Fact Sheet

U.S. Environmental Protection Agency
Region 10

The United States Environmental Protection Agency (EPA)
Plans to **Issue** a
National Pollutant Discharge Elimination System (NPDES) Permit to:

Applicant:	Forest Oil Corporation 310 K St., Suite 700 Anchorage, Alaska 99501
Permit Number:	AK0053309

Public Comment Period

Starts:	January 28, 2002
Ends:	February 26, 2002

Technical Contact

Name:	Kristine Koch
Phone:	(206)553-6705 1-800-424-4372 ext. 6705 (within Alaska, Idaho, Oregon, and Washington)
Email:	koch.kristine@epa.gov

EPA's Tentative Determination

EPA proposes to Issue an NPDES permit to the Forest Oil Corporation. The draft permit places conditions on the discharge of pollutants from the Osprey Production Platform to the Cook Inlet. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures;
- a description of the facility and the proposed discharge;
- a listing of the proposed effluent limitations and other conditions;
- a map and description of the proposed discharge location; and
- detailed technical material supporting the conditions in the permit.

Public Comment and Public Hearings

Persons wishing to comment on the tentative determinations contained in the draft permit must do so, in writing, by the end date of this public comment period. All comments should include the name, address, and telephone number of the commenter, reference the facility name and NPDES permit number, and include a concise statement of the exact basis of any comment and the relevant facts upon which it is based.

Persons wishing to request that a public hearing be held may do so, in writing, by the end date of this public comment period. A request for a public hearing must state the nature of the issues to be raised, reference the facility name and NPDES permit number, and include the requester's name, address, and telephone number. All written comments and requests should be submitted to the attention of the Director, Office of Water at the following address:

U.S. EPA, Region 10
1200 Sixth Avenue, M/S OW-130
Seattle, Washington 98101

****Comments may also be submitted electronically to the technical contact listed above.****

After the Public Notice expires, and all comments have been considered, EPA's Director for the Office of Water in Region 10 will make a final decision regarding permit issuance. If no significant comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board within 30 days.

Availability of Documents

The following documents are available at the EPA Region 10 Office, 1200 Sixth Ave, Seattle, Washington, between 8:30 a.m. and 4:00 p.m., Monday through Friday:

- permit application and any supporting data submitted by the applicant
- draft permit
- fact sheet
- documents referenced in fact sheet
- ocean discharge criteria evaluation (ODCE)
- NEPA documents (environmental assessment and finding of no significance impact)
- other documents (e.g., meeting reports, correspondence, trip reports, telephone memos, calculations, etc.)

Copies of the draft permit, fact sheet, ODCE and EA are also available at:

EPA Region 10 website: **www.epa.gov/r10earth.htm**

EPA Alaska Operations Office, Anchorage
Federal Building, Room 537
222 West 7th Avenue, #19
Anchorage, Alaska 99513

EPA Alaska Operations Office, Juneau
P.O. Box 20370
Juneau, Alaska 99802-0370

Anchorage Municipal Library
Z. J. Loussac Public Library
3600 Denali St
Anchorage, Alaska 99503-6055

Homer Library
141 West Pioneer Ave.
Homer, Alaska 99603

Juneau Library
292 Marine Way
Juneau, Alaska 99801

State Certification

The state of Alaska Department of Environmental Conservation proposes to certify the draft permit provided the discharge will comply with the applicable provisions of

Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act. The State provided a draft certification and preliminary comments for the draft permit. The conditions of the draft certification and comments have been incorporated into this draft permit. EPA is requesting that the Alaska Department of Environmental Conservation certify this NPDES permit for the **Forest Oil Corporation Osprey Platform**, under section 401 of the Clean Water Act.

Persons wishing to comment on the State's intent to certify this permit should submit written comments by the end date of this public comment period to the state of Alaska, with a copy to EPA, at the following address:

State of Alaska
Alaska Department of Environmental Conservation (ADEC)
555 Cordova Street
Anchorage, Alaska 99501

Alaska State Consistency Determination

EPA requests the state of Alaska, Office of Management and Budget, Division of Governmental Coordination, to review this action for consistency with the approved Alaska Coastal Management Program.

All written comments should be addressed to the attention of Alaska Coastal Management Program Consistency Review and submitted to:

State of Alaska
Pipeline Coordinator's Office
411 West 4th Avenue, Suite 2C
Anchorage, Alaska 99501-2343

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I. APPLICANT

Facility Name:	Osprey Production Platform
NPDES Permit Number:	AK-00
Facility Location:	West Forelands Area Cook Inlet, Alaska 99501
Facility Mailing Address:	310 K St., Suite 700 Anchorage, Alaska 99501
Facility Contact:	John Amundsen Safety, Health and Environment Manager
Contact Phone Number:	(907) 258-8600
Contact Email Address:	fen5@pobox.alaska.net

II. FACILITY INFORMATION

A. Facility Description.

The Osprey Platform is located approximately 1.8 miles southeast of the end of the West Forelands in central Cook Inlet. The water depth at the site is approximately 45 feet (referenced to mean lower low water). A map has been included in Appendix A which shows the general vicinity of the Osprey Platform and the discharge location(s).

The Osprey Platform, by design, is a movable drilling platform that has been constructed to support exploration drilling operations for the Redoubt Shoal Unit. (A general schematic and the design criteria of the Osprey Platform is included in Appendix A.) Once the exploration drilling operations have been completed (estimated for Spring 2002), the Osprey Platform will be used to support offshore production operations as described in Appendix A.

Conversion of the platform from an exploration operation to a production operation will include the addition of limited production equipment and the installation of offshore pipelines and utility lines. The proposed project anticipates production of up to 25,000 barrels of crude oil per day and 4.3 million cubic feet per day of natural gas. A process flow diagram has been included in Appendix A which shows the production operations of the Osprey Platform. The crude oil will be sent via pipeline to the Trading Bay Production Facility (which is jointly owned by Unocal and Forest Oil) where it will be tied into the existing Cook Inlet Pipe Line Company system, and then transported to the Drift River Facility. From there, the oil will be sent by tanker either to local, domestic, or foreign markets.

Natural gas may either be used as fuel to support local Forest Oil operations or be sent via pipelines to other local markets.

B. Background Information.

The Osprey Platform was placed on site during late June 2000. The platform is currently conducting exploration drilling operations under the Cook Inlet general NPDES permit for Oil and Gas Exploration (AKG285024). Once the platform commences production activities (estimated for Spring 2002), it becomes a "new source" discharger and the applicant is no longer authorized to discharge under the general permit.

III. RECEIVING WATER

A. Outfall Location.

The discharges for the **Forest Oil Corporation Osprey Production Platform** are located in the **Cook Inlet, Alaska**, at Latitude N 60°41'46", Longitude W 151°40'10".

B. Physical Oceanography.

1. Bathymetry.

Cook Inlet is a tidal estuary approximately 180 miles long and 60 miles wide at its mouth, with a general northeast-southwest orientation. It is divided naturally into the upper and lower inlet by the East and West Forelands, at which point the inlet is approximately 10 miles wide. The projected area is located in the vicinity of the West Forelands.

2. Tides.

Tides in Cook Inlet are classified as mixed, having strong diurnal and semi-diurnal components, and are characterized by two unequal high and low tides occurring over a period of approximately one day, with the mean range increasing northward.

3. Currents.

Currents in the upper Cook Inlet are predominantly tidally driven. Current speeds are primarily a function of the tidal range, and their

directions typically parallel the bathymetric contours. Near the mouths of major rivers, currents may locally influence both the current speed and direction by the large volume of fresh water inflow. Currents near the seafloor are expected to be lower, possibly 10 percent of the surface currents within a foot of the seafloor, due to bottom friction.

Surface currents in the general vicinity of the Osprey Platform are expected to have mean peak velocities of approximately 4 knots, with flood tides flowing generally in a northeasterly direction and ebb currents flowing in a southerly direction.

A general circulation pattern is also present throughout Cook Inlet. Limited circulation information for the upper inlet suggests that there may be a net southwesterly flow along the western side of the inlet, primarily as a result fo freshwater inflows near the head of the inlet. Below the Forelands, oceanic waters most commonly flow up the eastern side and turbid and fresher waters flow southward along the western side.

4. Waves.

Waves in upper and central Cook Inlet are fetch and depth limited, and wave heights are usually less than 10 feet. In storms, waves in the upper inlet can reach 15 feet with wave periods estimated up to 6-8 seconds.

5. Ice Conditions.

Ice is generally present in Cook Inlet from late November through early April, but can vary greatly from year to year. Three forms of ice normally occur in the inlet: sea ice, beach ice, and river ice. Sea ice is the predominant type and is formed by freezing of the inlet water from the surface downward. Sea ice forms gradually, beginning in November at the West Forelands and continuing until February where it reaches Cape Douglas. The ice then melts from March through April. Because of the strong tidal currents, sea ice does not occur as a continuous sheet, but as ice pans. Ice pans can form up to 3 feet thick and 1,000 feet (or greater) across. They can also form pressure ridges reportedly up to 18 feet high.

Beach ice, or stamukhi, forms on tidal flats as seawater contacts cold tidal muds. The thickness of beach ice is limited only by the

range of the tides and has been noted to reach 30 feet in thickness. During cold periods, beach ice normally remains on the beach; however, during warm weather in combination with high tides, it can melt free and enter the inlet. blocks of beach ice that enter the inlet are normally relatively small (less than several tens of feet across) and have relatively low strengths.

River ice also occurs in Cook Inlet. It is a freshwater ice that is similar to sea ice except that it is relatively harder. It is often discharged into the inlet during spring breakup.

