionally, the condition will require all piling to be installed by impact techniques must be completed by July 31.**

**k. Require a barge-based oil spill response plan. Three icebreaking barges would be used as the foundation of an on-site oil spill response plan. The barges would support oil cleanup crews, house equipment, and serve as a holding facility for recovered oil. The Corps does not have direct authority to include operational-type conditions related to oil spill prevention and response. Therefore, this condition will not be carried on the DA permit. However, we note that the State of Alaska in their approval of the Oil Discharge Prevention and Contingency Plan (ODPCP) required barge-based oil spill response, with ice-breaking capabilities. The Corps has considered the protective measures of the ODPCP and the State of Alaska's conditioning and approval of the ODPCP in this Record of Decision.**

1. **Require complete shutdown of the pipeline during broken ice conditions.** Such a measure is intended to minimize the risk of an oil spill when clean-up efficiencies are likely to be low. The NMFS requested a similar condition in their Essential Fish Habitat (EFH) Conservation Recommendations that reads as follows: "Reduce pipeline flow during periods when detection of chronic leaks is not possible by any other method." However, the Corps does not have direct authority to include operational-type conditions related to oil spill prevention and response. Therefore, this condition will not be carried on the DA permit. Additionally, we note that the State of Alaska in their review and approval of the Oil Discharge Prevention and Contingency Plan (ODPCP) determined that this condition was not necessary. The Corps has considered the protective measures of the ODPCP and the State of Alaska's conditioning and approval of the ODPCP in this Record of Decision.

m. **Require pre-staging of oil spill response equipment to protect biologically important sites, such as river deltas, lagoons, and barrier islands.** This measure is intended to reduce the risk of an oil spill reaching and adversely affecting sensitive species in these important habitats. The NMFS requested a similar condition in their Essential Fish Habitat (EFH) Conservation Recommendations that reads as follows: "Pre-stage oil spill response equipment to protect biologically important sites such as river deltas, lagoons, and barrier islands." The Corps does not have direct authority to include operational-type conditions related to oil spill prevention and response. Therefore, this condition will not be carried on the DA permit. However, we note that BPXA has incorporated this mitigation measure into the ODPCP, which was approved by the State of Alaska. The Corps has considered the protective measures of the ODPCP and the State of Alaska's conditioning and approval of the ODPCP in this Record of Decision.

n. **Require a well relief plan for a well blowout event.** This measure is intended to ensure that emergency equipment is close by in the event of a well blow out, so that control of the well will be regained as quickly as possible, to maximize safety and reduce harm to the environment. The Corps does not have direct authority to include operational-type conditions related to oil spill prevention and response. Therefore, this condition will not be carried on the DA permit. However, we note that BPXA has incorporated this mitigation measure into the ODPCP, which was approved by the State of Alaska. The Corps has considered the protective measures of the ODPCP and the State of Alaska's conditioning and approval of the ODPCP in this Record of Decision.

o. **Restrict construction and operation activities that may affect marine mammals (e.g., drilling, ball mill, pile driving).** This measure is intended to reduce noise impacts to marine mammals and potential effects on subsistence. Other mitigation measure have been considered and evaluated which would reduce noise impacts on marine mammals (see potential mitigation measures f., g., and j. above). Therefore, the intent of this condition has already been considered and mitigation measures will be incorporated into the DA permit that will minimize the effects of noise on marine mammals.

p. **Prohibit drilling the first development well into the targeted hydrocarbon formation(s) during broken ice conditions.** Such a requirement is intended to provide the applicant and the permitting agencies with an opportunity to test well integrity prior to the next development step and reduce the chance of an oil spill. The NMFS requested a similar condition in their Essential Fish Habitat (EFH) Conservation Recommendations of March 5, 1999. However, the Corps does not have direct authority to include

operational-type conditions related to oil spill prevention and response. Therefore, this condition will not be carried on the DA permit. However, we note that the State of Alaska in their approval of the Oil Discharge Prevention and Contingency Plan (ODPCP) required drilling restrictions during broken ice conditions. The Corps has considered the protective measures of the ODPCP and the State of Alaska's conditioning and approval of the ODPCP in this Record of Decision.

**q. Prohibit the drilling of exploration wells into untested formations during broken ice conditions. Such a measure is intended to reduce the chance of an oil spill occurring when oil spill cleanup efficiencies are likely to be low. The NMFS requested a similar condition in their Essential Fish Habitat (EFH) Conservation Recommendations of March 5, 1999. However, the Corps does not have direct authority to include operational-type conditions related to oil spill prevention and response. Therefore, this condition will not be carried on the DA permit. However, we note that the State of Alaska in their approval of the Oil Discharge Prevention and Contingency Plan (ODPCP) required drilling restrictions during broken ice conditions. The Corps has considered the protective measures of the ODPCP and the State of Alaska's conditioning and approval of the ODPCP in this Record of Decision.**

**r. Establish time periods for certain construction activities to minimize environmental consequences. Such activities would likely include: pipeline trenching, onshore and offshore gravel placement, spoil disposal offshore, gravel hauling, road construction, pipe construction, and pipeline testing. The NMFS requested a similar condition in their Essential Fish Habitat (EFH) Conservation Recommendations of March 5, 1999. We note that BPXA has scheduled most construction activities (except for module installation, island slope protection, and sheetpiling) to occur during winter, when impacts to fish and wildlife would be minimized or avoided. We have not identified any additional specific timing restrictions for construction-related activities.**

