Region 10, NPDES Permits Unit
1200 6th Ave M/S OWW-130
Seattle, WA 98101

Fact Sheet

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Proposed Issuance of a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)

Pacific Energy Resources Limited
Osprey Platform

EPA Proposes To Issue NPDES Permit
EPA proposes to issue an NPDES permit to the facility referenced above. The draft permit places conditions on the discharge of pollutants from the facility to waters of the United States. 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 from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

401 Certification
EPA is requesting that the Alaska Department of Environmental Conservatoin certify the NPDES permit for this facility, under section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Programs
555 Cordova Street
Anchorage, AK 99501

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit issuance. If no substantive 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 an appeal is submitted to the Environmental Appeals Board within 30 days.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-6251 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

USEPA Region 10: Alaska Operations Office
Federal Building, Room 537
222 West 7th Avenue, #19
Anchorage, Alaska 99513-7588
(800) 781-0983 (in Alaska)
(907) 271-5083

USEPA Region 10: Juneau Operations Office
709 West 9th Street, Room 223A
Juneau, Alaska 99802-0370
(907) 586-7604

USEPA Region 10: Kenai River Center
514 Funny River Road
Soldotna, AK 99669
(907) 260-4872

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Acronyms

AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
EC	Degrees Celsius
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
:g/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
s.u.	Standard Units

TMDL	Total Maximum Daily Load
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

I. Applicant

This fact sheet provides information on the draft NPDES permit for the following entity:

Facility Name: Osprey Production Platform
NPDES Permit Number: AK-005330-9
Facility Location:
West Forelands Area
Cook Inlet, Alaska 99501
Facility Contact: J.R. Wilcox

II. Facility Information

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).

A water flow diagram has been included in Appendix A which shows the production operations of the Osprey Platform. The crude oil is sent via pipeline to the Trading Bay Production Facility where it is tied into the existing Cook Inlet Pipe Line Company system, and then transported to the Drift River Facility. From there, the oil is sent by tanker either to local, domestic, or foreign markets. Natural gas may either be used as fuel to support local Pacific Energy operations or be sent via pipelines to other local markets.

The Osprey Platform was placed on site during late June 2000. The platform initially conducted exploration drilling operations under the Cook Inlet general NPDES permit for Oil and Gas Exploration (AKG285024). Once the platform commenced production activities, it became 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

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 subject facility is located in the vicinity of the West Forelands.

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.

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 of 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.

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.

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.

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 human-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.

C. Water Quality Standards

Section 301(b)(1)(C) of the Clean Water Act (Act) requires that NPDES permits contain effluent limits necessary to meet water quality standards. A 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 (such as cold water biota, contact recreation, etc.) that each water body is expected to achieve. 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.

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the Clean Water Act (Act) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based

limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards of a waterbody are being met and may be more stringent than technology-based effluent limits. The bases for the proposed effluent limits in the draft permit are provided in Appendices B, C, and D.

B. Proposed Effluent Limitations

Table 1 and the following list summarize the effluent limitations in the draft permit.

1. Unless specifically addressed in Table 1, the permittee must not discharge floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in amounts causing any of the following conditions:
    a. Acute or chronic problem levels for fish, shellfish, aquatic life, and wildlife,
    b. A film, sheen, or discoloration on the surface of the water or adjoining shorelines,
    c. Leaching of toxic or deleterious substances,
    d. 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,
    e. Detrimental effects on established water supply treatment levels.
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 permittee must maintain the pH range of all discharges between 6.5 and 8.5 standard units. The permittee must monitor pH in all discharges monthly.
5. Table 1 (below) presents the proposed average monthly, average weekly, maximum daily, and instantaneous maximum effluent limits.

Table 1: Proposed Effluent Limits

Discharge Number	Discharge Description	Effluent Parameter	Units	Effluent Limits	
				Average Monthly Limit	Maximum Daily Limit
001	Drilling Muds and Cuttings	No Discharge			
002	Deck Drainage	Free Oil	--	No Discharge[2]	
003	Sanitary Wastes	Five-day Biochemical Oxygen Demand (BOD_5)	mg/L	30	60
			lb/day	0.9	1.8
		Total Suspended Solids (TSS)	mg/L	30	60
			lb/day	0.9	1.8
		Fecal Coliform Bacteria	#/100 ml	137	200
		Enterococci	#/100 ml	35[1]	276[3]
		Total Residual Chlorine (TRC)	mg/L	0.8	1.6
			lb/day	0.01	0.03
004	Domestic Wastes	Floating solids, garbage, or foam	--	No Discharge	
005	Desalination Unit Wastes	Flow, salinity, whole effluent toxicity	No effluent limits, monitor and report only.		
006	Blowout Preventer Fluid	No Discharge			
010	Uncontaminated Ballast Water	No Discharge			
011	Bilge Water	No Discharge			
012	Excess Cement Slurry	Free Oil	--	No Discharge[2]	
013	Mud, Cuttings and Cement at Seafloor	No Discharge			
014	Waterflooding Discharges	No Discharge			
015	Produced Water and Solids	No Discharge			
016	Completion Fluids	No Discharge			
017	Workover Fluids	No Discharge			
018	Well Treatment Fluids	No Discharge			
019	Test Fluids	No Discharge			
021	Filter Backwash	TRC	µg/L	---	13
			lb/day	---	0.011

Notes:
1. Monthly geometric mean limit.
2. As determined by the presence of a film or sheen upon or a discoloration of the surface of the receiving water (visual sheen) using the static sheen test defined in appendix 1 to 40 CFR part 435, subpart A.
3. Instantaneous maximum limit.

C. Anti-backsliding

Some of the effluent limits in the revised draft permit are less stringent than those in the 2002 permit, as explained below.

Section 402(o) of the Act generally prohibits "backsliding" in NPDES permits but provides exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)).

Section 303(d)(4) of the Act states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). In accordance with the *U.S. EPA NPDES Permit Writers' Manual* (EPA-833-B-96-003), EPA generally views the 402(o)(2) exceptions as applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and they are independent of the requirements of 303(d)(4).

Therefore, it may be appropriate to relax water quality-based effluent limits as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied. However, even if the requirements of Sections 303(d)(4) or 402(o)(2) of the Act are satisfied, Section 402(o)(3) of the Act prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

Effluent Limits for Fecal Coliform in Discharge 003

The proposed effluent limits for fecal coliform in discharge 003 are less stringent than those in the 2002 permit. As stated above, a permit may be reissued to contain a less stringent effluent limitation than the previous permit, if the revision is made in compliance with Section 303(d)(4) of the Clean Water Act (CWA).

The applicable Alaska water quality criterion for fecal coliform in marine waters reads as follows: "Based on a 5-tube decimal dilution test, the fecal coliform median MPN may not exceed 14 FC/100 ml, and not more than 10% of the samples may exceed a fecal coliform median MPN of 43 FC/100 ml." The derivation of effluent limits for fecal coliform in the 2002 permit did not incorporate a mixing zone. The previous permit included a single-sample maximum effluent limit of 14 colonies per 100 ml.

The State of Alaska has authorized a mixing zone in its draft certification. The mixing zone provides a dilution ratio of 133:1. A water quality-based effluent limit based on this dilution factor and the water quality criteria would result in effluent limits that are less stringent than technology-based effluent limits.