C. Cook Inlet Water Quality.

Water quality in upper Cook Inlet is influenced by high currents and the large volumes of seasonally varying freshwater inflows. The high tidal currents tend to keep the entire water column well mixed with little vertical stratification, except in the vicinity of the mouths of major rivers. Large, glacier-fed rivers that flow into the inlet, particularly near the head of the inlet contribute large amounts of freshwater and suspended sediments.

In the vicinity of the Forelands, the more oceanic waters from the lower inlet mix with the more brackish estuarine waters of the upper inlet. As such, large variations in water quality may occur seasonally or even within a single tidal cycle. Salinity is generally lower in the late summer due to high freshwater inflows into Cook Inlet.

High currents in the upper Cook Inlet tend to keep sediments in suspension. Near the Forelands, suspended sediment concentrations of 100 to 200 mg/l are common. Studies conducted from 1993 to 1997 by the Cook Inlet Regional Citizens Advisory Council indicate that the suspended and bottom sediments are relatively free of man-induced contaminants.

Water temperatures in the upper inlet are primarily influenced by the air temperatures. During winter, water temperatures are typically at or near the freezing point of seawater (-1.8°C). In the summer, water temperatures can exceed 15°C.

D. Water Quality Standards.

The State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses that

each water body is expected to achieve (such as cold water biota, contact recreation, etc.). The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses.

The Alaska *Water Quality Standards* (18 AAC 70.020(a)(2)) protect Cook Inlet for the following beneficial use classifications: aquaculture water supply, seafood processing water supply, industrial water supply, contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life, and wildlife, and harvesting for consumption of raw mollusks or other raw aquatic life.

Cook Inlet is a tier 1 water body, therefore, water quality should be such that it results in no mortality and no significant growth or reproductive impairment of resident species. An NPDES permit cannot be issued that would result in the water quality criteria being violated in the water body. The draft permit contains effluent limits which ensures that the existing beneficial uses for Cook Inlet will be maintained.

IV. PROPOSED EFFLUENT LIMITATIONS

A. Basis for Permit Effluent Limits.

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. A technology-based effluent limit requires a minimum level of treatment for point sources based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a water body are being met. Appendix B provides discussion on the legal basis for the development of technology-based and water quality-based effluent limits.

B. Proposed Effluent Limitations.

Table 1 and the following list summarizes the effluent limitations that are in the draft permit:

1. There shall be no discharge floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in concentrations causing nuisance, objectionable, or detrimental conditions or that make the water unfit or unsafe for the use.

2. The discharge of surfactants, dispersants, and detergents must be minimized except as necessary to comply with the safety requirements of the Occupational Health and Safety Administration and the Mineral Management Service (MMS). The discharge of dispersants to marine waters in response to oil or other hazardous spills is not authorized by the permit.

3. There must be no discharge of diesel oil, halogenated phenol compounds, trisodium nitrilotriacetic acid, sodium chromate, or sodium dichromate.

4. The pH range shall be between 6.5 and 8.5 standard units.

Table 1. Proposed Effluent Limitations

Discharge	Discharge Description	Effluent Parameter	Units	AML	MDL
001	Drilling Muds and Cuttings	No discharge			
002	Deck Drainage	Free oil	---	No discharge[1]	
003	Sanitary Wastes	BOD	mg/L	30	60
			lbs/day	0.5	1.0
		TSS	mg/L	75	150
			lbs/day	1.3	2.5
		Fecal Coliform Bacteria	colonies/100 mL	---	14[1]
		Total Residual Chlorine	mg/L	0.8	1.6
			lbs/day	0.01	0.03
004	Domestic Wastes	Floating solids, garbage, or foam	---	No discharge	
005	Desalination Unit Wastes	No discharge			
006	Blowout Preventer Fluid	No discharge			
007	Boiler Blowdown	---	---	---	
008	Fire Control System Test Water	---	---	---	
009	Non-contact Cooling Water	---	---	---	
010	Uncontaminated Ballast Water	No discharge			
011	Bilge Water	No discharge			
012	Excess Cement Slurry	Free oil	---	No discharge[2]	
013	Mud, Cuttings, Cement at Seafloor	No discharge			

Table 1. Proposed Effluent Limitations					
Discharge	**Discharge Description**	**Effluent Parameter**	**Units**	**AML**	**MDL**
014	Waterflooding Discharges	No discharge			
015	Produced Water & Solids	No discharge			
016	Completion Fluids	No discharge			
017	Workover Fluids	No discharge			
018	Well Treatment Fluids	No discharge			
019	Test Fluids	No discharge			

Footnotes:
1 Based on any one sample.
2 As determined by the presence of a film or sheen upon or a discoloration of the surface of the receiving water (visual sheen).

V. PROPOSED MONITORING REQUIREMENTS

A. Basis for Effluent Monitoring.

1. Section 308 of the Clean Water Act and federal regulation 40 CFR 122.44(i) require effluent monitoring in NPDES permits to determine compliance with effluent limitations.

2. Section 308 also allows additional effluent monitoring (i.e., WET and chemical inventories) to gather data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

3. The draft permit only requires monitoring of discharges that are authorized by the permit. Since the draft permit does not authorize discharges 001, 005, 006, 010, 011, and 013-019, monitoring of these discharges is not proposed in the draft permit.

4. Whole Effluent Toxicity monitoring in Deck Drainage.

   The draft permit requires whole effluent toxicity (WET) tests during significant rainfall or snowmelt (i.e., when deck drainage flows are expected to be highest) to measure the chronic toxicity of deck drainage. However, acute toxicity testing is also required because the discharge occurs in short durations and acute affects are more likely to occur from the discharge. Likewise, grab sampling is more appropriate because the probability of peak toxicity occurring in a short duration. Results of these tests will be used to ensure that

toxics in the effluent are controlled and to determine the need for future WET limits.

Monitoring and analyses of deck drainage for WET is warranted based on the prevalence of both aliphatic and aromatic hydrocarbons, and inorganics in the discharge. Information provided to EPA from other operators in Cook Inlet identified 35 types of cleaners and solvents which are likely to be present in deck drainage.

The product components that may cause impair water quality are: terpene hydrocarbon, (sodium) hypochlorite, nonylphenols, gluteraldehyde, pine oil, butylated hydroxytoluene, ethylene glycol, isopropyl alcohol, polyglycol, alkyldimethylbenzyl ammonium chlorides, aromatic naphtha, Methanol, heavy aliphatic naphtha, phosphate, and alkyl & oxyalkyated phenols. In addition, aluminum, barium, iron, manganese, magnesium and titanium may also be found in deck drainage.

5. Accelerated Monitoring Trigger for Chronic Whole Effluent Toxicity in Deck Drainage.

   The draft permit establishes a trigger level of 4.0 TUc that, if exceeded, would trigger additional WET testing and/or an evaluation to reduce toxicity. The trigger level was calculated based on the chronic WET criterion of 1 TUc, the probability of acute toxic affects based on EPA's recommendation of 0.3 TUa, and a dilution ratio of 100:1, which was proposed by ADEC in their draft 401 certification for the draft permit. The trigger was based on calculations found in Chapters 1 and 5 of the TSD (see Appendix C for details).

6. Monitoring Frequency. Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance.

7. Sample Type.

   a. Estimated. Since the volume of the authorized discharges, except the sanitary discharge, is minimal and is not expected to present a significant risk to the environment, EPA has proposed in the draft permit that these discharge volumes be estimated rather than measured to provide relief from additional administrative burden.

b. Visual.

(1) Free Oil. Compliance with the free oil limitation will be monitored by year-round use of the Static Sheen Test daily and before bulk discharges. Region 10 requires use of the Static Sheen Test because visual observation of the discharge for sheen upon the receiving water will not prevent violations of the standard. This test is also appropriate for the harsh weather and extended periods of darkness common in Alaska.

(2) Floating solids, garbage and foam. The only way to adequately measure a discharge for this parameter is to conduct a visual analysis of the receiving waterbody to determine the presence or absence of floating solids, garbage and foam.

c. Grab. Grab samples are appropriate for parameters (i.e., pH, fecal coliform bacteria, and total residual chlorine) that are likely to change with storage or for parameters (i.e., BOD_5 and TSS) that are not likely to change over time. It is also more appropriate to collect grab samples for whole effluent toxicity analysis of the deck drainage discharge because it is known that the potential for toxicity is greatest during a significant rainfall or snowmelt. Additionally, the deck drainage discharge is precipitation related and may not last long enough to collect a composite sample.

d. Calculated. Since effluents are analyzed for concentrations, it is appropriate to calculate the loadings for parameters (i.e., BOD_5, TSS, and total residual chlorine) by multiplying the concentration by the flow and a conversion factor to ensure the appropriate units are reported. For example, a concentration in mg/L is converted to a loading of lbs/day by multiplying the concentration by the flow in mgd and a conversion factor of 8.34.