**s. Establish a citizen's advisory board to address impacts to subsistence and to recommend to the government and the applicant solutions to any identified problems. The NSB recognized the need for this mitigation measure in its approval of the rezoning of the NSB's Master Plan. As a result, this condition will not be carried on the DA permit. However, the Corps has considered the protective measure required by the NSB for a subsistence advisory board for the Northstar in this Record of Decision.**

**t. Require additional site-specific geotechnical data prior to construction along the pipeline route in the shoal area and at the pipeline landfall. This data will be employed in a geotechnical analysis as specified in a plan requiring approval prior to construction. This plan will also specify the geotechnical sampling methodologies and sites. The EPA and NMFS recommended that additional site-specific geotechnical data be collected, in their letters to the Corps of March 5, 1999. We note that there has already been several geotechnical drilling programs over a several year period for the Northstar Project. Additionally, a review of regional geotechnical data in the vicinity of Northstar has also been conducted. Thus, data are available and were used to consider the presence of permafrost in the shoreline transition zone for all action alternatives. The Cold Regions, Research, and Engineering Laboratory of the Corps of Engineers (CRREL) reviewed the available geotechnical data for the project. The CRREL agreed that available data indicated that depth to thaw stable gravel had generally been predicted and taken into account in the project design. However, CRREL recommended additional geotechnical data be**

collected to further verify depths to thaw stable gravel in the shoal area near the barrier islands and at the shoreline transition zone. The DA permit will include a special condition to require the collection of additional geotechnical data and review of the data prior to construction of the subsea pipeline. The purpose of this review is to verify the thaw settlement data used for pipeline design.

u. Require the use, if practicable, of arctic grade, low sulfur (0.05%) diesel fuel during the first year of drilling. The Corps does not have direct authority to include operational-type conditions related to reducing air emissions. Therefore, this condition will not be carried on the DA permit.

v. A monitoring program to investigate avian injury and mortality at Seal Island. The issue centers on whether facilities (towers, buildings, wires, and seawall) on Seal Island pose a hazard to birds. The study would need to be conducted from approximately May 1st through November 15th for a minimum of 5 years to monitor bird collisions during various ice conditions and lead patterns during bird migration periods. This condition is similar to a recommended condition by the USFWS/DOI in their letter to the Corps of March 10, 1999, which reads as follows: "Because project facilities (e.g., flare tower, pipe rack, sea wall) are potential hazards to migrating birds, including hundreds of thousands of sea ducks, the applicant shall conduct a post-construction monitoring study to evaluate whether Seal Island facilities result in avian injury and mortality. The monitoring study period will extend from 1 May through 15 November for a minimum of 5 years; methods and protocol will be developed between the applicant and the Service. Because the applicant is currently working with the Service to reduce potential impacts to spectacled eiders, a monitoring study will serve the dual purpose for reporting avian injury or mortality per requirements of the Endangered Species Act and the Migratory Bird Treaty Act." The Corps concurs that this mitigation measure is appropriate and necessary to minimize potential adverse impacts of island structures on migratory birds. Therefore, the condition will be included as a special condition of the DA permit.

w. An acoustic monitoring program to measure actual frequency and noise level at various distances from Seal Island during the construction and initial operation of facilities on Seal Island. The program should be conducted for at least 3 years, beginning with initial gravel placement on the island. This study is intended to better understand noise impacts to marine mammals and to determine the noise signature from project operations. This condition was recommended by NMFS in their letter to the Corps of March 5, 1999. Additionally, this condition was a recommended conservation measure of the NMFS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of this condition in the NMFS B.O. reads as follows: "Develop and conduct an acoustic monitoring study to measure the frequency composition of noise and noise levels as a function of distance from the Seal Island facility during construction and initial operation." The Corps concurs that this mitigation measure is appropriate and necessary to minimize potential adverse impacts of noise on bowhead whales. Therefore, the condition will be included as a special condition of the DA permit.

x. Conduct or support studies that investigate the impact of noise from the project on bowhead whale migration. The intent is to both understand the effects of the Northstar project and to provide information necessary for consideration of future offshore development. This condition was recommended by NMFS in their letter to the Corps of March 5, 1999. Additionally, this condition was a recommended conservation measure of the

NMFS in their Biological Opinion (B.O.) for the Northstar Project. The final wording of this condition in the NMFS B.O. reads as follows: "Conduct or support studies to describe the impact of the Northstar facility on the migrational path of the bowhead whale in the Beaufort Sea." The Corps concurs that this mitigation measure is appropriate and necessary to minimize potential adverse impacts of noise on bowhead whales. Therefore, the condition will be included as a special condition of the DA permit.

y. A monitoring program to characterize pre- and post-construction sediment chemistry. This would be conducted along the pipeline trench with location reference sites. This mitigation measure was included as a condition of the ADEC 401 Water Quality Certification. In accordance with 33 U.S.C. 1341(d), it will be incorporated into the DA permit (see Section III.A(1) above).