The technology-based effluent limits for this discharge are derived in Appendix B, and are equal to a maximum daily limit of 200 organisms per 100 ml, and an average monthly limit of 137 organisms per 100 ml. A discharge in compliance with the technology-based effluent limits in the draft permit would result in fecal coliform concentrations at the edge

of the mixing zone of about one organism per 100 ml on a monthly average basis, and less than two organisms per 100 ml on a maximum daily basis. These values are much less than the water quality criteria. Therefore, EPA believes the limits will not result in a lowering of water quality relative to the effluent limits in the previous permit. EPA believes the limits are therefore consistent with Alaska's antidegradation policy, and the effluent limits may be revised under Section 303(d)(4) of the Clean Water Act.

The revised effluent limits comply with Section 402(o)(3) of the Act because they ensure compliance with Alaska's water quality criteria for fecal coliform at the edge of the State-authorized mixing zone, and thus will not result violations of water quality standards. There are no promulgated effluent limit guidelines for fecal coliform bacteria in discharges of sanitary wastewater from facilities of this type, thus the fecal coliform effluent limits are not less stringent than required by effluent guidelines.

Mass Limits for BOD_5 and TSS in Discharge 003

As stated in the fact sheet for the 2002 issuance of this permit, the mass limits for BOD_5 and TSS in discharge 003 were based on the technology-based concentration limits, and the maximum effluent flow rate as stated in the permit application. The maximum effluent flow rate for discharge 003 provided on the most recent application (December 2006) is larger than that reported on the earlier application upon which the 2002 permit is based.

Effluent limits may be revised in the case of new information (other than revised regulations, guidance, or test methods) that was not available at the time the permit was issued and that would have justified the application of a less stringent effluent limitation (CWA Section 402(o)(2)(B)(i)). The increased maximum flow rate for discharge 003 is new information that was not available at the time of the 2002 permit issuance.

The proposed revision of the mass limits for BOD and TSS complies with Section 402(o)(3) of the Act. There are no promulgated effluent limit guidelines for BOD and TSS in discharges of sanitary wastes from facilities of this type. The BOD and TSS limits for Discharge 003 are based on State of Alaska's treatment standards for sewage, which are being applied here under the authority of Section 301(b)(1)(C) of the Clean Water Act. The authorized mass discharges of BOD and TSS are very small and will not result in dissolved oxygen depletion, or violations of Alaska's water quality standards for sediment or turbidity in the receiving water.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for renewal, as appropriate, to the U.S. Environmental Protection Agency (EPA).

The draft permit only requires monitoring of discharges that are authorized by the permit. Since the permit does not authorize discharges 001, 006, 010, 011 and 013 – 019, monitoring of these discharges is not proposed in the draft permit. However, the permittee must report all instances of noncompliance with the permit, including any occurrence of a discharge not authorized by the permit (see draft permit at Parts III.G and III.H.).

B. Effluent Monitoring

Sampling 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. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA approved test methods (generally found in 40 CFR 136) and if the Minimum Levels (MLs) are less than the effluent limits.

Sample Types

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 unnecessary administrative burden.

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.

Grab

Grab samples are appropriate for parameters that are likely to change with storage (e.g, pH, fecal coliform bacteria, and total residual chlorine) or for parameters (e.g., 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.

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 (or parts per million) is converted to a loading of lbs/day by multiplying the concentration by the flow in million gallons per day (mgd) and a conversion factor of 8.34 (the density of water in pounds per gallon).

Changes in Effluent Monitoring From 2002 Permit

The 2002 permit did not require monitoring of the boiler blowdown discharge (007) or the non-contact cooling water discharge (009) for temperature. The permit application indicates that these discharges can have elevated temperatures. Additionally, the current permit application indicates that the flow rate of non-contact cooling water is greater than that expected at the time the 2002 permit was issued. The draft permit therefore requires effluent monitoring of these discharges, for temperature.

The 2002 permit did not authorize discharges 005 and 021; therefore it did not require monitoring of these discharges. The revised draft permit does authorize these discharges, and requires monitoring of these discharges.

Discharge 005 (Desalination Unit Wastes)

The Alaska Water Quality Standards have water quality criteria for salinity in marine waters (18 AAC 70.020(b)(16)). The salinity of the wastewater from the desalination unit will be higher than that of the intake (ambient) water. Therefore, EPA has proposed to require monthly monitoring of the desalination unit intake and effluent for salinity. The data obtained from this monitoring will be used to determine whether an effluent limit for salinity will be necessary, when the permit is reissued.

Additionally, and consistent with the general permit for oil and gas extraction facilities in Cook Inlet (NPDES Permit #AKG315000), the permit requires monthly monitoring of the effluent flow rate, and the permit requires the permittee to maintain an annual inventory of the quantities and rates of chemicals and biocides that are added to desalination unit waste water.

The permit application indicates that desalination unit wastes discharge may have elevated temperatures. Therefore, the draft permit requires effluent monitoring of Discharge 005, for temperature.

Discharge 021

The draft permit contains monitoring requirements for total residual chlorine (TRC) and flow rate, in order to determine compliance with the mass and concentration effluent limits for TRC. In addition, because the filter backwash discharge is likely to contain suspended solids, the permit requires influent and effluent monitoring for total suspended solids and turbidity. These data will be used to determine if an effluent limit for suspended solids and/or turbidity may be necessary in the future.

Whole Effluent Toxicity Monitoring in Deck Drainage and Desalination Wastes

The 2002 permit required whole effluent toxicity monitoring of the deck drainage. This requirement has been continued in the draft permit.

The Cook Inlet general permit requires quarterly whole effluent toxicity monitoring for desalination unit wastewater, if the flow rate is greater than 10,000 gallons per day (See Cook Inlet GP at Page 32). The application states that the maximum 30-day average flow

rate of the desalination unit wastewater discharge will be 100,000 gallons per day, and the long-term average flow rate will be 10,000 gallons per day. Therefore, the draft permit proposes quarterly monitoring of Discharge 005 for whole effluent toxicity.

For discharges 002 and 005, the draft permit includes a WET trigger level of 1.0 TUc. Calculation of the WET trigger for discharges 002 and 005 is explained in Appendix D. If exceeded, the WET trigger level triggers additional WET testing and/or an evaluation to reduce toxicity. If the State of Alaska authorizes mixing zones for these discharges in its final Clean Water Act Section 401, the WET triggers in the final permit will be recalculated based on the revised mixing zones.

Proposed Effluent Monitoring

Table 2, below presents the proposed effluent monitoring requirements for the draft permit.