B. Proposed Effluent Monitoring. Table 2 presents the proposed effluent monitoring requirements for the draft permit.

Table 2. Proposed Effluent Monitoring Requirements					
Discharge	**Discharge Description**	**Effluent Parameter**	**Units**	**Sample Frequency**	**Sample Type**
001	Drilling Muds and Cutting	---	---	---	---
002	Deck Drainage	Free oil	---	Daily[1]	Visual
		WET, chronic	TUc	Annually[2]	Grab
		Flow	mgd	Monthly	Estimated
003	Sanitary Wastes	BOD	mg/L	Monthly	Grab
			lbs/day	Monthly	Calculated
		TSS	mg/L	Monthly	Grab
			lbs/day	Monthly	Calculated
		Flow	mgd	Monthly	Estimated[3]
		Fecal Coliform Bacteria	colonies/100 mL	Monthly	Grab
		Total Residual Chlorine	mg/L	Monthly	Grab
			lbs/day	Monthly	Calculated
004	Domestic Wastes	Floating solids, garbage, or foam	---	Daily[1]	Visual
005	Desalination Unit Wastes	---	---	---	---
006	Blowout Preventer Fluid	---	---	---	---
007	Boiler Blowdown	Flow	mgd	Monthly	Estimated
008	Fire Control System Test Water	Flow	mgd	Monthly	Estimated
009	Non-contact Cooling Water	Flow	mgd	Monthly	Estimated

Table 2. Proposed Effluent Monitoring Requirements					
Discharge	**Discharge Description**	**Effluent Parameter**	**Units**	**Sample Frequency**	**Sample Type**
010	Uncontaminated Ballast Water	---	---	---	---
011	Bilge Water	---	---	---	---
012	Excess Cement Slurry	Free oil	---	Daily[1]	Visual
		Flow	mgd	Monthly	Estimated
013	Mud, Cuttings, Cement at Seafloor	---	---	---	---
014	Waterflooding Discharges	---	---	---	---
015	Produced Water & Solids	---	---	---	---
016	Completion Fluids	---	---	---	---
017	Workover Fluids	---	---	---	---
018	Well Treatment Fluids	---	---	---	---
019	Test Fluids	---	---	---	---

Footnotes:
1 Monitoring is only required when discharge occurs.
2 Monitoring must be conducted during a significant rainfall or snowmelt. Monitoring may cease after the results of the first test indicate no toxicity.
3 Flow shall be estimated as 30 gallons per person per day.

VI. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP).

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop a Quality Assurance Plan to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The permittee is required to develop a Quality Assurance Plan within 90 days of the effective date of the final permit. The Quality Assurance Plan must consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Best Management Practices (BMP) Plan.

Section 402 of the Clean Water Act and federal regulations 40 CFR 122.44(k)(2) and (3) authorize EPA to require best management practices, or BMPs, in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires Forest Oil Corporation to review their current BMP Plan for accuracy. The BMP plan must be revised as new practices are developed for the facility.

VII. OTHER LEGAL REQUIREMENTS

A. State Certification Requirements.

Since this permit authorizes the discharge to Alaska State waters, section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions to ensure that the permit complies with water quality standards.

B. Standard Permit Provisions.

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

C. Endangered Species Act of 1973.

Section 7 of the Endangered Species Act requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. Under the NEPA process (see Part VII.H, below), NMFS and USFWS have determined that the proposed action is not likely to adversely effect threatened or endangered species. Therefore, EPA has determined that the issuance of this permit will not affect any of the threatened or endangered species in the vicinity of the discharge and no further consultation is required. This fact sheet and the draft permit will be submitted to NMFS and the USFWS for review during the public notice period.

D. Essential Fish Habitat.

The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. Under the NEPA process (see Part VII.H, below), NMFS has determine that the proposed action is not likely to affect any EFH species. Therefore, EPA has determined that the issuance of this permit will not affect any EFH species, therefore no consultation is required. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period.

E. Permit Expiration.

Section 402(1)(B) of the Clean Water Act require that NPDES permits are issued for a period not to exceed five years, therefore, this permit will expire five years from the effective date of the permit.

F. Ocean Discharge Criteria.

Section 403 of the Clean Water Act requires that an NPDES permit for a discharge into marine waters located seaward of the inner boundary of the territorial seas (i.e., state and federal offshore waters) be issued in accordance with guidelines for determining the potential degradation of the marine environment. These guidelines, referred to as the Ocean Discharge Criteria (40 CFR Part 125, Subpart M), and section 403 of the Clean Water Act are intended to “prevent unreasonable degradation of the marine environment and to authorize imposition of effluent limitations, including a prohibition of discharge, if necessary, to ensure this goal.” (49 FR 65942, October 3, 1980)

When EPA determines that the discharge will cause unreasonable degradation, an NPDES permit may not be issued. If a definitive determination of no unreasonable degradation cannot be made because of insufficient information, EPA must then determine whether a discharge will cause irreparable harm to the marine environment and whether there are reasonable alternatives to on-site disposal. To assess the probability of irreparable harm, EPA is required to make a determination that the discharger, operating under appropriate permit conditions, will not cause permanent and significant harm to the environment during a monitoring period in which additional information is gathered. If data gathered through monitoring indicate that continued discharge may cause unreasonable degradation, the discharge shall be halted or additional permit limitations established.

For the proposed permit, the Region recently updated the existing Ocean Discharge Criteria Evaluation (ODCE) information for the Cook Inlet general NPDES permit. The ODCE has stipulated the following discharge restrictions are necessary to ensure that unreasonable degradation of Cook Inlet will not occur.

- Discharges are prohibited in waters shallower than 5 meters, as measured from mean lower low water, because shallow nearshore waters in Cook Inlet are an important habitat for may species.

- Discharges are prohibited within the boundaries or within 1000 meters of a coastal marsh, river delta, river mouth designated Area Meriting Special Attention (AMSA), game refuge, game sanctuary, or critical habitat area. The seaward edge of a coastal marsh is defined as the seaward edge of emergent wetland vegetation.

The Region has determined that discharges occurring under the proposed permit, which incorporates the above prohibitions, will not cause unreasonable degradation as long as the limitations, requirements, and conditions of the proposed permit are met.

G. Coastal Zone Management Act (CZMA).

The applicant has certified that the activities authorized by the draft permit are consistent with the Alaska Coastal Management Plan. Pursuant to 40 CFR Part 122.49(d), requirements of the State coastal zone management program must be satisfied before the permit may be issued.

H. National Environmental Policy Act (NEPA).

The National Environmental Policy Act (NEPA) may require the preparation of an Environmental Impact Statement and consideration of EIS-related permit conditions as provided in 40 CFR 122.29(c) and 40 CFR Part 6, Subpart F [40 CFR 122.49(g)]. In accordance with these regulations, EPA prepared an Environmental Assessment (EA) and determined that the issuance of an NPDES permit to Forest Oil Corporation for their Osprey Platform would not significantly affect the quality of the human environment within the context of NEPA (EPA and SAIC 2001).

Pursuant to section 301 of the Clean Water Act, new source performance standards were promulgated by EPA in 1996 for the coastal subcategory of the oil and gas extraction point source category. In accordance with CWA § 511(c)(1), NPDES permits for new sources are subject to the provisions of NEPA. An assessment of potentially significant impacts on the quality of the human environment resulting from operation of a new source is required under NEPA.

Prior to the public notice of the draft permit, EPA conducted an EA to determine if the environmental impacts associated with the discharges from this new source would be significant. Under the NEPA process, the public was contacted by EPA on Jan 10, 2000 to ascertain any issues or concerns that the public and/or Tribal Governments may have with regards to the proposed project. An informational scoping package was sent to the public and known interested Tribal governments on this date for the purposes of obtaining those issues and concerns with the project.

The issues and concerns received from the public and Tribal governments were addressed in a draft Environmental Assessment that was published on June 20, 2001. The draft Environmental Assessment, Biological Assessment, and Essential Fish Habitat Assessment was sent to those agencies and Tribal Governments that provided initial scoping comments. On January 25, 2002, EPA determined that the environmental impacts would not be significant and issued a Finding of No Significant Impact (FNSI).

VIII. REFERENCES

EPA, 1991. *Technical Support Document for Water Quality-based Toxics Control*. U.S. Environmental Protection Agency, Office of Water, 3PA\505\2-90-001. March, 1991.

EPA, 2002. *Environmental Assessment for the New Source NPDES Forest Oil Redoubt Shoal Unit Production Oil and Gas Redevelopment Project.* U.S. Environmental Protection Agency. January 2002.

EPA, 1991. *Ocean Discharge Criteria Evaluation for the Forest Oil Osprey Platform, Redoubt Shoal Unit Development Project, Cook Inlet, Alaska, NPDES Permit No. AK-005330-9*. U.S. Environmental Protection Agency, Region 10. October, 2001.

ADEC, 1999. *Water Quality Standards As amended through January 22, 1999*. Alaska Department of Environmental Conservation, 18 AAC 70.

APPENDIX A
Description of Production Activities

A.1 Completion

After confirmation of a successfully producing formation, the well will be prepared for hydrocarbon extraction, or "completion." The completion process includes: setting and cementing of the production casing; packing the well; and installing the production tubing. During the completion process, equipment is installed in the well that allows hydrocarbons to be extracted from the reservoir. Completion methods are determined based on the type of producing formation, such as hard or loose sand, and consist of four steps: wellbore flush, production tubing installation, casing perforation, and wellhead installation.

A.2 Fluid Extraction

The fluid that will be produced from the oil reservoir consists of crude oil, natural gas, and produced water. Production fluids will flow to the surface, through tubing inserted within the cased borehole, using electric submersible pumps. As hydrocarbons are produced, the natural pressure in the reservoir decreases and additional pressure must be added to the reservoir to continue production of the fluids. The additional pressure will be provided artificially to the reservoir using waterflooding, which is the injection of water into the reservoir to maintain formation pressure that would otherwise drop as the withdrawal of the formation fluids continues.

A.3 Fluid Separation

As the produced fluids (natural gas, crude oil, and produced water) surface from the wells, the gas will be separated from the liquids in a two-phase separator on the platform, the wet gases from the separator will pass through a glycol dehydrator to remove water and then will be used to support platform heating or will be shipped by pipeline to the onshore production facility. A low-pressure relief and vent system will be provided on the Osprey Platform. The low-pressure vent system will be connected to a flare scrubber and routed to a low-pressure flare. This flare is intended for use as vessel/piping safety depressurization in the event of platform emergencies.

Liquids will be pumped to the Wet Oil Surge Vessel and then pumped to the onshore production facility for oi-water separation. There will be no storage capacity onboard the Osprey Platform for separated liquids. The produced water separated from the crude oil at the onshore production facility will then be pumped back to the Osprey Platform by pipeline for downhole injection to maintain formation pressures within the Redoubt Shoal Unit.