z. A monitoring program to track disposed material from trench excavation. The objective is to document how far these sediments travel and to determine if excessive subsea mounding occurs to determine compliance with permit conditions. The NMFS requested a similar condition in their Essential Fish Habitat (EFH) Conservation Recommendations of March 5, 1999. Additionally the EPA recommended the following condition in their letter of concurrence, dated March 25, 1999, for the Section 103 transport of dredged material for the purpose of ocean disposal: "A sediment monitoring plan is required to be developed and conducted. Development of a draft monitoring work plan shall be completed by BPXA and submitted to EPA and the Corps for review and approval within 90 days of permit issuance. Inclosure 1 of this letter provides our objectives and a conceptual monitoring design. The conceptual monitoring design is tiered based on the monitoring objectives. Once those monitoring objectives are met, the monitoring requirement can be terminated. Baseline sampling must be completed prior to initiating trenching operations in the ocean. If a BPXA-proposed work plan has not been approved by the federal government 90 days before ocean trenching is scheduled to begin, the EPA and Corps will finalize the conceptual monitoring design and that plan will be provided to BPXA to conduct as a stipulated condition." The Corps will incorporate this condition, with a slight wording modification, into the DA permit, as it is appropriate and necessary to ensure that the effects from ocean disposal of dredged material are minimized.

aa. A monitoring program to measure water quality and sediments around Seal Island. The objective is to gather data that can be used by the applicant and the agencies in determining whether the project is in compliance with permit conditions. In addition, this data may be used to inform the decision-maker when permit reissuance may be sought by the applicant. The NMFS requested two similar conditions in their Essential Fish Habitat (EFH) Conservation Recommendations of March 5, 1999. The Corps does not have direct authority to include these types of operational-type conditions. Therefore, this condition will not be carried on the DA permit. However, the EPA has proposed to incorporate a water quality and sediment monitoring program in their Preliminary Final National Pollutant Discharge Elimination System (NPDES) Permit. The Corps has reviewed and considered the protective measures of the Preliminary Final (NPDES) permit in this Record of Decision.

bb. Require an erosion monitoring and remedial action plan to protect the pipeline landfall site in the event of unexpectedly large erosion events or rates. This plan should include both a monitoring component and a description of the remedial actions that may be employed in the event the landfall shoreline requires stabilization. The Corps believes this condition is appropriate and necessary to minimize undue degradation to the



aquatic environment. Therefore, this condition, as worded below in condition 2, will be included on the DA permit.

cc. Require an ice-override monitoring and action plan to protect the pipeline transition site in the event of unexpectedly large ice-override events. This mitigation measure was considered as part of the State Pipeline Coordinator's Office (SPCO) review for this project. We believe that appropriate ice-override considerations have been incorporated into the design of the landfall pad. Specifically, the distance of the pad setback from the coastline and the placement of a protective gravel berm on the pad should adequately protect the valve pad from an ice-override event. Therefore, this condition will not be carried as a condition of the DA permit.

dd. Because the specific timing of migration and distribution of sea ducks (common, king and threatened spectacled eiders, oldsquaws) and other migratory birds (e.g., Pacific, red-throated, and yellow-billed loons, red and red-necked phalaropes) have been inadequately described, and because this offshore development may impact these resources, the applicant may be required to conduct research using aerial surveys, migration watches, ground surveys of barrier islands, and the use of radar to describe spring, fall, and molt migrations and potential staging/molting areas of migratory birds. This condition was not requested as a condition by the federal resource agencies. However, the MMS is planning to support funding for a study in FY99 entitled "Monitoring Beaufort Sea Waterfowl and Marine Birds" that would address much of the information needs of this mitigation measure. The MMS will consult with other resource agencies, including the USFWS, in developing the study design. The Corps has considered the fact that the study has already been committed to by the MMS, therefore this condition will not be carried on the DA permit.

ee. The applicant may be required to conduct aerial surveys of polar bears during certain times of the year around Seal Island and along the offshore/onshore pipeline corridors to minimize effects of the proposed development. This condition is similar to a recommended condition by the USFWS/DOI in their letter to the Corps of March 10, 1999, which reads as follows: "Because the proposed project will increase oil spill risks to polar bears, the applicant shall conduct or support studies to address the following: (a) likelihood of chronic and one-time release oil spill trajectories contacting one or more polar bears in the project area; (b) development of forward looking infrared radar (FLIR) to determine the distribution of maternal dens within the project area; and (c) conduct aerial surveys to determine the distribution of polar bears on barrier islands and along the coast within the Project Area during August through October. Study objectives, design and methods will be the responsibility of the Fish and Wildlife Service (Marine Mammals Management) and the U.S. Geological Survey (Biological Resources Division), in coordination with the Corps of Engineers." The Corps concurs that this mitigation measure is appropriate and necessary to minimize adverse impacts to polar bears. Therefore, it will be included as a special condition of the DA permit.