Table 2: Monitoring Requirements

Discharge	Discharge Description	Effluent Parameter	Units	Monitoring Requirements	
				Sample Frequency	Sample Type
002	Deck Drainage	Free oil	Visual[3]	Daily	Visual[3]
		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
		Fecal Coliform Bacteria	#/100 mL	Monthly	Grab
		Enterococci	#/100 mL	Monthly	Grab
		Total Residual Chlorine	mg/L	Monthly	Grab
			lbs/day	Monthly	Calculated
004	Domestic Wastes	Floating solids, garbage, or foam	Visual	Daily	Visual
		Flow	mgd	Monthly	Estimated
005	Desalination Unit Wastes	Salinity[1]	PPT[1]	Monthly[1]	Grab[1]
		Flow	mgd	Monthly	Estimated
		WET	TUc	Quarterly	Grab
		Temperature[1]	ºC[1]	Monthly[1]	Grab[1]
007	Boiler Blowdown	Flow	mgd	Monthly	Estimated
		Temperature	ºC	Monthly	Grab
008	Fire Control System Test Water	Flow	mgd	Monthly	Estimated
009	Non-contact Cooling Water	Flow	mgd	Monthly	Estimated
		Temperature[1]	ºC[1]	Monthly[1]	Grab[1]
012	Excess Cement Slurry	Free oil	Visual[3]	Daily When Discharging	Visual[3]
		Flow	mgd	Monthly	Estimated
021	Filter Backwash	Flow	mgd	Monthly	Estimated
		TRC	µg/L	Monthly	Grab

Table 2: Monitoring Requirements					
Discharge	**Discharge Description**	**Effluent Parameter**	**Units**	**Monitoring Requirements**	
				Sample Frequency	**Sample Type**
		TSS[1]	mg/L[1]	Monthly[1]	Grab[1]
		Turbidity[1]	NTU[1]	Monthly[1]	Grab[1]

Notes:
1. Monitoring is required for both the intake and effluent.
2. Monitoring must be conducted during a significant rainfall or snowmelt.
3. As determined by the presence of a film or sheen upon or a discoloration of the surface of the receiving water (visual sheen) using the static sheen test defined in appendix 1 to 40 CFR part 435, subpart A.

VI. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. Pacific Energy is required to develop and implement a Quality Assurance Plan by the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to EPA and ADEC upon request.

B. 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 Pacific Energy to update the BMP plan to reflect the additional permitted surface water discharges (005 and 021), and review their current BMP Plan for accuracy with respect to the previously permitted discharges. The BMP plan must be revised as new practices are developed for the facility.

C. Additional Permit Provisions

Sections III, IV and V 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, and reporting requirements, compliance responsibilities, and other general requirements.

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. Endangered Species Act

Section 7 of the Endangered Species Act of 1973, as amended, requires all federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if they determine that any action they fund, authorize, or undertake may affect an ESA-listed species or designated critical habitat. There are two ESA-listed bird species (the Steller's eider and Kittlitz's murrelet) and four ESA-listed marine mammals (the Steller sea lion, Northern sea otter, humpback whale, and beluga whale) present in general area of the Osprey Platform.

EPA has determined that the proposed action (i.e. re-issue the Osprey's NPDES permit with the two additional outfalls as permitted discharges) may affect, but is not likely to adversely affect ESA-listed species present in the general area of the Osprey Platform. EPA will seek concurrence from the Services on its effects determination prior to approval of the proposed action.

C. Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Act, PL-104-267, which regulate fishing in U.S. waters, included substantial new provisions to protect important habitats for all federally managed species of marine and anadromous fish. The amendment created a new requirement to describe and identify "essential fish habitat" (EFH) in each fishery management plan. EFH is defined as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity." All federal agencies are required to consult with the National Marine Fisheries Service (NMFS) on all actions funded, authorized, or undertaken by the agency that may adversely affect EFH.

EPA has prepared an Essential Fish Habitat Assessment for the proposed project (i.e. re-issue the Osprey's NPDES permit with the two additional outfalls as permitted discharges). Based upon the findings in the EFH assessment, EPA has determined that the proposed project will not have an adverse affect on EFH in the general area of the Osprey Platform. As such, consultation with the NMFS under the Magnuson-Stevens Act is not required.

D. National Environmental Policy Act

The environmental review of major federal actions affecting the quality of the environment is required by the National Environmental Policy Act of 1969 (NEPA). The Council on Environmental Quality (CEQ) established regulations for implementing NEPA in 40 CFR Part 1500. EPA established regulations to govern its compliance with NEPA in 40 CFR Part 6.

EPA effluent limitation guidelines and new source performance standards for oil and gas extraction point source category projects went into effect on December 16, 1996 (61 FR 66123). With promulgation of the new source performance standards for oil and gas extraction, those oil and gas projects requiring NPDES permits, which are defined as "new sources," are subject to the provisions of NEPA.

EPA, with technical assistance from Booz Allen Hamilton, has prepared an Environmental Assessment for the Osprey Platform NPDES re-issuance. The EA addresses the potential environmental consequences associated with the re-issuance of the NPDES permit for the Osprey Platform.

E. 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.

F. Permit Expiration

The permit will expire five years from the effective date. Section 402(B)(1) of the Act requires that NPDES permits are issued for a fixed term not to exceed five years.