A.4 Well Treatment

Well treatment is the process of stimulating a producing well to improve oil or gas productivity. It is not anticipated that stimulation will be needed for the wells. However, if well treatment is required at the Osprey Platform, the method used will be acid treatment (i.e., acid stimulation). Acid stimulation is performed by injecting acid solutions into the formation. The acid solution dissolves portions of the formation rock, thus enlarging the openings in the formation. The acid solution must be water soluble, safe to handle, inhibited to minimize damage to the well casing and piping, and inexpensive.

A.5 Workover

Workovers, or treatment jobs, occur approximately once per year. Workover operations are performed on a well to improve or restore productivity, repair or replace downhole equipment, evaluate the formation, or abandon the well. Workover operations include well pulling, stimulation (acidizing and fracturing), washout, reperforating, reconditioning, gravel packing, casing repair, and replacement of subsurface equipment. The four general classifications of workover operations are pump, wireline, concentric, and conventional. Workovers can be performed using the original derrick. The operations begin by using a workover fluid to force the production fluids back into the formation to prevent them from exiting the well during the operation.

A.6 Well Drilling

Rotary drilling is the process that is used to drill the well. the rotary drill consists of a drill bit attached to the end of a drill pipe. The most significant waste streams, in terms of volume and constituents associated with the drilling activities, are drilling fluids and drill cuttings. Drill cuttings are particles (e.g., sand, gravel, etc.) generated by drilling into subsurface geological formations and carried to the surface with the drilling fluid. the drilling fluid, or mud, is a mixture of water, special clays, and certain minerals and chemicals used to cool and lubricate the bit, stabilize the walls of the borehole, and maintain equilibrium between the borehole and the formation pressure. The drilling fluid is pumped downhole through the drill string and is ejected through the nozzles in the drill bit and then circulated to the surface through the annulus. The drilling fluids will be separated from the drilling cuttings on the platform for use as make-up drilling fluids.

A.7 Fuel Tanks

Primary fuel tanks will include a 20,000-gallon main tank (Tank 1) located in the platform Lower Deck, and two 4,000-gallon tanks (Tanks 2 and 3) integral to each of the two pedestal craned. Tank 1 is filled directly by supply vessels

through either of two marine transfer stations located on the platform. The two pedestal tanks may either be filled directly by marine transfers or from Tank 1. These primary tanks are constructed to Det Norske Veritas Standards (NCG 2001) and are equipped with level gauges and high level alarms. The platform serves as secondary containment for the entire volume of Tank 1; Tanks 2 and 3 do not have secondary containment for their entire volumes.

Table A-1. Design Criteria for the Osprey Platform
(source: NCG 2001)

Criteria	**Value**
Extreme High Water above Mean Lower Low Water	24.2 feet
Extreme Low Water below Mean Lower low Water	6.0 feet
Maximum Current Speed	13 feet/second
100-Year Ice Load:	
Ice Thickness	3.5 feet
Ice Compressive Strength	300 psi
Total Load on Legs	8,460 kips
Wind and Wave Criteria:	
Design Wind	80 mph
Maximum Wind Gust	100 mph
Design Significant Wave Height	15.3 feet
Maximum Wave Height	28.0 feet
Period of Maximum Wave	8.5 seconds
Minimum Ambient Air Temperature	-20°F
Minimum Ambient Water Temperature	29°F
Earthquake Design Criteria (per API RP 2A)	Zone 4
Mudline Scour	-5.0 feet

