FACT SHEET

PUBLIC COMMENT ISSUANCE DATE: SEPTEMBER 3, 2015

PUBLIC COMMENT EXPIRATION DATE: OCTOBER 5, 2015

TECHNICAL CONTACT:

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The U.S. Environmental Protection Agency (EPA) plans to issue a National Pollutant Discharge Elimination System (NPDES) permit to the following facility pursuant to the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq:

UNITED STATES NAVY ARCTIC ICE CAMP
NPDES PERMIT NO. AK-005378-3

EPA PROPOSES NPDES PERMIT ISSUANCE

EPA proposes to issue a NPDES permit to the facility referenced above. The permit places conditions on the discharge of pollutants from the United States Navy Arctic Ice Camp to the Beaufort Sea at a location approximately 100 to 200 nautical miles north of Deadhorse, Alaska. 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 and places other conditions on the facility.

This Fact Sheet includes:

- information on public comment, public hearings and appeal procedures
- a description of the facility and proposed discharge
- 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 draft permit

PUBLIC COMMENT

EPA will consider all substantive comments on the draft NPDES Permit, Fact Sheet and Ocean Discharge Criteria Evaluation (ODCE) before issuing the final NPDES permit. Persons wishing to comment on, or request a public hearing for, the proposed permit action may do so in writing by the expiration date of the public notice 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 should include name, address, phone number, a concise statement of basis of comment and relevant facts upon which it is based. All written comments should be addressed to:

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After the public notice period has ended and the public comments have been considered, EPA Region 10's Director of the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the conditions in the proposed permit will become final and the permit will become effective upon issuance. If substantive comments are received, EPA will respond to the comments and the permit will become effective 30 days after its issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

401 CERTIFICATION FOR FACILITIES THAT DISCHARGE TO STATE WATERS

The area of coverage of the draft Arctic Ice Camp Permit is located within federal waters of the Beaufort Sea. As the permit does not authorize discharges to Alaska State waters, it is not subject to CWA Section 401 certification.

DOCUMENTS ARE AVAILABLE FOR REVIEW

Pursuant to 40 CFR § 124.9, the Administrative Record for this draft NPDES permit, which consists of the Draft Permit, Fact Sheet, ODCE and the documents referenced in this Fact Sheet, is available upon request by contacting Erin Seyfried at (206) 553-1448 or seyfried.erin@epa.gov.

The Draft NPDES Permit, Fact Sheet and Draft ODCE can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle or the Anchorage Operations Office in Alaska between 8:30 a.m. and 4:00 p.m., Monday through Friday (see address below). The draft documents and other information can also be found by visiting the Region 10 website at "www.epa.gov/R10earth/waterpermits.htm".

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I. APPLICANT

This Fact Sheet provides background information on the draft NPDES permit for the Arctic Ice Camp. When issued, the permit will provide Clean Water Act (CWA) authorization to discharge wastewater to the Beaufort Sea from the United States Navy Arctic Ice Camp.

Applicant:

United States Navy
140 Sylvester Road
San Diego, California 92106

Facility Contact:

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U.S. Navy
140 Sylvester Road
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II. BACKGROUND INFORMATION

A. FACILITY OVERVIEW

The United States Navy ("U.S. Navy") is the operator of the temporary Arctic Ice Camp ("the facility"), located approximately 100 – 200 nautical miles north of Deadhorse, Alaska. The facility provides support for a variety of submarine training and testing, and research activities. The general location of the facility is depicted in Figure A-1 (Appendix A of this Fact Sheet). The exact location of the facility cannot be predicted in advance as it will depend upon ice conditions at the start of the exercise. The location will also change over the course of the exercise as the ice floe on which the camp is built drifts due to wind and ocean currents.

The U.S. Navy intends to construct the facility on multiyear ice, which is structurally more stable than first-year ice. Multiyear ice has distinct properties that distinguish it from first-year ice based on processes that occur during the summer melt. When ice crystals form on the sea surface, salt accumulates into droplets called *brine*, which are typically expelled back into the ocean. This raises the salinity of the near-surface water. Some brine droplets become trapped in pockets between the ice crystals. These droplets are saline, whereas the ice around them is not. The brine remains in a liquid state because much cooler temperatures would be required for it to freeze. At this stage, the sea ice has a high salt content. Over time, the brine drains out, leaving air pockets, and the salinity of the sea ice decreases. Brine can move out of sea ice in different ways, though generally aided

by gravity, the brine migrates downward through holes and channels in the ice, eventually emptying back into the ocean. Therefore, multiyear ice contains much less brine and more air pockets than first-year ice making it structurally more stable.