VIII. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

Appendix A: Map and Process Flow Diagram

Figure A-1: Location Map

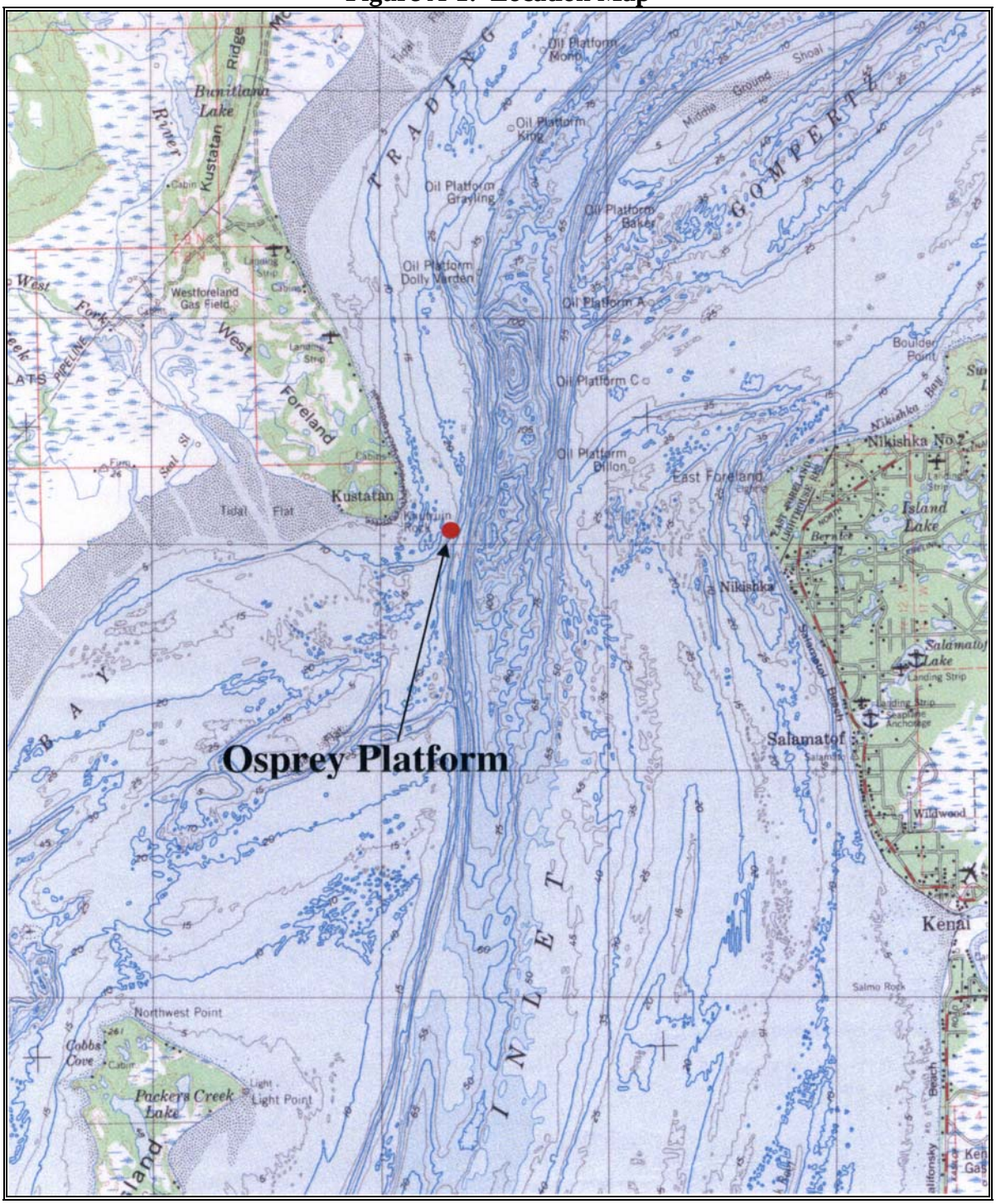
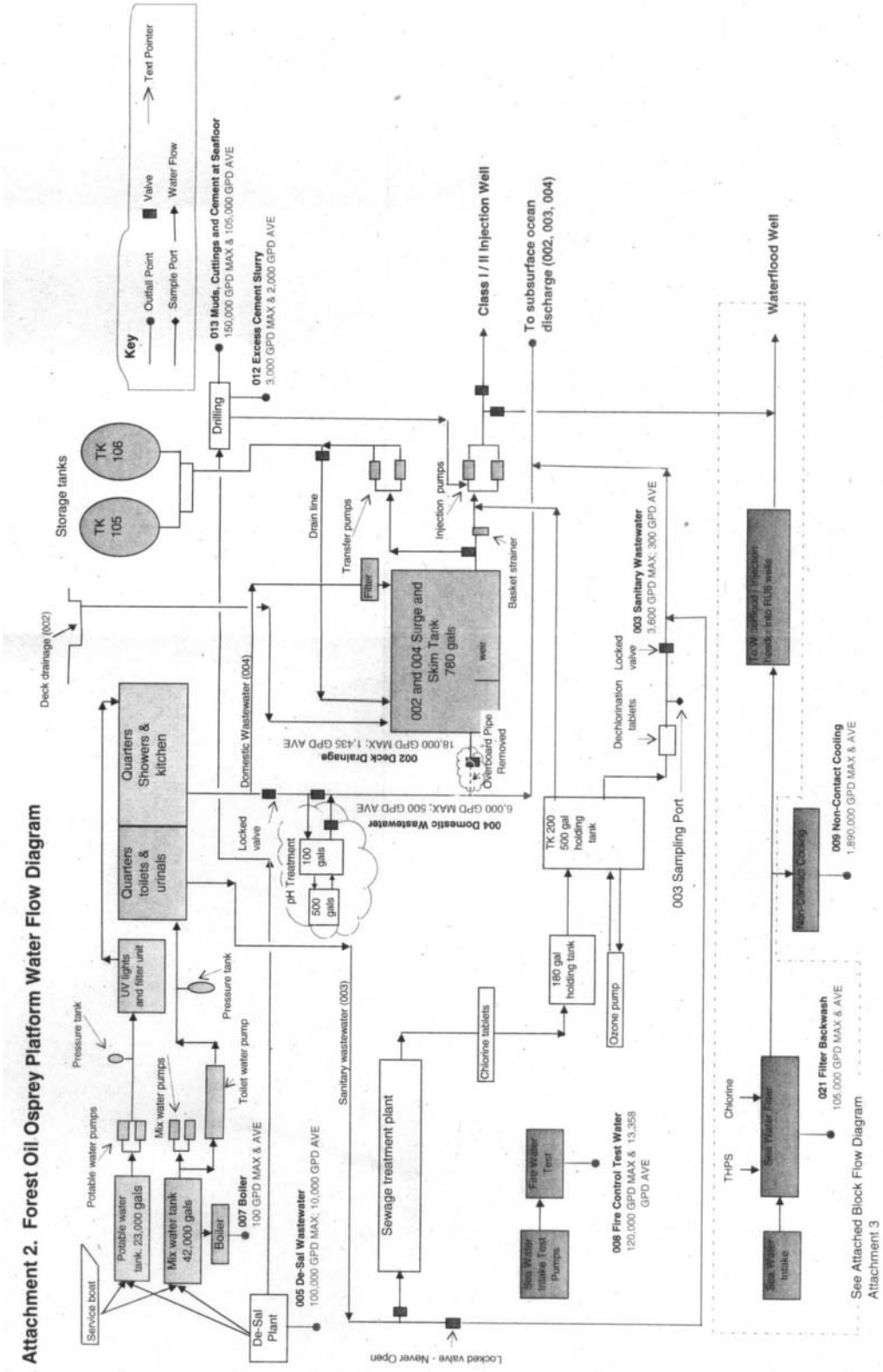


Figure A-2: Water Flow Diagram



Appendix B: Basis for Effluent Limits

A. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 306, 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 determined 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 excursions above the water quality standards in the receiving water. If excursions could occur, Section 301(b)(1)(C) of the Clean Water Act requires that EPA include more-stringent water quality-based limits in the permit. Therefore, the proposed permit limits will reflect whichever requirements (technology-based or water quality-based) are more stringent.

B. Expression of Effluent Limits

Continuous Discharges

The NPDES regulations at 40 CFR 122.45(d) require that all effluent limitations, standards, and prohibitions of discharges from sources other than publicly owned treatment works that discharge continuously to be expressed, as both maximum daily and monthly average limits, unless impracticable.

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:

- Frequency of discharge;
- Total mass of pollutant per batch discharge;
- Maximum discharge rate of pollutants; and
- Expression of limits using the appropriate measure (e.g., mass, concentration, etc.).

Mass and 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. Permit conditions must 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 terms of both mass and concentration, the permittee must comply with both the mass and concentration effluent limits.

Limitations may be expressed in terms of both concentration and mass for one of two reasons. One 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. Also, Section 5.7.1 of the *Technical Support Document for Water Quality-based Toxics Control* recommends that effluent limits for pollutants that can cause direct toxicity to aquatic life to be expressed in terms of both mass and concentration in cases of low dilution.

It has been determined that the limits for BOD_5, TSS, and total residual chlorine in the sanitary discharge (discharge 003), and the total residual chlorine effluent limits for the filter backwash discharge require both mass and concentration effluent limitations. Since the treatment requirements for BOD and TSS for discharge 003 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). The mass limits for chlorine for discharge 003, from the 2002 permit, are retained in this permit under the anti-backsliding provisions of the Clean Water Act (Section 402(o)).

C. Discharges Associated With This Industry

There are nineteen (19) different discharges associated with the oil and gas extraction industry in general. The applicant applied to discharge an additional type of wastewater, filter backwash, which is listed as discharge number 021. 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, 005, 007, 008, 009, 012, and 021. 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, and the permit requires reporting of any discharges that are not authorized by the permit.

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.

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. 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 maximum flow of deck drainage is estimated to be 18,000 gallons per day.

Sanitary Waste (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 3,600 gallons per day.

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 maximum quantity of domestic waste discharged is 6,000 gallons per day.