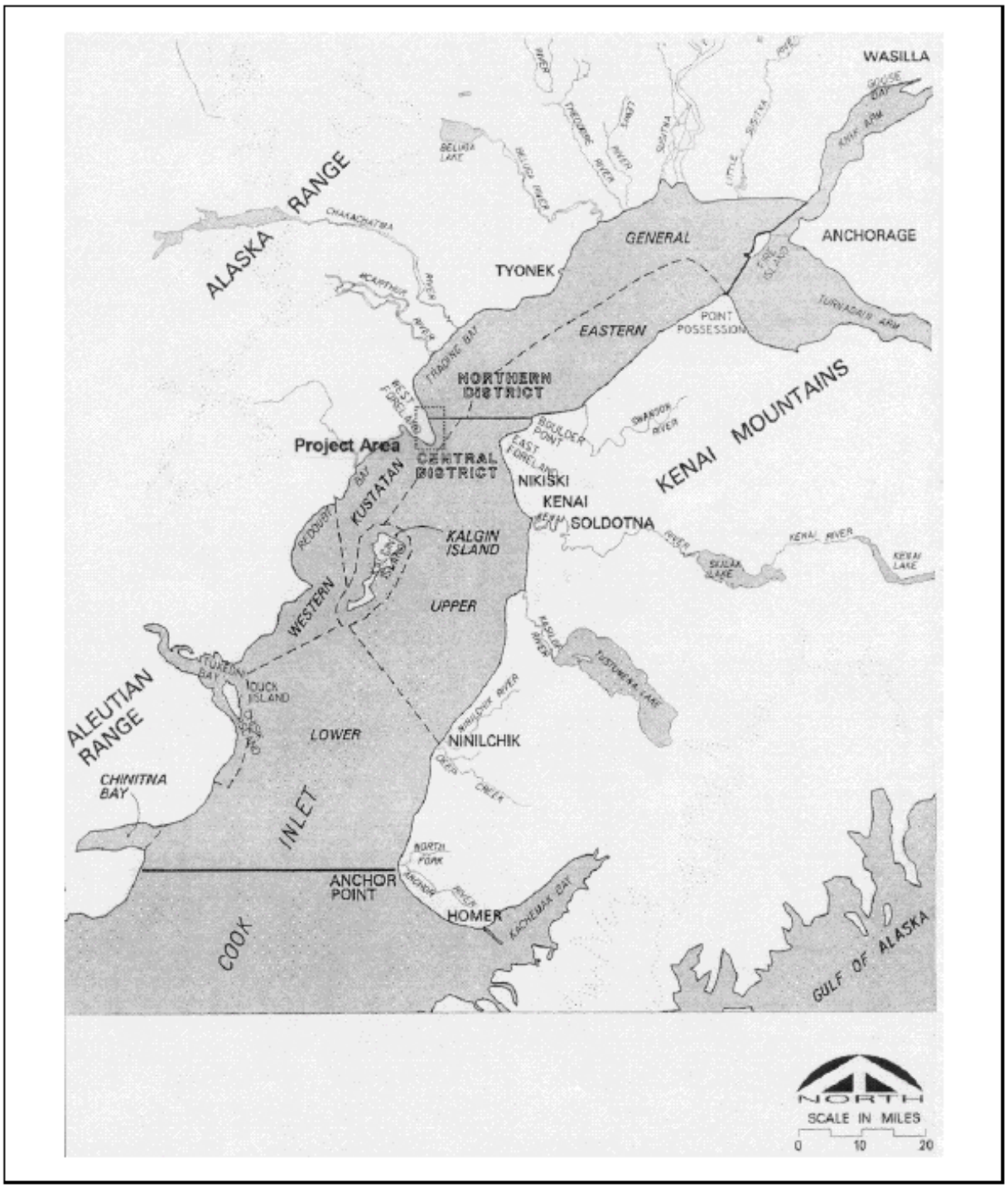

Figure A-1. General Vicinity Map

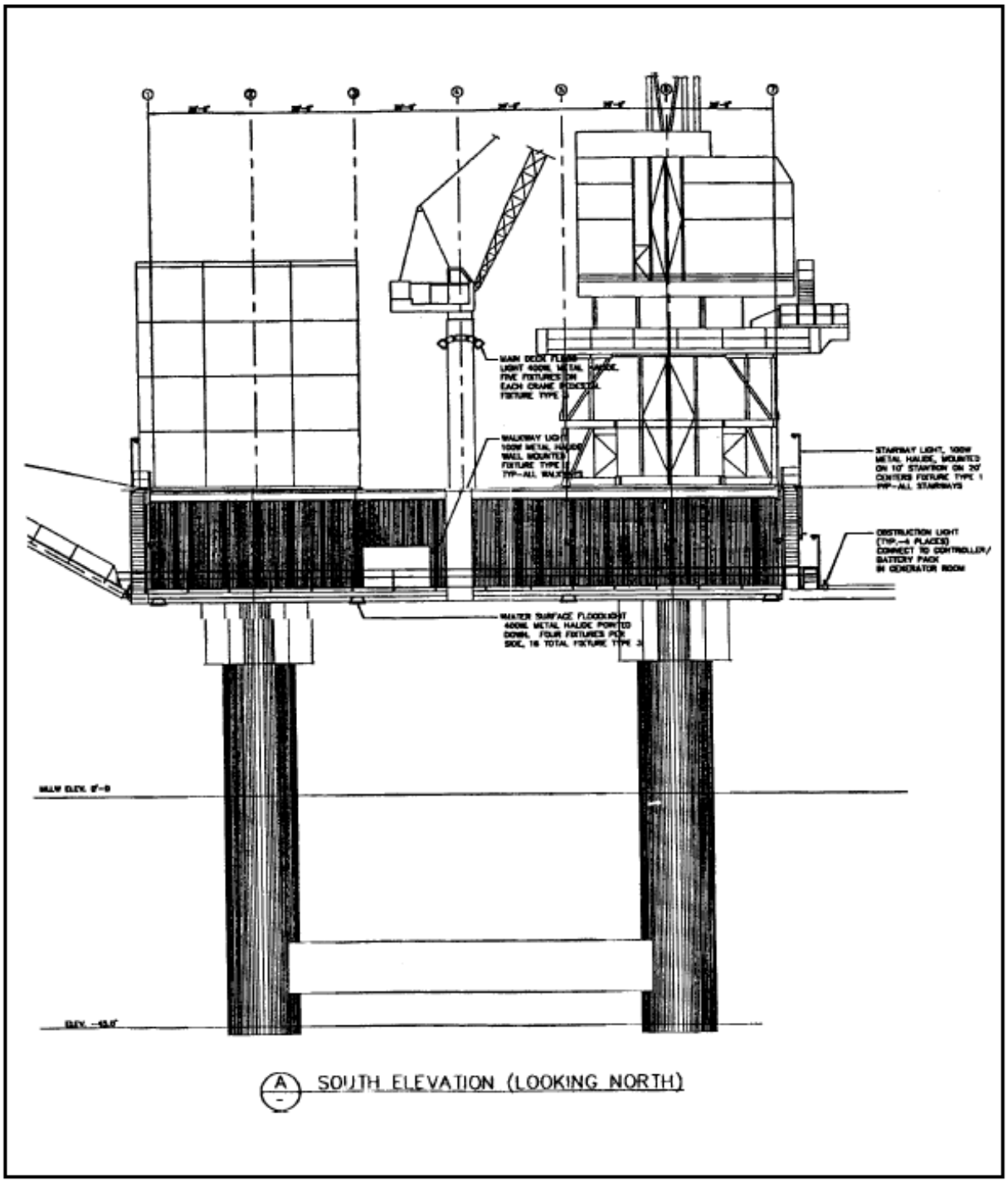

Figure A-2. General Schematic of the Osprey Offshore Drilling Unit

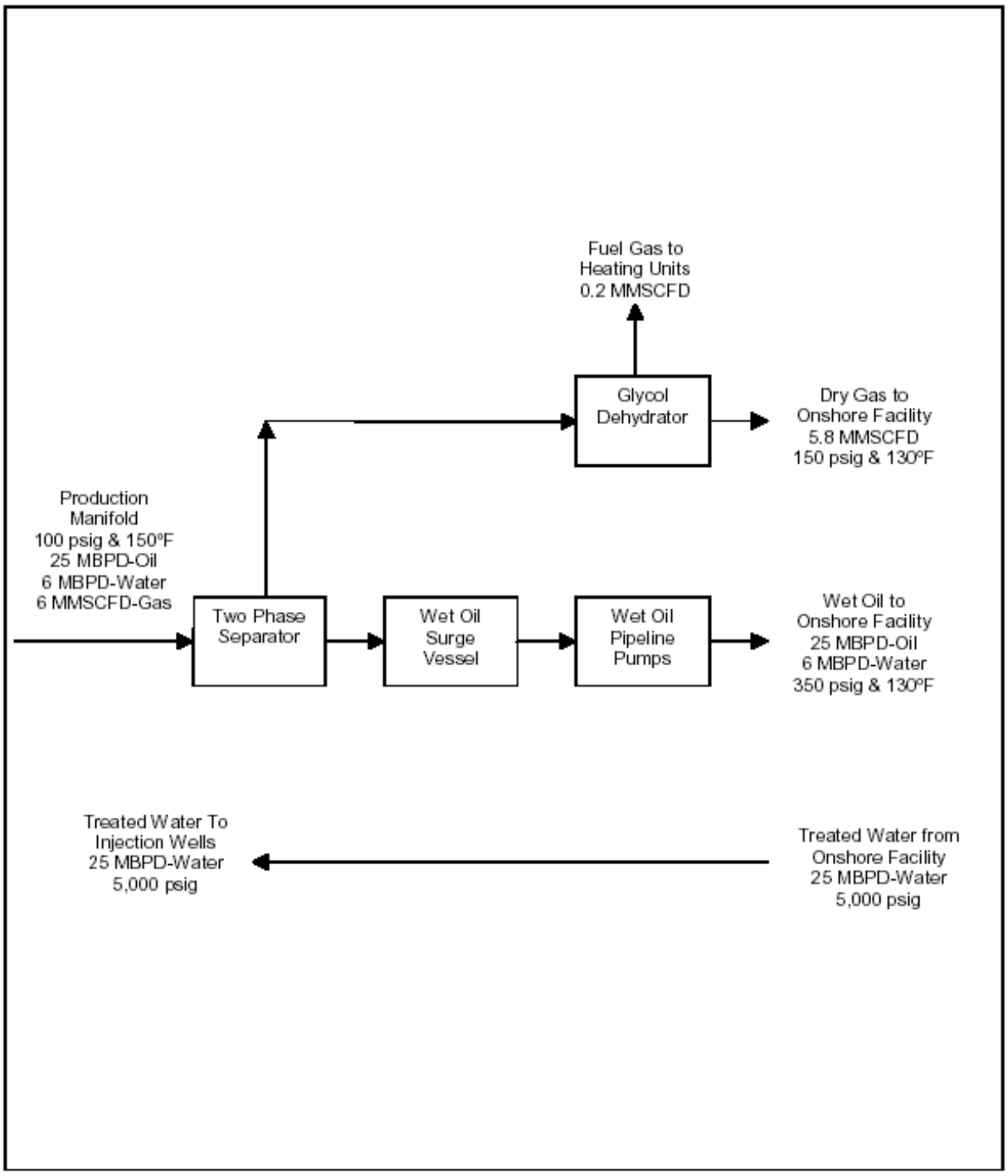

Figure A-3. Process Flow Diagram for the Osprey Platform Production Operations (source: NCG 2001)

APPENDIX B
Basis for Effluent Limitations

I. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act (CWA) provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates the discharges with respect to these sections of the CWA and the relevant National Pollutant Discharge Elimination System (NPDES) regulations to determine which conditions to include in the draft permit.

In general, the EPA first determines which technology-based limits must be incorporated into the permit. EPA then evaluated the effluent quality expected to result from these controls, to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur, EPA must include water quality-based limits in the permit. The proposed permit limits will reflect whichever requirements (technology-based or water quality-based) are more stringent.

II. Expression of Effluent Limitations.

A. Continuous Discharges. The NPDES regulations at 40 CFR 122.45(d) require that all effluent limitations, standards, and prohibitions of discharges from continuous sources at industrial facilities to be expressed, unless impracticable, as both maximum daily and monthly average values.

B. Non-continuous Discharges. The federal regulations at 40 CFR 122.45(e) allows non-continuous discharges to be described and limited considering the following factors, as appropriate:

1. Frequency of discharge;

2. Total mass of pollutant per batch discharge;

3. Maximum discharge rate of pollutants; and

4. Expression of limits using the appropriate measure (e.g., mass, concentration, etc.).

III. Mass Versus Concentration Limits.

The regulations at 40 CFR 122.45(f)(1) require that all permit limits, standards, or prohibitions be expressed in terms of mass units (e.g., pounds, kilograms, grams) except under the following conditions:

- For pH, temperature, radiation, or other pollutants that cannot appropriately be addressed by mass limits;
- When applicable standards and limitations are expressed in terms of other units of measurement; or
- If in establishing technology-based permit limitations on a case-by-case basis limitations based on mass are infeasible because the mass or pollutant cannot be related to a measure of production. The limitations, however, just ensure that dilution will not be used as a substitute for treatment.

While the regulations require that limitations be expressed in terms of mass, a provision is included at 40 CFR 122.45(f)(2) that allows limits to be expressed in additional units (e.g., concentration units). Where limits are expressed in more than one unit, the permittee must comply with both.

The basis for expressing limitations in terms of concentration as well as mass is to encourage proper operation of treatment units. In the absence of concentration limits, a permittee would be able to increase its effluent concentration (i.e., reduce its level of treatment) during low flow periods and still meet its mass-based effluent limits. Therefore, concentration limits discourage the reduction in treatment efficiency during low flow periods, and require proper operation of treatment units at all times.

IV. Discharges Associated with this Industry

There are nineteen (19) different discharges associated with the oil and gas extraction industry. The following paragraphs provide a discussion of each discharge and how it applies to the Osprey Platform. The applicant has only applied to discharge waste streams 002, 003, 004, 007, 008, 009, and 012, therefore, the draft permit only provides effluent limitations, requirements, and conditions for those waste streams. The draft permit does not authorize the discharge of waste streams that were not clearly identified in the permit application process.

A. Drilling Muds & Cuttings (001). Drilling muds are the circulating fluids used in the rotary drilling of wells to clean and condition the hole, counterbalance formation pressure and transport drill cuttings to the surface. The applicant will be using water-based and oil-based muds. Drill cuttings are the particles generated by drilling into subsurface geologic formations and carried to the surface with the drilling fluid. On the Osprey Platform, drilling muds will be separated from the cuttings and used as make-up fluids. The separated drill cuttings, with some residual muds and the dewatering effluent, will be disposed of in a Class II injection well that has been permitted with the Alaska Oil and Gas Conservation Commission (AOGCC). Therefore, the applicant did not

apply to discharge this waste stream and the draft permit does not authorize this discharge.

B. Deck Drainage (002). Deck drainage refers to any waste resulting from platform washing, deck washing, spillage, rainwater, and runoff from curbs, gutters, and drains, including drip pans and wash areas. This could also include pollutants, such as detergents used in platform and equipment washing, oil, grease, and drilling fluids spilled during normal operations (Avanti 1992). On the Osprey Platform, contaminated deck drainage will be treated through an oil-water separator prior to discharge. Non-contaminated deck drainage will be discharged with no treatment. The average flow of deck drainage is estimated to be 108,000 gallons per day, depending on precipitation.

C. Sanitary Waste - M10 (003). Sanitary waste is human body waste discharged from toilets and urinals. The sanitary waste system on the Osprey Platform, an aerated marine sanitation device, will serve a 3- to 55-person crew residing on the platform at any one time. The expected maximum quantity of sanitary waste discharged is 2,020 gallons per day.

D. Domestic Waste (004). Domestic waste (gray water) refers to materials discharged from sinks, showers, laundries, safety showers, eyewash stations, and galleys. Gray water can include kitchen solids, detergents, cleansers, oil and grease. Domestic waste will not be treated prior to discharge. The expected quantity of domestic waste discharged is 4,000 gallons per day.