The following mitigation measures were not included as potential mitigation measures in Chapter 11 of the FEIS, but were recommended by the federal resource agencies in a Biological Opinion or permit comment letters to the Corps.

ff. The USFWS/DOI in their letter to the Corps of March 10, 1999, recommended the following condition: "The applicant shall consult with Alaska Departments of Natural Resources, Environmental Conservation, and Fish and Game and ARCO Alaska to conduct contaminant testing at the

abandoned Kuparuk River State No. 1 airstrip and pad. Upon a finding of no contamination, BPXA will remove 20,000 - 25,000 cy of gravel from the abandoned Kuparuk River State No.1 airstrip and pad for construction of Seal Island. Removal of this gravel to supplement or decrease the amount of gravel mined from the new gravel site would mitigate some of the environmental impacts from earlier development." The Corps concurs that this mitigation measure, if practicable, is appropriate and necessary to minimize adverse impacts to onshore aquatic resources and facilitate restoration of abandoned gravel pads. However, questions have arisen as to the applicant's ability to perform the work from legal and/or ownership perspectives. Therefore, the mitigation measure will be included as a special condition of the DA permit, with slightly modified wording to allow for use in island construction or other purposes, and to indicate that ownership and legal issues would need to be resolved.

gg. The USFWS included the following conservation measure for spectacled eiders in their Biological Opinion (note the recommended conservation measure regarding helicopter routes has already been discussed above under mitigation measure f.): "The applicant will comply with all relevant State of Alaska regulations governing the storage and disposal of refuse. The applicant will provide training to all employees and contractors that prevents all personnel from providing food for wildlife intentionally or unintentionally." This recommended condition regarding refuse is not within the direct authority of the Corps to enforce and therefore will not be included on the DA permit. We note that BPXA has previously agreed to comply with the terms of this condition.

hh. The USFWS included the following conservation measure for spectacled eiders in their Biological Opinion: "The applicant will assign one or more persons to be responsible for the monitoring refuse storage facilities such as dumpsters to determine if foxes, ravens, or gulls gain access to food. If predators are seen feeding on anthropogenic waste at facilities at Seal Island, it will be reported in writing to the Field Supervisor, U.S. Fish and Wildlife Service, Ecological Services, 101 12<sup>th</sup> Ave., Box 19, Fairbanks, AK 99701. In the event that predators are seen feeding at Northstar facilities, the applicant and Service will cooperatively develop a strategy to eliminate the problem." This recommended condition regarding refuse is not within the direct authority of the Corps to enforce and therefore will not be included on the DA permit. We note that BPXA has previously agreed to comply with the terms of this condition.

ii. The EPA in their letter to the Corps of March 5, 1999, recommended the following condition: "Construction and operations that may result in effects to marine mammals or endangered species will be limited in a manner acceptable to either the Fish and Wildlife Service or National Marine Fisheries Service as appropriate for the animal in question." The Corps believes we have fully considered and implemented the appropriate and practicable conditions to minimize or avoid adverse impacts to marine mammals and endangered species. The Corps' evaluation and handling of the recommended conditions from the NMFS and the USFWS have been coordinated with those agencies. Therefore, this condition is unnecessary and will not be included on the DA permit.

jj. The EPA in their letter to the Corps of March 5, 1999, recommended the following condition: "Monitor the area around the reconstructed gravel island to verify the assumption that there will not be a long term problem with erosion and sediment movement." The Corps concurs that this condition is appropriate and necessary to avoid adverse impacts to aquatic resources. Therefore, this condition will be included on the DA permit.

kk. The EPA in their letter to the Corps of March 5, 1999, recommended the following condition: "Monitor the work necessary to reconstruct the erosion protecting sacrificial gravel berms to determine both if they are functioning as needed and to determine if there is a better, less damaging solution to erosion protection." The Corps concurs that this condition is appropriate and necessary to avoid adverse impacts to aquatic resources. Therefore, this condition will be included on the DA permit.

ll. The applicant has agreed to develop a new state-of-art external leak detection system for the subsea pipeline. The Corps believes this will result in early leak detection under all environmental conditions, and in particular during solid and broken-ice conditions. As stated in above in the Rationale for Decision, the Corps believes the project is safe and conservatively engineered. However, an external leak detection system would add another safeguard for the offshore and lagoon environments. Therefore, the Corps will include a condition on the DA permit that will require the permittee to design, install, operate and maintain an external leak detection system for the subsea pipeline. The system shall be designed to detect oil leaks at 50-foot intervals or less along the entire subsea pipeline length, and have a minimum capability of detecting a 32.5 barrel per day chronic leak.

mm. The Corps compliance and enforcement regulations provide an opportunity for a permittee to pay for inspection expenses in unusual cases [see 33 CFR 326.4(c)]. The Corps believes the Northstar Project is an unusual situation, in that it is remote and very difficult to access the project site by typical transportation carriers. Adding a condition that specifies compliance and enforcement inspection expenses will be borne by the permittee will streamline the compliance process and provide the benefits of regular inspections to ensure compliance with the permitted activities and special conditions of the DA permit.

nn. The Corps has also determined that a condition requiring notification of future ice road construction, directly associated with the Northstar Project, is appropriate to allow review of each proposal for Corps jurisdiction. Additionally, notification of ice road construction and routes to the federal resource agencies would allow resource agencies to suggest optimal routing to minimize impacts to fish and wildlife resources.

oo. In consultation with the U. S. Coast Guard, and at the permittee's request, I have conditioned the DA permit (special condition # 22) to include the pre-positioning of oil spill response equipment and development of a Gwydyr Bay specific (from the western edge of the Kuparuk River Delta to West Dock) oil spill strategy plan to include detailed bathymetry mapping, current mapping, identification of potential containment sites, and identification of pre-deployment boom anchor sites.

pp. Finally, I have included two permit conditions which address notification requirements to the National Ocean Service for a submerged pipeline and to the U.S. Coast Guard for potential lighting and/or aids to navigation.