Desalination Unit Waste (005)

Desalination unit waste is wastewater associated with the process of creating freshwater from seawater. The previous (2002) permit did not authorize the discharge of desalination unit waste because the applicant did not apply to discharge this waste stream at that time. In the most recent application, however, the applicant did apply to discharge this waste stream. Therefore, the draft permit proposes to authorize the discharge of desalination unit waste. The expected quantity of desalination unit wastewater is 100,000 gallons per day.

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.

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.

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 occurs approximately once per week. The expected maximum flow rate is 120,000 gallons per day, or 83 gallons per minute.

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 maximum quantity of non-contact cooling water is 1.89 million gallons per day.

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.

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.

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 78 discharge events are anticipated per year, with a maximum discharge of 3,000 gallons per event.

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.

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.

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.

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.

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.

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.

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.

Filter Backwash (021)

Discharge 021 is a new outfall for filter backwash that consists mainly of sea water and sediments entrained in sea water. Chlorine will be added to the filter backwash to remove bacterial growth in the filter, but the effluent concentration of chlorine in the discharge is unknown. Tetrakis (hydroxymethyl) phosphonium sulphate (THPS) may be used to treat the

filter intermittently (once every two to three weeks) to remove bacteria that are not significantly affected by chlorine.

The applicant did not apply for a mixing zone for this discharge from ADEC. The letter accompanying the NPDES permit application stated that "the chlorine is expected to be removed to such an extent that a mixing zone for chlorine is not needed for compliance with State of Alaska water quality standards." The letter also stated that the applicant may apply for a mixing zone for this discharge, if chlorine cannot be removed to the extent necessary to meet chlorine water quality standards without mixing.

D. Technology-based Effluent Limits

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 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, as is the case here.

Effluent Limit 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 NSPS (40 CFR 435.45) effluent limitation guidelines that apply to the Osprey Platform discharges are provided in table B-1, below:

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

Discharge	Pollutant Parameter	Limitation
Deck Drainage (002)	Free Oil[1]	No Discharge
Sanitary Waste (M9IM, discharge 003))[2]	Floating Solids	No Discharge
Domestic Waste	Floating Solids, Garbage and Foam	No Discharge

Notes:
1. As determined by the presence of a film or sheen upon or a discoloration of the receiving water (visual sheen).
2. M9IM means those offshore facilities continuously manned by nine (9) or fewer persons or only intermittently manned by any number of persons (40 CFR 435.41(s)).

State of Alaska Treatment Requirements

In addition to EPA's new source performance standards, the state of Alaska has minimum treatment requirements for the discharge of domestic wastewater (18 AAC 72.050(a)(4)). The State requires all domestic wastewater discharged into or onto waters of the State to meet secondary treatment. This requirement is applicable to the sanitary waste discharge (003) on the Osprey Platform. 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 Treatment Requirements for Sanitary Wastes (003)

Pollutant Parameter	Averaging Period	Limitation
Five-day biochemical oxygen demand (BOD_5)	30-day Average	30 mg/L
	7-day Average	45 mg/L
	1-day Average	60 mg/L
Total Suspended Solids (TSS)	30-day Average	30 mg/L
	7-day Average	45 mg/L
	1-day Average	60 mg/L
pH	At all times	6.0 - 9.0 standard units (s.u.)

Best Professional Judgment

No Free Oil 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.

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.

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.

Fecal Coliform in Marine Sanitation Devices
40 CFR Part 140 contains standards for marine sanitation devices (MSDs). These standards are not directly applicable to the Osprey platform's marine sanitation device, because they apply only to vessels. The term "vessel" means watercraft capable of being used as a means of transportation on waters of the United States. The Osprey platform is not capable of being used for transportation, thus, it is not a vessel.

One of the ways in which best professional judgment may be applied is by applying existing effluent limit guidelines or standards for a similar source to the source being permitted (See *U.S. EPA NPDES Permit Writer's Manual*, EPA-833-B-96-003, at Page 71). There is no practical difference between an MSD operated on a vessel and an MSD operated on an oil platform such as the Osprey. Therefore, EPA believes it is appropriate to apply the fecal coliform standard in 40 CFR 140.3(d), which is a maximum of 200 FC per 100 ml, to the subject discharge, through best professional judgment. See also the 2002 Fact Sheet for the Osprey platform NPDES permit at Appendix B.

Continuous discharges from facilities other than POTWs must be expressed as average monthly limits and maximum daily limits, unless impracticable (40 CFR 122.45(d)(1)). EPA will implement the 200 FC per 100 ml technology-based effluent limit as a maximum daily limit. An average monthly limit can be calculated using Table 5-3 of the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001), which provides ratios between average monthly and maximum daily limits. Assuming a sampling frequency of once per month and a coefficient of variation of 0.6, and using the 95^{th} percentile probability basis for the average monthly limit and the 99^{th} percentile probability basis for the maximum daily limit, the ratio between the average monthly limit and the maximum daily limit is 1.46:1. Therefore, the technology-based average monthly limit for fecal coliform is 200 ÷ 1.46 = 137 FC per 100 ml.

Summary

The technology-based effluent limitations for the Osprey Platform's discharges, which are based on effluent limit guidelines, Alaska treatment requirements, and best professional judgment, are listed in Table B-3, below:

Table B-3: Technology-based Effluent Limitation Summary for the Osprey Platform

Discharge Description and Number	Pollutant Parameter	Limit Type	Limitation	Basis
Deck Drainage (002)	Free oil	In any visual measurement	No Discharge[1]	40 CFR 435
Sanitary Waste (003)	BOD_5	Average monthly limit	30 mg/L	18 AAC 72
			0.90 lb/day	40 CFR 122.45(f)
		Maximum daily limit	60 mg/L	18 AAC 72
			1.8 lb/day	40 CFR 122.45(f)
	TSS	Average monthly limit	30 mg/L	18 AAC 72
			0.90 lb/day	40 CFR 122.45(f)
		Maximum daily limit	60 mg/L	18 AAC 72
			1.8 lb/day	40 CFR 122.45(f)
	Fecal coliform	Average monthly limit	137/100 ml	CWA Section 402(a)(1)(B), 40 CFR 140
		Maximum daily limit	200/100 ml	
	pH	in any measurement	6.0 - 9.0 s.u.	18 AAC 72
	Floating solids	in any measurement	No Discharge	40 CFR 435
Domestic Waste (004)	Floating solids, garbage and foam	in any visual measurement	No Discharge	40 CFR 435
Excess Cement Slurry (012)	Free oil	In any visual measurement	No Discharge[1]	CWA Section 402(a)(1)(B)

Notes:
1. As determined by the presence of a film or sheen upon or a discoloration of the receiving water (visual sheen).

E. Water Quality-based Effluent Limits

Overview

In addition to the technology-based limits discussed above, 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 that are more stringent than technology-based effluent limits, when those limits are necessary to meet water quality standards. 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* or TSD (EPA, 1991). The water quality-based analysis consists of four steps: (1) determine the appropriate water quality criteria that apply 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.

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.C 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 (40 CFR 122.44(d)(1)(vi)):

- 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 published under section 304(a) of the Clean Water Act; or
- Establish an effluent limit for 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, below.