E. Desalination Unit Waste (005). Desalination unit waste is wastewater associated with the process of creating freshwater from seawater. Since the applicant did not apply to discharge this waste stream, the draft permit does not authorize this discharge.

F. Blowout Preventer Fluid (006). Blowout preventer fluid is fluid used to actuate hydraulic equipment on the blowout preventer. Since the applicant did not apply to discharge this waste stream, the draft permit does not authorize this discharge.

G. Boiler Blowdown (007). Boiler blowdown is the discharge of water and minerals drained from boiler drums to minimize solids build-up in the boiler. Although boiler blowdown discharges are not planned or likely to occur, they may occur intermittently and will be treated through an oil-water separator prior to discharge. The expected quantity of boiler blowdown is 100 gallons per event.

H. Fire Control System Test Water (008). Fire control system test water is sea water that is released during the training of personnel in fire protection, and the testing and maintenance of fire protection equipment on the platform. Contaminated fire control test water will be treated through an oil-water separator prior to discharge. This is an intermittent discharge that is expected to occur approximately 12 times per year. The expected discharge quantity is 750 gallons per minute for 30 minutes totaling 22,500 gallons per event.

I. Non-contact Cooling Water (009). Non-contact cooling water is sea water that is used for non-contact, once-through cooling of various pieces of machinery on the platform. The expected quantity of non-contact cooling water is 300,000 gallons per day.

J. Uncontaminated Ballast Water (010). Ballast waster is seawater added or removed to maintain the proper ballast floater level and ship draft. Since the applicant did not apply to discharge this waste stream, the draft permit does not authorize this discharge.

K. Bilge Water (011). Bilge water is water which collects in the lower internal parts of the drilling vessel hull. Since the applicant did not apply to discharge this waste stream, the draft permit does not authorize this discharge.

L. Excess Cement Slurry (012). Excess cement slurry will result from equipment washdown after cementing operations. Excess cement slurry will be discharged intermittently while drilling, depending on drilling, casing, and testing program and problems. This waste stream will not be treated prior to discharge. Approximately 30 discharge events are anticipated per year, with a maximum discharge of 100 bbl (or 4,200 gallons) per event.

M. Mud, Cuttings, Cement at Seafloor (013). Muds, cuttings, and cement at the seafloor are materials discharge at the surface of the ocean floor in the early phases of drilling operations, before the well casing is set, and during well abandonment and plugging. Since the applicant did not apply to discharge this waste stream, the draft permit does not authorize this discharge.

N. Waterflooding Discharges (014). Waterflooding discharges are discharges associated with the treatment of seawater prior to its injection into a hydrocarbon-bearing formation to improve the flow of hydrocarbons from production wells, and prior to its use in operating physical/chemical treatment units for sanitary waste. These discharges include strainer and filter backwash water. All waterflooding discharges will be disposed of in

a Class II injection well that has been permitted with AOGCC. Therefore, the applicant did not apply to discharge this waste stream and the draft permit does not authorize this discharge.

O. Produced Water and Solids (015). Produced water refers to the water (brine) brought up from the hydrocarbon-bearing strata during the extraction of oil and gas, and can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process. Produced solids are sands and other solids deposited from produced water which collect in vessels and lines and which must be removed to maintain adequate vessel and line capacities. The produced water and solids will be disposed of in a Class II injection well that has been permitted with AOGCC. Therefore, the applicant did not apply to discharge this waste stream and the draft permit does not authorize this discharge.

P. Well Completion Fluids (016). Well completion fluids are salt solutions, weighted brines, polymers, and various additives used to prevent damage to the well bore during operations which prepare the drilled well for hydrocarbon production. The well completion fluids will be disposed of in a Class II injection well that has been permitted with AOGCC. Therefore, the applicant did not apply to discharge this waste stream and the draft permit does not authorize this discharge.

Q. Workover Fluids (017). Workover fluids are salt solutions, weighted brines, polymers, or other specialty additives used in a producing well to allow safe repair and maintenance or abandonment procedures. The workover fluids will be disposed of in a Class II injection well that has been permitted with AOGCC. Therefore, the applicant did not apply to discharge this waste stream and the draft permit does not authorize this discharge.

R. Well Treatment Fluids (018). Well treatment fluid refers to any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. The well treatment fluids will be disposed of in a Class II injection well that has been permitted with AOGCC. Therefore, the applicant did not apply to discharge this waste stream and the draft permit does not authorize this discharge.

S. Test Fluids (019). Test fluids are discharges that occur if hydrocarbons located during exploratory drilling are tested for formation pressure and content. This would consist of fluids sent downhole during testing, along with water from the formation. The test fluids will be disposed of in a Class II injection well that has been permitted with AOGCC. Therefore,

the applicant did not apply to discharge this waste stream and the draft permit does not authorize this discharge.

V. Technology-based Evaluation

A. Overview.

There are two general approaches for developing technology-based effluent limits for industrial facilities: (1) using national effluent limitations guidelines (ELGs) and (2) using Best Professional Judgment (BPJ) on a case-by-case basis. The intent of a technology-based effluent limitation is to require a minimum level of treatment for industrial point sources based on currently available treatment technologies while allowing the discharger to use any available control technique to meet the limitations.

The national ELGs are developed based on the demonstrated performance of a reasonable level of treatment that is within the economic means of specific categories of industrial facilities. Where national ELGs have not been developed or did not consider specific pollutant parameters in discharges, the same performance-based approach is applied to a specific industrial facility based on the permit writer's BPJ. In some cases, technology-based effluent limits based on ELGs and BPJ may be included in a single permit.

B. National Effluent Limitation Guidelines.

Section 301(b) of the CWA requires technology-based controls on effluents. This section of the CWA requires that, by March 31, 1989, all permits contain effluent limitations which: (1) control toxic pollutants and nonconventional pollutants through the use of "best available technology economically achievable" (BAT), and (2) represent "best conventional pollutant control technology"(BCT) for conventional pollutants. In no case may BCT or BAT be less stringent than "best practical control technology currently achievable" (BPT), which is the minimum level of control required by section 301(b)(1)(A) of the CWA.

In addition to BPT and BAT requirements, section 306 of the CWA established more restrictive requirements for "new sources." The intent of this special set of guidelines is to set limitations that represent state-of-the-art treatment technology for new sources because these dischargers have the opportunity to install the latest in treatment technology at the time of start-up. These standards, identified as new source performance standards (NSPS), are described as the best available demonstrated control technology (BADT), processes, operating methods, or other alternatives including, where practicable, standards permitting no

discharge of pollutants. NSPSs are effective on the date of the commencement of a new facility's operation and the facility must demonstrate compliance within 90 days (40 CFR 122.29(d)).

For several specific industrial sectors, EPA has developed effluent limitation guidelines (ELGs) that contain BPT, BCT, BAT, and NSPS limitations. On December 16, 1996, EPA published effluent limitation guidelines for the coastal subcategory of the oil and gas extraction industry. These guidelines are found in 40 CFR Part 435, Subpart D. The BADT (40 CFR 435.45) effluent limitation guidelines that apply to the Osprey Platform discharges are provided in the following table:

Table B-1. NSPS Effluent Limitations for the Osprey Platform

Discharge	Pollutant Parameter	Limitation
Deck Drainage (002)	Free Oil[1]	No discharge
Sanitary Waste - M10[2] (003)	Residual Chlorine	Minimum of 1 mg/l[3]
Domestic Waste (004)	Floating Solids, Garbage & Foam	No discharge

Footnotes:
1 As determine by the presence of a film or sheen upon or a discoloration of the receiving water (visual sheen).
2 An M10 is facility that is continuously manned by ten (10) or more persons.
3 Maintained as close to this concentration as possible.

C. State of Alaska Treatment Requirements (18 AAC 72)

In addition to EPA's new source performance standards, the state of Alaska has minimum treatment requirements for the discharge of domestic water (18 AAC 72.050(a)(4)). The State requires all domestic wastewater, which applies to sanitary waste (003) on the Osprey Platform, discharged into or onto waters of the State to meet secondary treatment. The State's wastewater regulations provide effluent limitations for secondary treatment at 18 AAC 72.991(59) and summarized in Table B-2.

Table B-2. Alaska Technology-based Effluent Limitations for Sanitary Wastes (003)		
Pollutant Parameter	**Duration**	**Limitation**
BOD_5	30-day average	30 mg/l
	7-day average	45 mg/l
	24-hour average	60 mg/l
TSS	30-day average	30 mg/l
	7-day average	45 mg/l
	24-hour average	60 mg/l
pH	in any measurement	6.0 - 9.0

D. Technology-based Requirements for Marine Sanitation Devices

The EPA has federal regulations at 40 CFR Part 140 that provide standards for marine sanitation devices (MSDs) that require effluents to contain a maximum of 150 mg/l TSS, a maximum of 200/100 ml fecal coliform bacterial count, and no visible floating solids. Since the MSD being employed by the Osprey Platform estimates secondary treatment standards for biochemical oxygen demand (BOD), total suspended solids (TSS), and fecal coliform bacteria, the secondary treatment standards required by Alaska will be applied to this discharge.

E. Best Professional Judgement

1. No Free Oil Permit Limit

Region 10 has determined that discharges that are likely to be oil-contaminated must be limited to contain no free oil. Therefore, the draft permit proposes a no free oil effluent limitation for excess cement slurry (discharge 012) based on the Agency's BPJ and previous permit actions for similar discharges. Previous BPJ determinations for the Coastal Subcategory were incorporated into the 1986 permit for Cook Inlet/Gulf of Alaska (51 FR 35460, October 10, 1986) and the individual permit issued to ARCO Alaska, Inc. for exploration discharges in upper Cook Inlet. Compliance with this limitation will be by the visual sheen test.