**As a result of the above discussion and evaluation of potential mitigation measures, the following conditions will be carried on the DA permit:**

- (1) This Department of the Army (DA) permit does not authorize you to take any endangered species. In order to legally take a listed species, you must have a separate authorization under the Endangered Species Act (ESA), for example an ESA section 10 permit or a Biological Opinion (B.O.) with "incidental take" provisions with which you must comply. The U.S. Fish and Wildlife Service (USFWS) B.O. for this project contains mandatory terms and conditions to implement the reasonable and prudent measures that are specified in the B.O. Your authorization under this DA permit is conditional upon your compliance with all of the mandatory terms and conditions of the USFWS B.O. The mandatory terms and conditions of the B.O. are hereby incorporated by reference into this permit. Failure to comply with the terms and conditions of the B.O., where a take of a listed species occurs, would constitute an unauthorized take, and would cause you to be in non-compliance with this DA permit. The USFWS is the authority on compliance with the terms and conditions of the B.O.
- (2) The permittee shall develop and execute a program to monitor the shoreline erosion at the proposed pipeline landfall site. The initiation of this monitoring program will begin the first break-up after island construction. The measurements from the monitoring program will be used to assess the accuracy of design parameters considered in the original permit application. The permittee shall develop a plan for remedial actions that will be employed to stabilize the landfall site in the case of unexpectedly large erosion events or rates. Plans for monitoring shoreline erosion and remedial action shall be submitted within 60 days of permit issuance to the Corps, in consultation with the federal resource agencies, for review and approval prior to construction of the pipeline. An annual report presenting observations from the shoreline erosion monitoring program shall be submitted to the Corps no later than November 15 of each year for review, in consultation with the federal resource agencies.
- (3) The permittee shall prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to: (a) minimize attraction of bears to Seal Island; (b) warn personnel of bears near or on Seal Island and offshore/onshore pipeline sites and identify proper procedures to be followed; (c) if authorized, deter bears from Seal Island and offshore/onshore pipeline sites; (d) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (e) provide for proper storage and disposal of materials that may be toxic to bears; and (f) provide a systematic record of bears observed on the site and in the immediate area. The permittee shall develop or continue educational programs to improve awareness of polar bears and denning habitat awareness concurrently with operations plans. These plans shall be developed in consultation with appropriate Federal, State, and NSB regulatory and resource agencies.
- (4) The permittee and the permittee's contractors shall consult with the USFWS, Marine Mammals Management Office (907-786-3800), prior to initiating activities associated with the Northstar development between October 30 and April 15. Because the use of forward looking infrared radar (FLIR) appears to be a valuable technique to detect the presence of active polar bear dens, the

Service recommends BPXA use this method prior to conducting field operations in denning habitat.

- (5) The number of helicopter routes needed to facilitate construction and operation of the Northstar project will be minimized and will be identified and adhered to between 15 May and 15 September unless doing so would jeopardize human safety. It is not believed that any individual routes are significantly better or worse than others in regard to spectacled eiders; therefore, the routes will be defined in consultation with the Corps, USFWS, and National Marine Fisheries Service (NMFS) considering impacts to other resources and economic factors. The routes will be identified and must be approved by the Corps, USFWS, and NMFS prior to initiation of construction. The permittee will develop procedures to ensure compliance from pilots, and GPS or other navigational aids will be used to minimize deviation from the identified routes. Prior to initiation of aerial support activities between May 15 and September 15, a report will be submitted to the Corps, USFWS, and NMFS that includes: A) a map depicting the routes to be used; and B) an explanation of the procedures to be used by the permittee to ensure compliance by pilots, including the use of GPS or other navigational aids.
- (6) Vessel operations shall be scheduled to minimize operations after August 31 of each year in order to reduce potential harassment of migrating bowhead whales. Vessel routes shall be established which maximize separation with the bowhead whale migration corridor, remaining within the 18m depth contour and behind the barrier islands, when practicable. During fall broken ice conditions, supply and crew changes between Deadhorse and Seal Island shall be accomplished with helicopters rather than vessels to the extent practicable, especially if those vessels would employ ice breaking.
- (7) Should ice-management be required to provide spill response capability for the Northstar project, ice breaking shall not occur prior to October 15 of each year, with the exception of vessel maneuvering in the immediate vicinity of West Dock. The operator should investigate the use and effectiveness of propellor nozzles to reduce vessel noise.
- (8) All observed polar bear dens shall be reported to the USFWS, Marine Mammals Management Office (907-786-3800) within 24 hours of discovery. A one-mile buffer zone will be established and will remain in effect from the time of detection until the female bear/cubs leaves the denning area in the spring. However, the USFWS will evaluate these instances on a case-by-case basis to determine the appropriate action. The permittee and their contractors are urged to apply to the Service for Letters of Authorization for incidental take of polar bears during project operations.
- (9) The agitation technique for placement of sheetpiling and piling, instead of pile driving using impact techniques, shall be utilized, whenever practicable. All impact driving methods for sheetpile and other piling installations, shall be completed on or before July 31.
- (10) Additional geotechnical information shall be collected to verify the thaw settlement sediment data used for the pipeline design.