Table B-4: Water Quality Criteria Applicable to the Osprey Platform Discharges

Pollutant Parameter	Related Discharge	Criteria
Chronic Whole Effluent Toxicity	Deck Drainage (002) Desalination Wastes (005)	1.0 TU_c
Total Residual Chlorine	Sanitary Waste (003) Filter Backwash (021)	13 µg/L (acute) and 7.5 µg/L (chronic)
pH	All	6.5 – 8.5 s.u., may not vary more than 0.1 s.u. from natural conditions
Fecal Coliform Bacteria	Sanitary Waste (003)	Median of 14 FC/100 ml
		Maximum (in no more than 10% of samples) of 43 FC/100 ml
Enterococci Bacteria	Sanitary Waste (003)	Geometric mean of 35 per 100 ml
		Single sample maximum of 276 per 100 ml
Residues	All	Narrative criteria. See discussion under "Specific water quality-based effluent limits," below.

Table B-4: Water Quality Criteria Applicable to the Osprey Platform Discharges		
Pollutant Parameter	**Related Discharge**	**Criteria**
Temperature	Desalination Wastes (005) Boiler Blowdown (006) Non-contact Cooling Water (009)	May not cause the weekly average temperature to increase more than 1º C. The maximum rate of change may not exceed 0.5º C per hour. Normal daily temperature cycles may not be altered in amplitude or frequency. Temperature may not exceed 15 ºC.

Reasonable Potential Evaluation

To determine if there is "reasonable potential" to cause or contribute to an excursion above 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. The results of the reasonable potential analysis are summarized below. The details of the reasonable potential analysis are provided in Appendix C.

Total Residual Chlorine (Discharges 003 and 021)

EPA has determined that discharges 003 and 021 have the reasonable potential to cause or contribute to excursions above Alaska's water quality standards for chlorine. Therefore the draft permit contains water quality-based effluent limits for chlorine.

Fecal Coliform Bacteria (Discharge 003)

EPA has determined that the discharge 003 has the reasonable potential to cause or contribute to an excursion above Alaska's water quality standards for fecal coliform bacteria. Therefore the draft permit contains water quality-based effluent limits for fecal coliform bacteria.

pH (All Discharges)

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 standard and ADEC has not proposed to grant a mixing zone for pH in the sanitary discharge, EPA has determined that the sanitary waste discharge has the reasonable potential to cause or contribute to excursions above or below Alaska's pH criteria, and a water quality-based effluent limit for pH is therefore necessary for the sanitary waste discharge. Additionally, EPA has determined that there is reasonable potential for all of the authorized discharges to cause or contribute to excursions above or below Alaska's pH criteria.

Residues (All Discharges)
The water quality standards require that the receiving water be free from 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 (18 AAC 70.020(b)(20), 2003). EPA Region 10 has determined that there is reasonable potential for all of the discharges to cause or contribute to a violation of this water quality standard.

Specific Water Quality-based Effluent Limits

Total Residual Chlorine (Discharges 003 and 021)
As shown in Appendix D, EPA has determined that the water quality-based effluent limits for total residual chlorine for Discharge 003 that are derived from and comply with the applicable water quality standards are an average monthly limit of 0.8 mg/L and a maximum daily limit of 1.6 mg/L. EPA has determined that

Fecal Coliform Bacteria (Discharge 003)
EPA has determined that the water quality-based fecal coliform effluent limits that are derived from and comply with the applicable water quality standards are a monthly geometric mean effluent limitation of 14 FC per 100 ml and a maximum daily limit of 43 FC per 100 ml.

pH (All Discharges)
The water quality-based pH effluent limits in the draft permit, for all discharges, are identical to the pH range allowed by the water quality criteria (6.5 to 8.5 standard units).

Residues (All Discharges)
The State of Alaska adopted revised water quality standards for residues in 2006. However, these standards have not been submitted to EPA for approval and have thus not been approved by EPA for Clean Water Act purposes, including NPDES permits. Therefore, the water quality criteria for residues that are in effect for Clean Water Act purposes are the criteria that appear in the version of the Alaska Water Quality Standards, as amended through June 26, 2003.

In general, the most stringent water quality criterion for residues, in marine waters, is the criterion that protects the beneficial use of growth and propagation of fish, shellfish, other aquatic life, and wildlife. This criterion reads as follows:

> "Floating solids, debris, sludge, deposits, foam, scum, or other residues (m)ay not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use, or cause acute or chronic problem levels as determined by bioassay or other appropriate methods. May not, alone or in combination with other substances, 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." (18 AAC 70.020(b)(20)(C), 2003)

In addition, the residues criterion for protection of the use of aquaculture water supply requires that "Floating solids, debris, sludge, deposits, foam, scum, or other residues…(m)ay not cause detrimental effects on established water supply treatment levels."

The 2002 permit contained the following condition, which was intended to ensure that the permit was conditioned to ensure compliance with Alaska's water quality standards for residues:

> "Unless specifically addressed in Table 1, the permittee must not 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." (2002 permit at Page 4)

Comparing this condition to the language of the currently-effective water quality standard for residues, it is clear that this condition addresses some, but not all, of the requirements of the currently-effective water quality criterion for residues. Therefore, in the draft permit, this condition has been changed to read as follows:

> Unless specifically addressed in Table 1, the permittee must not discharge floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in amounts causing any of the following conditions:
>
> a. Acute or chronic problem levels for fish, shellfish, aquatic life, and wildlife,
> b. A film, sheen, or discoloration on the surface of the water or adjoining shorelines,
> c. Leaching of toxic or deleterious substances,
> d. 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,
> e. Detrimental effects on established water supply treatment levels.

Appendix C: Reasonable Potential Calculations

A. Overview

Federal regulations require that permits contain effluent limits for all pollutants or pollutant parameters that 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 (40 CFR 122.44(d)(1)(i)). The following describes the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to excursions above Alaska's federally approved water quality standards. EPA uses the process described in Section 3 of the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

To determine if there is reasonable potential for the discharge to cause or contribute to an excursion above water quality criteria for a given pollutant, 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 water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

B. Sanitary Wastes (003)

Fecal Coliform

Fecal coliform are a type of bacteria that are found in the intestines and fecal matter of human beings and warm-blooded animals. Discharges of treated sanitary wastewater (human wastes) are likely to contain fecal coliform, unless disinfected. Also, as discussed in Appendix D, there is a technology-based effluent limit for fecal coliform in marine sanitation devices. The technology-based effluent limit allows a higher concentration of fecal coliform in the discharge than the water quality criteria. Therefore, the discharge has the reasonable potential to cause or contribute to excursions above Alaska's water quality standards for fecal coliform and an effluent limit must be imposed. In this case, however, the technology-based effluent limit is more stringent than the water quality-based effluent limit.

Total Residual Chlorine

The permittee provided effluent data for total residual chlorine in the sanitary wastes discharge. EPA followed the procedures in Section 3.3 of the TSD (determining the need for permit limits with effluent monitoring data) to determine if the discharge has the reasonable potential to cause or contribute to excursions above water quality standards for chlorine.