The Navy will operate the facility during a six (6) week period, from approximately late February to early April timeframe, and is expected to occur every other year, starting in February 2016. Once constructed, the facility consists of approximately 15 to 20 buildings (housing, dining facility and command hut), a runway, and a heliport. The completed facility, including the runway, is approximately one mile in diameter. The camp population hosts an average of 48 people with a maximum population of 65 people over two separate two-day periods. During facility construction and demobilization, the camp population will consist of about 15 people.

All materials, fuel, and food for the facility will be transported from Deadhorse, Alaska by aircraft that range in size from small, twin-engine aircraft, to large LC-130 military transport aircraft. Upon completion of activities at the facility, the facility will be demobilized and removed from the ice floe, including all construction materials, solid waste, hazardous waste, and sanitary waste.

The U.S. Navy has requested authorization to discharge graywater (Outfall 001) and reverse osmosis reject water (Outfall 002) from the ice camp to the Beaufort Sea. Sanitary/human waste (i.e. black water) generated at the camp will be collected and treated at zero-discharge sanitary facilities, such as incinerating toilets. If sanitary facilities do not operate as planned, sanitary/human wastes will be containerized and transported to Deadhorse, Alaska for disposal. This will be the first NPDES permit for the facility.

B. PROCESS DESCRIPTION

1. OUTFALL 001: GRAYWATER

For purposes of this permit, graywater is defined as wastewater discharged from sinks, kitchens or galleys, or other domestic sources that do not contain excrement, urine, or combined stormwater. Discharges of graywater are intermittent and vary in volume based on the number of people at the facility.

The average daily flow of graywater is estimated to be 100 gallons/day, with an estimated maximum daily flow of 300 gallons/day discharged during periods of food preparation and dishwashing. The estimated total discharge volume, during the six-week operational period, from the ice camp's dining facility is 6,300 gallons. The facility will use a $\frac{1}{16}$–inch mesh screening system to filter solids from the graywater waste stream prior to discharge. As a best management practice, camp personnel will be directed to scrape dishes clean of any solids prior to turning them in for washing.

Dishwashing will involve the use of a biodegradable, chlorine and phosphate-free detergents.

2. OUTFALL 002: REVERSE OSMOSIS REJECT WATER

Freshwater for food preparation, dishwashing, and for human consumption will be generated at the facility via ice mining of multiyear sea ice, and through the desalination of first-year sea ice and/or seawater.

Ice mining and melting of multiyear ice will be the primary means of generating fresh water at the facility. When saltwater freezes, crystalline irregularities cause enough salt to leach slowly out over several years to make it safe to consume. This multiyear, or "aged," ice tends to be bluish in color and must be melted and tested to ensure it is safe to drink. This process of producing freshwater will not result in a wastewater discharge (WHOI, 2015).

In addition to ice mining, the U.S. Navy intends to test a portable desalination system to determine if it can function effectively in the Arctic environment. The discharge of wastewater from the portable system would be through Outfall 002. Desalination is the process of removing dissolved salts from water, thereby producing fresh water from seawater or brackish water.

The U.S. Navy has selected a portable reverse osmosis (RO) system manufactured by Ampac USA. RO is a water treatment process that utilizes pressure and semipermeable membranes to remove impurities, such as dissolved salts and organics, from water. As feed water (influent) enters the RO membrane under pressure, the water molecules pass through the semipermeable membrane while the salts and other impurities are discharged through the reject wastewater stream. Unlike most filtration processes, impurities are not captured by the RO membrane, but rather swept across the membrane and discharged, therefore back filtering is not necessary in maintaining the functionality of the membrane. Most RO systems, including the Ampac system, incorporate a pre-filtration process designed to capture colloidal materials, such as sediments, sand and silt, which are capable of fouling the membrane.