A geotechnical-sampling plan shall be submitted within 60 days of permit issuance. The plan will be reviewed and approved by the Corps, in consultation with the federal resource agencies. Specifically, observations shall be made along the proposed pipeline route where limited data has been obtained, including (a) the shoal area near the barrier islands and (b) the shoreline transition zone, particularly onshore. These observations should include information from boring and sample analysis, such as geotechnical properties, thaw strain measurements, and the depth to the thaw stable gravel in zones of ice bonded permafrost. The permittee will assess the consistency of this additional data with their design limits for thaw strain, as described in the original permit application. In the event that the additional observations are inconsistent with the original design criteria, the permittee will assess the impact of this result on their design. A report presenting these additional observations and the comparison with original design criteria will be submitted to the Corps, in consultation with the federal resource agencies, for review and approval prior to subsea pipeline construction. Should design or construction modifications be necessary, these changes must be submitted to the Corps, in consultation with the federal resource agencies, for review and approval at least 90 days prior to subsea pipeline construction.

- (11) The permittee shall conduct a post-construction monitoring study to evaluate whether Seal Island facilities result in avian injury and mortality. The monitoring study period will extend from 1 May through 15 September for a minimum of 5 years; methods and protocol will be developed between the permittee, the Corps, and the USFWS. Because the permittee is currently working with the USFWS to reduce potential impacts to spectacled eiders, a monitoring study will serve the dual purpose for reporting avian injury or mortality per requirements of the Endangered Species Act and the Migratory Bird Treaty Act.
- (12) The permittee shall develop and conduct an acoustic monitoring study to measure the frequency composition of noise and noise levels as a function of distance from the Seal Island facility during construction and initial operation.
- (13) The permittee shall conduct or support studies to describe the impact of the Northstar facility on the migrational path of the bowhead whale in the Beaufort Sea.
- (14) The permittee shall conduct or support studies to address the following: (a) likelihood of chronic and one-time release oil spill trajectories contacting one or more polar bears in the project area; (b) application of forward looking infrared radar (FLIR) to determine the distribution of maternal dens within the project area; and (c) conduct aerial surveys to determine the distribution of polar bears on barrier islands and along the coast within the Project Area during August through October. Study objectives, design and methods will be developed by the U.S. Fish and Wildlife Service (Marine Mammals Management), the U.S. Geological Survey (Biological Resources Division), and the permittee, in coordination with the Corps of Engineers.
- (15) The permittee shall consult with the Corps, federal resource agencies, State of Alaska, ARCO Alaska, and Exxon, as appropriate, in an attempt to resolve legal and ownership issues

regarding Kuparuk River State No. 1. If these issues are resolvable, the permittee shall consult with the Corps, federal resource agencies, Alaska Departments of Natural Resources, Environmental Conservation, and Fish and Game, ARCO Alaska, and Exxon, as appropriate, to conduct contaminant testing at the Kuparuk River State No. 1 airstrip and pad. Upon a finding of no contamination, BPXA will remove 20,000 - 25,000 cy of gravel (or a mutually agreed upon amount if there is less gravel available) from the Kuparuk River State No. 1 airstrip and pad for construction of Seal Island, or other North Slope construction purposes.

- (16) The permittee shall monitor the vicinity of the reconstructed gravel island to verify the assumption that there will not be a long-term problem with erosion and sediment movement. The monitoring plan will be submitted within 60 days after permit issuance for review and approval by the Corps, in consultation with the federal resource agencies.
- (17) The permittee shall monitor the sacrificial gravel berms on the island slopes to determine if they are functioning. The monitoring plan will be submitted within 60 days after permit issuance for review and approval by the Corps, in consultation with the federal resource agencies.
- (18) The permittee shall design, construct, install during pipeline trenching activities, operate, and maintain a prototype oil spill leak detection system, external to the carrier pipeline to detect an oil spill below current threshold detection limits (systems currently to be used are Pressure Point Analysis systems and traditional mass balance leak detection systems). The intent of this condition is to provide for an early detection of an oil spill into the environment. The permittee shall submit the design of the prototype oil spill leak detection system for review and approval by the Corps, in consultation with the federal resource agencies, no later than 90 days prior to initiating pipeline trenching activities. The system shall be designed with the objective of detecting oil leaks at 50-foot intervals or less along the entire subsea pipeline length, and have a minimum capability of detecting a 32.5 barrel per day chronic leak. The permittee shall provide progress reports at three and six months from the date of this permit. The progress reports shall delineate the progress being made on the concepts and describe the prototype system(s), problems encountered and proposed solutions, and schedule for remaining activities.
- (19) The permittee shall pay for the Corps of Engineers compliance inspection expenses for the Northstar Project pursuant to the Corps' authority contained in Section 9701 of Pub L. 97-258 (31 U.S.C. 9701). This shall be accomplished either through direct arrangements or cost reimbursements (transportation, lodging, and meals). This generally will not exceed three annual trips of a week in duration each for two Corps personnel, except in instances of noncompliance of the terms and conditions of this permit. Transportation conveyance shall be of the permittee's choosing selected from a (Corps furnished) list of Department of Defense Approved Charter Carriers for Alaska.
- (20) The permittee shall develop and conduct a sediment monitoring plan. The plan shall be submitted to the Corps and EPA for