This effluent limitation is Region 10's best professional judgement (BPJ) determination of Best Practicable Control Technology Currently Available (BPT) controls for this discharge. BPT is

based on the average of the best existing performance by plants of various sizes, ages, and unit processes within the industrial category or subcategory. BPJ-based effluent limits are technology-based limits derived on a case-by-case basis under Section 402(a)(1) of the Clean Water Act. BPJ limits are established in cases where ELGs are not available for, or do not regulate, a particular pollutant of concern. EPA has developed this BPJ effluent limitation in accordance with federal regulations 40 CFR 122.43, 122.44, and 125.3.

2. Surfactants, Dispersants and Detergents

The draft permit proposes the discharge of surfactants, dispersants, and detergents to be minimized except as necessary to comply with the safety requirements of the Occupational Health and Safety Administration and the MMS. These products contain primarily nonconventional pollutants. This provision has appeared in the following Alaska general NPDES permits for the oil and gas industry: Cook Inlet, Beaufort Sea, Chukchi Sea, Norton Sound, Bering Sea and the Arctic Ocean.

3. Other Toxic and Non-conventional Compounds

The draft permit proposes prohibiting the discharge of the following pollutants: halogenated phenol compounds, trisodium nitrilotriacetic acid, sodium chromate, and sodium dichromate. The class of halogenated phenol compounds includes toxic pollutants while sodium chromate and dichromate contain chromium, which is also a toxic pollutant. Trisodium nitrilotriacetic acid is a nonconventional pollutant. Past general NPDES permits for the oil and gas industry in Alaska that prohibit the discharge of these compounds are Cook Inlet, Beaufort Sea, Chukchi Sea, Norton Sound, Bering Sea, and Arctic Ocean.

F. Mass Versus Concentration Limits.

As discussed in Section III of this appendix, it is sometimes necessary to express limits in concentration units, as well as mass. It has been determined that the limits for BOD_5, TSS, and total residual chlorine in the sanitary discharge (discharge 003) require both mass and concentration effluent limitations. Since the treatment requirements for this discharge are expressed as concentration, effluent limits for mass-based limits are calculated by multiplying the concentration limit (in mg/L) by the estimated discharge flow (in mgd) and a conversion factor of 8.34 to obtain a limitation in units of pounds per day (lbs/day).

VI. Technology-based Requirements for the Osprey Platform.

The technology-based effluent limitations for the Osprey Platform discharges are provided in the Table B-3.

Table B-3. Technology-based Effluent Limitations for the Osprey Platform's Discharges				
Discharge	**Discharge Description**	**Pollutant Parameter**	**Duration**	**Limitation**
002	Deck Drainage	Free oil	in any visual measurement	no discharge[1]
003	Sanitary Waste	BOD_5	monthly average	30 mg/l
				0.5 lbs/day
			daily maximum	60 mg/l
				1.0 lbs/day
		TSS	monthly average	30 mg/l
				0.5 lbs/day
			daily maximum	60 mg/l
				1.0 lbs/day
		fecal coliform bacteria	daily maximum	200/100 ml
		pH	in any measurement	6.0 - 9.0
		residual chlorine	monthly average	minimum of 1.0 mg/L[2]
004	Domestic Waste	floating solids, garbage & foam	in any visual measurement	no discharge
012	Excess Cement Slurry	Free oil	in any visual measurement	no discharge[1]

Footnotes:
1 As determine by the presence of a film or sheen upon or a discoloration of the receiving water (visual sheen).
2 Maintained as close to the this concentration as possible.

VII. Water Quality-based Evaluation

A. Overview

In addition to the technology-based limits discussed in Part III of this appendix, EPA evaluated the Osprey Platform's discharges to determine compliance with section 301(b)(1)(C) of the CWA. This section requires the establishment of limitations in permits necessary to meet water quality standards by July 1, 1977. The regulations at 40 CFR 122.44(d) implement section 301(b)(1)(C) of the CWA. These regulations require that permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The permit limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation (WLA).

In determining whether water quality-based limits are needed and developing those limits when necessary, EPA follows guidance in the *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA, 1991). The water quality-based analysis consists of four steps: (1) determine the appropriate water quality criteria that applies to each discharge, (2) determine if there is "reasonable potential" for the discharge to exceed the criteria in the receiving water, (3) develop a WLA if there is reasonable potential, and (4) develop effluent limitations based on the WLA.

B. Water Quality Criteria

The first step in developing water quality-based effluent limits is to determine the applicable water quality criteria. For Alaska, the State water quality standards are found at Title 18, Chapter 70 of the Alaska Administrative Code (18 AAC 70). The applicable criteria are determined based on the beneficial uses of the receiving water. As discussed in Part III.D of this fact sheet, the beneficial uses for Cook Inlet are aquaculture water supply, seafood processing water supply, industrial water supply, contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life, and wildlife, and harvesting for consumption of raw mollusks or other raw aquatic life.

When there are not numeric criteria, EPA must interpret the narrative criteria in order to evaluate reasonable potential. This can be accomplished in one of three methods:

- Establish a permit limit using a calculated criterion using a proposed State water quality criterion, or an explicit State policy;

- Establish permit limits on a case-by-case basis using EPA's water quality criteria; or

- Establish an indicator parameter.

The discharges from the Osprey Platform were evaluated for whole effluent toxicity, based on the narrative criterion of "no toxics in toxic amounts." (See 18 AAC 70.020(b)(2)(C)). In order to interpret this narrative criterion, EPA used the state standard at 18 AAC 70.030, "Whole Effluent Toxicity."

For any given pollutant, different uses may have different criteria. To protect all beneficial uses, the permit limits are based on the most stringent of the water quality criteria applicable to those uses. The applicable criteria based on the beneficial uses for Cook Inlet are summarized in Table B-4.

Table B-4. Water Quality Criteria Applicable to the Osprey Platform Discharges		
DISCHARGE	**POLLUTANT PARAMETER**	**CRITERIA**
Deck Drainage (002)	Whole Effluent Toxicity (chronic)	1.0 TU_c
Sanitary Waste (003)	Total Residual Chlorine	2.0 :g/l
	Fecal Coliform Bacteria[1]	14 FC/100 ml[2]
		43 FC/100 ml[3]
	pH[4]	6.5 - 8.5
All	Residues	Floating solids, debris, sludge, deposits, foam, scum, or other residues may not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use; cause acute or chronic problem levels as determined by bioassay or other appropriate methods; cause a film, sheen, or discoloration on the surface of the water or adjoining shorelines; cause leaching of toxic or deleterious substances; or cause a sludge solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.

Footnotes:
1 Based on the median most probable number (MPN) from a 5-tube decimal dilution test.
2 Based on any one sample.
3 Based on #10% of the samples.
4 May not vary more than 0.1 pH unit from natural conditions.

C. Reasonable Potential Evaluation

1. Determination of Reasonable Potential

To determine if there is “reasonable potential” to cause or contribute to an exceedance of water quality criteria for a given pollutant (and therefore whether a water quality-based effluent limit is needed), for each pollutant present in a discharge, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is “reasonable potential,” and a limit must be included in the permit. EPA uses the recommendations in Chapter 3 of the TSD (EPA, 1991) to conduct this “reasonable potential” analysis.

2. Reasonable Potential Evaluation Procedure with Numeric Criteria.

a. Because the effluent discharges are to a marine environment, the appropriate steady-state mixing model to calculate the minimum dilution at critical conditions is:

$C_d \times V_d = (C_e \times V_e) + (C_u \times V_d)$,

where, C_d is the projected receiving water concentration, V_d is the volume of the receiving water used for mixing (i.e., the mixing zone), C_e is the maximum effluent concentration, V_e is the estimated volume of effluent discharge, and C_u is the existing receiving water concentration prior to effluent discharge.

The predicted receiving water concentration (C_d) can be calculated by rearranging the basic mass balance equation, as follows:

$C_d = (C_e \div \text{dilution ratio}) + C_u$,

where the dilution ratio is the ratio of the effluent volume to the receiving water volume. The dilution ratio is determined from computer modeling performed by ADEC.

If C_u is equal to 0, the equation becomes

$C_d = C_e \div \text{dilution ratio}$.

b. The criterion is then compared to the maximum projected receiving water concentration to determine the need for a water-quality-based effluent limitation (WQBEL). If the projected receiving water concentration is equal to or greater than the criterion, then a WQBEL for that pollutant must be incorporated into the permit.

The exception is for BOD, nutrients, and bacteria where the WLAs are directly applied as the WQBEL (i.e., the acute WLA is the maximum daily limit and the chronic WLA is the average monthly limit). In this case, the projected receiving water concentration must be greater than the criterion before a WQBEL is necessary for that pollutant.

3. Reasonable Potential Evaluation Procedure with Narrative Criteria.

The EPA must establish levels that are protective of the narrative criteria (40 CFR 122.44(d)(1)(vi)) in the absence of State numeric criteria and when there is reasonable potential for the discharge to cause or contribute to an excursion that results in the violation of the narrative water quality standard. In order to determine this, EPA must use the best information available to characterize the conditions of the receiving water body and the point source discharge (effluent).

4. Reasonable Potential Analysis for the Osprey Platform.

a. Whole Effluent Toxicity.

EPA cannot determine if there is “reasonable potential” for whole effluent toxicity in the deck drainage discharge because there is not any information available. Therefore, an effluent limitation is not proposed for the draft permit. However monitoring is required to obtain information for future reasonable potential determinations.

b. Total Residual Chlorine.

In order to determine reasonable potential, the technology-based effluent limitation is used as the maximum projected effluent concentration and 0 is assumed for the background concentration. Additionally, ADEC has proposed a dilution ratio of 500:1 (volume receiving water:volume effluent).

c. Fecal Coliform Bacteria.