Table C-1, below, summarizes the reasonable potential calculations:

Table C-1: Reasonable Potential Calculations for Total Residual Chlorine	
Confidence Level	0.99
Z-Score of Confidence Level	2.33
Dilution Factors	
Acute	133
Chronic	133
Maximum Reported Effluent Conc. (metals as TR)	5500
Average Effluent Conc. (Metals as TR)	1046
Standard Deviation of Effluent Conc. (Metals as TR)	1466
Number of samples (n)	61
Coefficient of Variation (CV, assume 0.6 if n<10)	1.40
σ	1.04
σ^2	1.087
Percentile of Largest Value	0.927
Z-Score of Percentile of Largest Value	1.456
C99	6.56
Cn	2.65
Reasonable Potential Multiplier (RPM)	2.48
Maximum Projected Effluent Conc. (Metals as TR)	**13628**
Ambient Concentration (Metals as Dis)	0
Maximum Acute RWC (Metals as Dis)	102
Maximum Chronic/Single Value RWC (Metals as Dis)	102
Acute Aquatic Life Criterion (Metals as Dis)	13
Chronic Aquatic Life Criterion (Metals as Dis)	7.5
Most Stringent Single-Value Criterion (Metals as TR)	N/A
Reasonable Potential?	**YES**

As shown in table C-1, the discharge has the reasonable potential to cause or contribute to excursions above Alaska's water quality standards for chlorine, and an effluent limit must therefore be imposed (40 CFR 122.44(d)(1)(i)).

C. Filter Backwash (021)

The Osprey platform has never discharged filter backwash, therefore no effluent data are available. Therefore, EPA used determined reasonable potential based on the expected characteristics of the discharge.

Total Residual Chlorine

The cover letter sent to EPA with the application for renewal of the NPDES permit stated that chlorine would be added to the filter, in order to control bacterial growth. The letter also stated that the applicant expected that the chlorine concentration in the filter backwash discharge would be low enough to meet Alaska water quality standards for chlorine at the point of discharge. Thus, the applicant did not request a mixing zone for chlorine from the State of Alaska for this discharge.

Chlorine is being added to the filter, and effluent concentrations are variable. Therefore, even if the chlorine concentration is generally low enough to meet Alaska's water quality standards for chlorine at the point of discharge, the chlorine concentration could, at times, be greater than the

water quality criteria. Therefore, the discharge has the reasonable potential to cause or contribute to excursions above water quality standards for chlorine, and a chlorine effluent limit must be imposed.

Water quality criteria for chlorine are expressed in terms of a chronic criterion, which is a 4-day average criterion not to be exceeded more than once every three years, and an acute criterion, which is a 1-hour average criterion not to be exceeded more than once every three years. Because discharge 021 is a batch discharge (occurring over a period of less than 24 hours), it is unlikely that it will significantly influence the chlorine concentration in the receiving water, over a four-day period, as long as the acute water quality criterion (13 µg/L) is met. However, because the acute water quality criterion is a 1-hour average concentration, it is necessary to impose an effluent limit for chlorine based on the acute criterion, in spite of the fact that the discharge is not continuous.

Appendix D: Water Quality-based Effluent Limit Calculations

A. Overview

This appendix explains in detail the calculation of water quality-based effluent limits for the Osprey platform.

B. Mixing zones for Discharge 003

According to the Fact Sheet for the 2002 reissuance of the subject permit (2002 Fact Sheet), effluent limits in the 2002 permit, for the sanitary wastes discharge (#003) applied water quality criteria at the end-of-pipe for fecal coliform bacteria, and at the edge of a mixing zone providing a dilution ratio of 500:1 for total residual chlorine (see 2002 Fact Sheet at Appendix C).

For this reissuance of the permit, ADEC has authorized a mixing zone for discharge 003, providing a dilution ratio of 133:1. If ADEC certifies a mixing zone with different dilution ratios, or denys a mixing zone, EPA will recalculate the water quality-based effluent limits for chlorine and fecal coliform.

C. Fecal Coliform (Discharge 003)

Water Quality Criteria

The most stringent water quality criterion for fecal coliform in Alaska waters is for protection of the use of human consumption of raw mollusks and other raw aquatic life. The criterion is a median of 14 fecal coliform (14) per 100 ml, with the additional restriction that no more than 10% of the samples may exceed 43 fecal coliform per 100 ml (18 AAC 70.020(b)).

Wasteload Allocation

The State of Alaska has authorized a mixing zone for fecal coliform for discharge 003. The dilution factor is 133:1.

Since there are two water quality criteria values (a median criterion and a criterion which no more than 10% of the samples may exceed), two WLAs must be calculated and expressed as water quality-based effluent limits, as follows

$$WLA_{median} = 133 \times 14 \text{ FC/100 ml} = 1862 \text{ FC/100 ml}$$
$$WLA_{\leq 10\%} = 133 \times 43 \text{ FC/100 ml} = 5719 \text{ FC/100 ml}$$

It would be protective of the water quality criteria to express the median WLA in the permit as a monthly geometric mean effluent limitation, and to express the WLA based on the criterion stating that no more than 10% of the samples may exceed 43 FC/100 ml as a maximum daily limit. This is consistent with the expression of fecal coliform effluent limitations in the general permit for small sewage treatment plants discharging to marine waters in Alaska (AKG571000). Therefore, the water quality-based effluent limits for fecal coliform are:

Monthly Geometric Mean Limit: **1862 FC/100 ml**
Maximum Daily Limit: **5719 FC/100 ml**

Since the technology-based effluent limits for fecal coliform are more stringent than the water quality-based limits (see Appendix B), the technology-based effluent limits are the limits that appear in the permit.

D. Enterococci (Discharge 003)

Water Quality Criteria

The water quality criteria for enterococci for marine waters in Alaska were promulgated by EPA in 40 CFR 131.41. The criteria are a geometric mean of 35 per 100 ml and a single sample maximum of 276 per 100 ml.

Wasteload Allocation

No mixing zone is authorized for enterococci for discharge 003. In cases were a mixing zone is not authorized, the wasteload allocations (WLAs) are equal to the water quality criteria.

Similar to fecal coliform, there are two water quality criteria values. Therefore, two WLAs must be calculated and expressed as water quality-based effluent limits, as follows

$WLA_{geometric}$ = 35 per 100 ml
WLA_{max} = 276 per 100 ml

It would be protective of the water quality criteria to express the geometric mean WLA in the permit as a monthly geometric mean effluent limitation, and to express the WLA based on the single sample maximum criterion as an instantaneous maximum limit. This is consistent with the expression of fecal coliform effluent limitations in the general permit for small sewage treatment plants discharging to marine waters in Alaska (AKG571000). Therefore, the water quality-based effluent limits for fecal coliform are:

Monthly Geometric Mean Limit: **35 per 100 ml**
Instantaneous Maximum Limit: **276 per 100 ml**

E. Total Residual Chlorine (Discharge 003)

Water Quality Criteria

The Alaska water quality criteria for chlorine are found in the *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* (ADEC 2002). The aquatic life water quality criteria for chlorine are an acute criterion of 13 µg/L (0.013 mg/L) and a chronic criterion of 7.5 µg/L (0.0075 mg/L).

Technology-based Effluent Limit

The 2002 Fact Sheet states that there is a technology-based effluent limit for total residual chlorine (TRC) in sanitary waste, which is a minimum of 1 mg/L (40 CFR 435.45). This is based on the assumption that the facility would be continuously manned by ten or more persons. For facilities that are continuously manned by nine or fewer persons, there is no promulgated technology-based requirement for total residual chlorine. The Osprey platform is not continuously manned by ten or more persons, thus, the 1 mg/L minimum TRC limit does not

apply. However, it is nonetheless necessary to re-calculate water quality-based effluent limits for total residual chlorine.