review and approval within 90 days of permit issuance. Inclosure 1 of EPA's letter of March 26, 1999, (attached to this permit) provides the objectives and a conceptual monitoring design. The conceptual monitoring design is tiered based on the monitoring objectives. Once those monitoring objectives are met, the monitoring requirement can be terminated. Baseline sampling must be completed prior to initiating trenching operations in the ocean. If a BPXA-proposed work plan has not been approved by the federal government 90 days before ocean trenching is scheduled to begin, the EPA and Corps will finalize the conceptual monitoring design and that plan will be provided to BPXA to conduct as a stipulated condition.

- (21) The permittee must notify the Corps, and the federal resource agencies, of any future ice road construction directly associated with the Northstar Project at least 30 days in advance of ice road construction in order to allow the Corps to review the proposal for jurisdiction, and the resource agencies to suggest optimal routing to minimize fish and wildlife impacts.
- (22) The permittee shall develop a plan which shall include the following elements:
  - (a) Pre-positioning of oil spill response equipment on Stump Island (subject to land owner permission) and near the Pt. Storkersen pipeline landfall;
  - (b) Identification of potential containment sites within Gwydyr Bay;
  - (c) Development of a detailed map of currents in Gwydyr Bay from the western edge of the Kuparuk River Delta to West Dock;
  - (d) Development of detailed bathymetry for Gwydyr Bay from the western edge of the Kuparuk River Delta to West Dock;
  - (e) Development of a specific tactical plan for oil spill response inside the barrier islands of Gwydyr Bay (western edge of the Kuparuk River Delta to West Dock); and,
  - (f) Pre-deployment of boom anchors inside Gwydyr Bay in accordance with (e) above.

Items a - d shall be submitted for review and approval to the Corps, in consultation with the U.S. Coast Guard and federal resource agencies within six (6) months from the date of this permit authorization. Item (e) shall be developed in consultation with the Corps, the U.S. Coast Guard and federal resource agencies within six (6) months from the date of this permit authorization and submitted for supplementation and approval as part of the Oil Discharge Prevention and Contingency Plan for the Northstar Operations. Item (f) shall occur prior to operation of the pipeline.

- (23) National Ocean Service (NOS) has been notified of this authorization. You must notify NOS and this office in writing, at least two weeks before you begin work and upon completion of the activity authorized by this permit. Your notification of completion must include a drawing which certifies the location and configuration of the completed activity (a certified permit drawing may be used). Notifications to NOS will be sent to the following address:

The Director  
National Ocean Service (N/CG 222)  
Rockville, Maryland 20852



(24) The permittee must install and maintain, at your own expense, any safety lights and signals prescribed by the United States Coast Guard (USCG), through regulations or otherwise, on the authorized facilities. The USCG may be reached at the following address and telephone:

Commander (oan)17<sup>th</sup> Coast Guard District  
P.O. Box 25517  
Juneau, Alaska 99802-5517  
Telephone: (907) 463-2257

**VI. Compliance with Environmental Requirements and General Evaluation:** The issuance of a permit for the proposed project is in compliance with applicable environmental requirements. Specifically,

- The development of the DEIS and FEIS was accomplished in accordance with the National Environmental Policy Act of 1969, as amended, and Corps of Engineers implementing regulations at 33 CFR 325, Appendix B, and 33 CFR 230.
- Recommendations of the USFWS prepared pursuant to the Fish and Wildlife Coordination Act of 1958, as amended, have been fully considered in the permit decision.
- Coordination with the USFWS and NMFS pursuant to Section 7 of the Endangered Species Act of 1973, as amended, have been completed.
- The State of Alaska, Department of Environmental Conservation has issued a Section 401 Water Quality Certification for this project.
- The State of Alaska, Division of Governmental Coordination has found this project consistent with the Coastal Zone Management Act, and applicable local standards.
- Coordination with the State Historical Preservation Officer was conducted pursuant to the National Historic Preservation Act of 1966, as amended.
- An evaluation of the discharge of dredged and fill material as required by Section 404(b)(1) of the Clean Water Act, 40 CFR 230 was completed. The discharge complies with the guidelines, with the inclusion of the appropriate and practicable conditions listed above to minimize pollution and the adverse effects to the affected ecosystem.
- I have determined that there would not be any adverse impacts or effects on navigation, pursuant to Section 10 of the Rivers and Harbors Act of 1899. There have been no comments received during scoping or review of the DEIS and FEIS that raised concerns related to navigation.
- The Environmental Protection Agency (EPA) has concurred with the Section 103 evaluation for the disposal site for the transportation of dredged material for the purpose of ocean dumping. The Section 103 evaluation for the Northstar Project was included as Appendix I to the DEIS in June 1998. The Section 103 evaluation in Appendix I was not revised in the FEIS and that evaluation is a final evaluation which is incorporated by reference into this ROD. The EPA's concurrence with the Section 103 evaluation included the provision of adding a special condition to the DA permit for monitoring the disposal areas. This condition has been included in the DA permit.
- Essential Fish Habitat consultation has been completed with the NMFS.
- Environmental Justice has been fully considered in my decision in accordance with the Executive Order.
- Government to Government Coordination with Federally-Recognized Tribal Governments has been conducted in accordance the Executive Order.
- Section 176(c) of the Clean Air Act General Conformity Rule Review: The proposed project has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air

Act. Air quality impacts were fully addressed in the EIS. This project was issued an air quality emissions permit by the ADEC. Furthermore, this action has been coordinated with ADEC and EPA. Any later indirect emissions are generally not within the Corps continuing program responsibility and cannot be practicably controlled by the Corps.