In order to determine reasonable potential, the technology-based effluent limitation is used as the maximum projected effluent concentration and 0 is assumed for the background concentration. Both water quality criteria are evaluated directly against the technology-based effluent limit because the proposed sample frequency is once per month. Since ADEC has not proposed a mixing zone for fecal coliform therefore the analysis (see calculations in Appendix C) indicates that WQBELs are necessary for the sanitary discharge.

d. pH.

The technology-based effluent range of pH is 6.0 - 9.0 standard units applies only to the sanitary discharge. Since the water quality standards require a pH range of 6.5 - 8.5 and ADEC has not proposed a dilution ratio for pH in the sanitary discharge, EPA has determined that there is reasonable potential for this discharge. Additionally, EPA has determined that there is reasonable potential for the other authorized discharges to violate this water quality standard.

e. Residues.

The domestic waste discharge has a technology-based effluent limitation that prohibits the discharge floating solids, garbage and foam. Since the water quality standards prohibit the discharge floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in concentrations causing nuisance, objectionable, or detrimental conditions or that make the water unfit or unsafe for the use, Region 10 has determined that there is reasonable potential for the other discharges to violate this water quality standard.

D. Water Quality-based Permit Limit Derivation

Once EPA has determined that a water quality-based limit is required for a pollutant, the first step in developing the permit limit is development of a wasteload allocation (WLA) for the pollutant. A WLA is the concentration (or loading) of a pollutant that may be discharged without causing or contributing to an exceedence of water quality standards in the receiving water. The WLAs and permit limits are derived based on guidance in the TSD (EPA, 1991). The WLAs are then converted to long-term average concentrations (LTAs) and compared. The most stringent LTA concentration for each parameter is converted to effluent limits.

1. Total Residual Chlorine.

Since the Alaska water quality criteria for total residual chlorine is reported as a single value (i.e., 2 ：g/L), the TSD (EPA, 1991) recommends deriving the wasteload allocation (WLA) from the single criterion as the chronic WLA. In the absence of data to evaluate the true variability of the effluent, EPA has used a value of 0.6 for the coefficient of variation (CV) in the statistical

calculations for WQBELs. A CV of 0.6 is a conservative estimate that assumes relatively high variability in the final permit limit.

The resulting WQBELs (see calculations in Appendix C) indicate effluent maximum concentrations while the technology-based limit indicates a minimum control level. Consequently, the WQBELs are the more stringent effluent limits and are applied to this discharge.

2. pH.

The draft permit incorporates the more stringent water quality-based pH range of 6.5 to 8.5 standard units.

3. Residues.

The draft permit prohibits any discharge of floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in concentrations causing nuisance, objectionable, or detrimental conditions or that make the water unfit or unsafe for the use.

4. Fecal Coliform Bacteria.

The draft permit incorporates the more stringent water quality-based criteria of 14 FC/100 mL in any sample and 43 FC/100 mL in #10% of the samples.

VIII. Statutory Basis for Proposed Permit Conditions

Table B-5. Statutory Bases for Proposed Effluent Limitations		
Discharge	**Effluent Limit**	**Statutory Basis**
Deck Drainage (002)	no free oil	40 CFR 435 (NSPS)
	monitor WET, chronic	§308 18 AAC 70
Sanitary Wastes (003)	total residual chlorine	18 AAC 70
	BOD_5	18 AAC 72
	TSS	40 CFR 140
	fecal coliform bacteria	18 AAC 70
Domestic Wastes (004)	no floating solids, garbage & foam	40 CFR 435 (NSPS)
Excess Cement Slurry (012)	no free oil	BPJ/BPT
All Discharges	no halogenated phenol compounds, diesel oil, trisodium nitrilotriacetic acid, sodium chromate, or sodium dichromate	BPJ/BAT
	pH maintained between 6.5 and 8.5	18 AAC 70
	no sufactants, detergents, dispersants	BPJ/BAT
	no floating solids, visible foam	18 AAC 70
	area & depth related requirements	§403 (ODCE)

APPENDIX C
Calculations

I. TOTAL RESIDUAL CHLORINE

A. Reasonable Potential Calculations

Table C-1. Reasonable Potential Analysis for Total Residual Chlorine			
Aquatic Life - Chronic	**Nomenclature**	**Value**	**Units**
criterion		**0.002**	mg/L
projected receiving water concentration $C_d = (C_e \div \text{dilution ratio}) + C_u$	C_d	**0.002**	mg/L
maximum effluent concentration C_e = TBEL	C_e	1.0	mg/L
Technology-based effluent limit	TBEL	1.0	mg/L
dilution ratio		500:1	
background concentration	C_u	0	mg/L

The projected receiving water concentration (C_d) is equal to the acute criterion for aquatic life, thus, there is reasonable potential to violate this water quality standard.

B. Wasteload Allocation Calculations

Table C-2. Waste Load Allocation for Total Residual Chlorine			
Aquatic Life - Chronic	**Nomenclature**	**Value**	**Units**
wasteload allocation $WLA = C_e = [C_d - C_u] \times \text{dilution ration}$	WLA_c	**1.0**	mg/L
chronic criterion	C_d	0.002	mg/L
dilution ratio		500:1	
background concentration	C_u	0	mg/L

C. Water Quality-based Effluent Limitation (WQBEL) Calculations

Table C-3. WQBELs for Total Residual Chlorine			
Aquatic Life	**Nomenclature**	**Value**	**Units**
maximum daily limit $MDL = LTA \times \exp[z_{99}F - 0.5F^2]$	MDL	**1.6**	mg/L
maximum daily loading loading (lbs/day) = MDL(mg/L) × Q_e × 8.34		**0.03**	lbs/day
average monthly limit $AML = LTA \times \exp[z_{95}F_n - 0.5F_n^2]$	AML	**0.8**	mg/L
average monthly loading loading (lbs/day) = AML(mg/L) × Q_e × 8.34		**0.01**	lbs/day
average annual effluent flow	Q_e	0.00202	mgd
long term average $LTA_c = WLA_c \times \exp[0.5F_4^2 - z_{99}F_4]$	LTA	0.53	
chronic wasteload allocation	WLA_c	1.0	
z-score (99th percentile)	z_{99}	2.326	
z-score (95th percentile)	z_{95}	1.645	
coefficient of variation	CV	0.6	
popular variance $F^2 = \ln(CV^2+1)$	F^2	0.31	
standard deviation $F = (F^2)^{0.5}$	F	0.55	
number of samples required per month	n	4	
$F_n^2 = \ln[(CV^2 \div n)+1]$	F_n^2	0.086	
$F_n = (F_n^2)^{0.5}$	F_n	0.29	

II. FECAL COLIFORM BACTERIA

A. Reasonable Potential Calculations

Table C-4. Reasonable Potential Analysis for Fecal Coliform Bacteria			
Aquatic Life	**Nomenclature**	**Value**	**Units**
criterion		**14**	FC/100 mL
projected receiving water concentration $C_d = (C_e \div \text{dilution ration}) + C_u$	C_d	**200**	FC/100 mL
maximum effluent concentration C_e = TBEL	C_e	200	FC/100 mL
Technology-based effluent limit	TBEL	200	FC/100 mL
dilution ratio		0	
background concentration	C_u	0	FC/100 mL
criterion (in #10% of samples)		**43**	FC/100 mL
projected receiving water concentration $C_d = (C_e \div \text{dilution ration}) + C_u$	C_d	**200**	FC/100 mL
maximum effluent concentration C_e = TBEL	C_e	200	FC/100 mL
Technology-based effluent limit	TBEL	200	FC/100 mL
dilution ratio		0	
background concentration	C_u	0	FC/100 mL

The projected receiving water concentration (C_d) is less than or equal to the criteria for aquatic life, thus, there is not reasonable potential to violate this water quality standard.

B. Wasteload Allocation Calculations

N/A

C. Water Quality-based Effluent Limitation (WQBEL) Calculations

N/A

III. WHOLE EFFLUENT TOXICITY TRIGGER

Alaska regulation 18 AAC 70.030 prohibits discharges that impart a chronic toxicity to aquatic organisms more than or equal to 1.0 chronic toxic unit (TUc) at or beyond the mixing zone boundary. ADEC has proposed a mixing zone for chronic toxicity of 100:1 dilution. Therefore, EPA must establish the appropriate effluent level that would trigger accelerated testing.

The following statistical procedure provides a mechanism for determining which type of testing (acute or chronic) is more toxicologically protective and establishing a trigger level in chronic toxic units (TUc). EPA has used the recommended acute toxicity criterion of 0.3 TUa to evaluate an appropriate chronic toxicity trigger that would protect the water body from acute toxic effects. In the absence of data to develop an acute-to-chronic ratio (ACR), EPA has applied an ACR of 10 based on the TSD (EPA, 1991).

A. Calculate the chronic toxicity trigger (TTc) from the chronic criterion.

TTc = (chronic criteria) x (chronic dilution) = (1.0TUc) x (100) = 100 TUc

B. Calculate the chronic toxicity trigger (TTc) from the acute criterion.

Since acute testing cannot exceed 67 percent effluent (LC50 #67%), the acute dilution is the ratio of chronic dilution to the maximum acute percent effluent. The acute toxicity trigger is calculated as follows:

TTa = (acute criteria) x (chronic:acute dilution) = (0.3 TUa) x (100/67) = 0.4 TUa.

The acute toxicity trigger is then converted to the chronic toxicity trigger using the ACR.

TTc = (TTa) x (ACR) = (0.4TUa) x (10) = 4.0 TUc

C. Since the chronic toxicity trigger developed from the acute criterion is more stringent than the trigger developed from the chronic criterion, 4.0 TUc is the chronic toxicity trigger that will be proposed in the draft permit.