Wasteload Allocations

EPA will assume that the ambient concentration of total residual chlorine is zero. The mixing zone dilution factor is 133:1. Therefore, the acute and chronic wasteload allocations are as follows:

$$WLA_{acute} = D_{acute} \times C_{MZ} = 133 \times 0.013 \text{ mg/L} = 1.73 \text{ mg/L}$$
$$WLA_{chronic} = D_{chronic} \times C_{MZ} = 133.3 \times 0.0075 = 1.00 \text{ mg/L}$$

Effluent Variability

For two-value (acute and chronic) water quality criteria, wasteload allocations are translated into permit limitations using the statistical procedures of the *Technical Support Document for Water Quality-based Toxics Control* or TSD (EPA/505/2-90-001). To calculate water quality-based effluent limits from the wasteload allocations, it is necessary to quantify the effluent variability by calculating the coefficient of variation or CV, which is the ratio of the standard deviation of the effluent concentration to the mean effluent concentration (this value is also called the relative standard deviation). The applicant provided 12 months of effluent data in its mixing zone application. These data show an average effluent chlorine concentration of 1.05 mg/L and a standard deviation of 1.47 mg/L, which results in a coefficient of variation of 1.40.

However, in order to meet the water quality-based effluent limits in the draft permit, the permittee must reduce the effluent chlorine concentrations below historical levels. It is unclear how this reduction will affect the effluent variability. If the effluent variability is unknown, the TSD recommends making the assumption that the CV is equal to 0.6 (Section 5.5.2).

Long Term Average Wasteload Allocations

The wasteload allocations calculated above are consistent with the averaging periods and excursion frequencies allowed by the criteria (a one-hour average for acute criteria and 4-day average for chronic criteria, which are not to be exceeded more than once every three years). These must be converted to long-term average wasteload allocations using the procedures of the TSD. Using the multipliers in Table 5-1 of the TSD, the long term average wasteload allocations are (using the 99^{th} percentile probability basis):

$$LTA_{acute} = 1.73 \text{ mg/L} \times 0.321 = 0.555 \text{ mg/L}$$
$$LTA_{chronic} = 1.00 \text{ mg/L} \times 0.527 = 0.53 \text{ mg/L}$$

The lower (more stringent) of the acute and chronic long term averages is used to calculate effluent limits. In this case, the acute LTA of 0.53 mg/L is the limiting LTA.

Effluent Limits

Effluent limits for all continuous discharges other than publicly-owned treatment works shall be expressed as average monthly limits and maximum daily limits, unless impracticable (40 CFR 122.45(d)(1)). The permit application states that there will be a discharge of sanitary wastewater 365 days per year. Therefore, EPA has treated discharge 003 as a continuous discharge, for the purpose of calculating effluent limits. Although the 2002 permit required monitoring only once

per month and this monitoring frequency will be retained in the draft permit, the TSD recommends calculating an average monthly limit based on a sampling frequency of at least four samples per month. The calculation of maximum daily limits is independent of the sampling frequency. Using the multipliers in Table 5-2 of the TSD (at the 95th percentile probability basis and assuming 4 samples per month for the average monthly limit and at the 99th percentile probability basis for the maximum daily limit) the effluent limits consistent with the dilution factors, wasteload allocations, and long-term averages calculated above are:

Maximum Daily Limit = 0.53 mg/L × 3.11 = **1.6 mg/L**
Average Monthly Limit = 0.53 mg/L × 1.55 = **0.8 mg/L**

In general, discharges must also be limited in terms of mass (40 CFR 122.45(f)). The mass limits from the 2002 permit have been retained under the anti-backsliding provisions of the Clean Water Act (Section 402(o)).

F. Total Residual Chlorine (Discharge 021)

It is expected that the filter backwash discharge (021) will be a batch discharge, as opposed to a continuous discharge (personal communication with J.R. Wilcox, Pacific Energy Resources Ltd., May 12, 2008). For non-continuous discharges, 40 CFR 122.45(e) requires that the discharge shall be particularly described and limited, considering the following factors, as appropriate:

1. Frequency (for example, a batch discharge shall not occur more than once every 3 weeks);
2. Total mass per discharge (for example, not to exceed 100 kilograms of zinc and 200 kilograms of chromium per batch discharge);
3. Maximum rate of discharge of pollutants during the discharge (for example, not to exceed 2 kilograms of zinc per minute); and
4. Prohibition or limitation of specified pollutants by mass, concentration, or other appropriate measure (for example, shall not contain at any time more than 0.1 mg/1 zinc or more than 250 grams of zinc in any discharge).

In this case, the frequency of the discharge is unknown; therefore the discharge is not limited in terms of its frequency. If appropriate limits are placed the rate of mass discharge and the concentration of chlorine (40 CFR 122.45(e)(3) and (4)), the effluent limits will ensure that the resulting water quality is derived from and complies with applicable water quality standards (40 CFR 122.44(d)(1)(vii)(A)).

As explained in Appendix C, assuming that the discharge is not continuous and meets the acute criterion for chlorine, it is not necessary to impose an effluent limit based on the chronic water quality criterion. The TSD states, on Page 96, that "a (maximum daily limit), which is measured by a grab sample, would be toxicologically protective of potential acute toxicity impacts." Therefore, for discharge 021, the permit proposes a maximum daily effluent limit for total residual chlorine, which is equal to the acute water quality criterion of 13 µg/L, consistent with 40 CFR 122.45(e)(4).

In general, discharges must also be limited in terms of mass (40 CFR 122.45(f)). Therefore, EPA has calculated a mass limit for chlorine based on the concentration limit above and the

maximum flow rate reported in the application, as follows. Note that this limit also controls the maximum rate of chlorine discharged during the discharge, consistent with 40 CFR 122.45(e)(3).

Maximum Daily Limit = 0.013 mg/L × 8.34 × 0.105 mgd = **0.011 lb/day**

G. Whole Effluent Toxicity Trigger

Discharges 002 and 005

For discharges 002 and 005, the derivation of the whole effluent toxicity trigger is explained below. 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 the point of discharge, unless a mixing zone is authorized by ADEC. ADEC has not proposed a mixing zone for chronic toxicity for discharges 002 and 005. Therefore, EPA must establish the appropriate effluent level that would trigger accelerated testing.

The following 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). The calculation of the toxicity trigger is analogous to the calculation of a toxicity wasteload allocation (see TSD at Section 5.4).

Step 1: Calculate the chronic toxicity trigger (TTc) from the chronic criterion.

TTc (in TUc) = WLA_c = chronic criterion = 1.0 TUc

Step 2: Calculate the chronic toxicity trigger from the acute criterion, in chronic toxic units (TTac).

TTac (in TUc) = WLAac = acute criterion (in TUa) × ACR = 0.3 × 10 = 3 TUc

In this case, the chronic toxicity trigger calculated from the chronic criterion (1.0 TUc) is more stringent. Therefore, 1.0 TUc is the chronic toxicity trigger proposed in the draft permit for discharges 002 and 005.

H. References

ADEC. 2002. *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances.* August 2002.

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* EPA/505/2-90-001. Office of Water. March 1991.

EPA. 1996. *U.S. EPA NPDES Permit Writer's Manual.* EPA-933-B-96-003. Office of Water. December 1996.

EPA. 2002. *Fact Sheet.* Permit Number AK0053309. Region 10. January 28, 2002.