I find that issuance of a permit as described above is in conformance with these guidelines.

1. **General Evaluation** [33 CFR 320.4(a)]:

- (a) The relative extent of the public and private need for the proposed work: The private need of the applicant is to develop reasonable access for hydrocarbon recovery of the Northstar reservoir. The applicant, BPXA, has provided an estimate of 158 million barrels of recoverable crude oil over the 15-year life of the project. BPXA would benefit from the opportunity to sustain and improve its oil and gas production capabilities on the Alaska North Slope. Development of Northstar reservoir would also increase energy supplies and provide economic benefit to BPXA, the United States, the North Slope Borough, the State of Alaska, and Municipality of Anchorage. Throughout the life of the project, additional benefits would be gained through payment of royalties, and increases in State and local tax bases. In addition, the proposed work would increase or provide new employment opportunities within the local communities on the North Slope, for the State of Alaska and national petroleum industry sectors in fabrication, construction, and subsequent production operations of the facilities. The public need to conserve and protect aquatic resource of national importance is being met with state-of-the-art technology for petroleum industry development and incorporation of extensive and protective mitigation measures. Finally, it is recognized that energy conservation and development are major national objectives. In accordance with 33 CFR 320.4(n), District Engineers will give high priority to the processing of permit actions involving energy projects.
- (b) The practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work: There are no practicable alternatives to re-locating the proposed project outside waters of the U.S. Alternative locations for the proposed project are limited geographically to effectively produce the Northstar reservoir as delineated by geologic and geophysical assessments. Environmental information and scoping concerns collected during the NEPA process were used to develop and evaluate alternatives. Extensive and protective mitigation measures have been included in the applicant's proposed design and operational plans, in state and local approvals, and in the DA permit. The proposed location, methods of construction, and implementation of appropriate and practicable mitigation measures, and compliance with special conditions and stipulations imposed by Federal, State, and local permits would meet the applicant's needs, and would meet all regulatory requirements.
- (c) The extent and permanence of the beneficial and/or detrimental impacts that the proposed structures or work may have on the public and private uses to which the area is suited: Both short-term and long-term beneficial impacts would result from development of the 15-year operation of the Northstar development project. The State of Alaska, North Slope Borough, the federal

government, and the Municipality of Anchorage would benefit from either revenue interest or an increased tax base. Detrimental short-term impacts (as described in the EIS) on the public and private uses of the project area are expected. These short-term impacts will be adequately mitigated provided that the work is conducted as proposed and in compliance with special conditions on regulatory permits and approvals issued. The most significant potential adverse impacts are the risk of an oil spill, and noise-related impacts. If a large oil spill were to occur, it would potentially result in significant adverse impacts to resources as described in the FEIS and would potentially result in significant long-term environmental impacts affecting the public and private uses of the area. Additionally, if noise-related impacts from the project were to occur such that the subsistence harvest of the bowhead whale was adversely affected, such impacts could be significant. I believe these potential risks are mitigated with the stipulations being required for approvals by the federal and non-federal agencies, and in the DA permit.

At the end of the production phase (when the reservoir is depleted) BPXA will be required to develop a Northstar Unit/production facilities Abandonment Plan. Upon abandonment and cessation of oil and gas production, all structures would be removed and/or abandoned in accordance with lease and permit stipulations.

**2. Other Public Interest Factors and Evaluation:** I have reviewed and evaluated, in light of the overall public interest, the documents and factors concerning this permit application as well as the stated views of other interested agencies and the concerned public. In doing so, I have considered the possible consequences of this proposed work in accordance with regulations published in 33 CFR Part 320 to 330 and 40 CFR 230, and in particular those public interest factors set forth in 33 CFR 320.4 and analyzed in the FEIS.

**VII. Determination:** I find that the issuance of the DA permit, as described by regulations published in 33 CFR Parts 320 through 330, with the scope of work as described in this document, and in accordance with the drawings attached to the public notice dated February 5, 1999, is based on a thorough analysis and evaluation of the various factors discussed above. I have determined that there is no practicable alternative to the applicant's proposal which would have less adverse impact on the aquatic ecosystem and that will achieve the purposes for which the work is being conducted; the proposed work is deemed to comply with established state and local laws, regulations, and codes; the issuance of this permit is consistent with national policy, statutes, and administrative directives; and on balance, issuance of a DA permit to BPXA for the proposed work is not contrary to the public interest.

**APPROVING OFFICIAL:**

  
COLONEL SHELDON L. JAHN  
DISTRICT ENGINEER

3 May '99  
DATE