RO is capable of removing 90 – 99% of the dissolved salts, particles, organics and bacteria from the water, therefore the reject water is generally a highly concentrated brine solution. The quantity of reject water (i.e. wastewater) can be greater than that of the potable water produced (AMPAC USA Website, Seawater Desalination Data Sheet, accessed May 20, 2015). The discharge of reject water from the camp's portable reverse osmosis system will occur for a four week period during the camp's six weeks of operation. Treatment chemicals will not be used in the desalination process and the salinity of the reject water is expected to be three times that of the feed seawater.

The average flow of RO reject water is expected to be 144 gallons/day with a maximum daily flow of 288 gallons/day. The maximum total discharge of reject water from the ice camp, during the 6-week operational period, is 8,064 gallons.

C. COMPLIANCE HISTORY

This is the first NPDES permit for the facility, and therefore there is no historical effluent monitoring data to review.

D. THE RECEIVING WATERS

The Arctic Ice Camp is established approximately 100 – 200 nautical miles north of Deadhorse, Alaska in the Beaufort Sea, and is operated for a six-week period during the winter months, from late February to early April. During this period, the Beaufort Sea is covered almost exclusively by sea ice. Once sea ice forms into sheet ice, it continues to grow through the winter. If the ice does not grow thick enough over the winter, it will completely melt during the summer when the air temperatures increase. If the ice thickness grows over the winter, and it thins but does not completely melt over the summer, then it is classified as multiyear ice.

Annual formation and decay of sea ice greatly influence the oceanographic dynamics of the Beaufort Sea, regulating heat, moisture, and salinity. Sea ice insulates the relatively warm ocean water from the cold polar atmosphere, except where cracks or leads (areas of open water between large pieces of ice) in the ice allow exchange of heat and water vapor from ocean to atmosphere in winter. Sea ice impacts virtually all of the physical, biological, and cultural aspects of life of the region. In the Beaufort Sea, sea ice generally begins forming in late September or early October, with full ice coverage by mid-November or early December. Ice begins melting in early May in the southern part of Beaufort Sea, and early to mid-June in the northern region. Maximum open water occurs in September (MMS 2008).

Detailed descriptions of the physical and biological characteristics and environments of the Beaufort Sea can be found in the draft ODCE for this permit.

III. EFFLUENT LIMITATIONS AND DISCHARGE REQUIREMENTS

A. BASIS FOR PERMIT EFFLUENT LIMITS

Section 301(a) of the CWA, 33 USC § 1311(a), prohibits the discharge of pollutants to waters of the United States unless the discharge is authorized pursuant to a NPDES permit. Section 402 of the CWA, 33 USC § 1342, authorizes the EPA, or an approved state NPDES program, to issue a NPDES permit authorizing discharges subject to limitations and requirements imposed pursuant to CWA Sections 301, 304, 306, 401 and 403, 33 USC §§ 1311, 1314, 1316, 1341 and 1343.

Accordingly, NPDES permits typically include effluent limits and requirements that require the permittee to (1) meet national standards that reflect levels of currently available treatment technologies; (2) comply with the EPA-approved state water quality standards in state waters; and (3) prevent unreasonable degradation of the marine environment in the territorial seas, the contiguous zone and the oceans.

In general, the CWA requires that the limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based effluent 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 they may be more stringent than technology-based effluent limits. Due to the 100 – 200 nautical mile-offshore location of the proposed discharges from the Arctic Ice Camp, state water quality standards do not apply.

Monitoring requirements must also be included in the permit to determine compliance with effluent limitations. Effluent and ambient monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Section 301(b) of the CWA, 33 USC § 1311(b), requires technology-based controls on effluents. All permits must contain effluent limitations which: (a) control toxic pollutants and nonconventional pollutants through the use of "best available technology economically achievable" (BAT), and (b) control conventional pollutants through the use of "best conventional pollutant control technology" (BCT). In no case may BAT or BCT 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, 33 USC § 1311(b)(1)(A).

There are two general approaches for developing technology-based effluent limits: (a) using applicable national effluent limitations guidelines (ELGs), and (b) 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.

ELGs are developed on a national scale and reflect a reasonable level of treatment that is within the economic means of specific categories of 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 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.

EPA has not established ELGs for discharges from portable reverse osmosis treatment facilities, or for graywater (e.g. domestic waste) discharges from temporary ice camps.

C. OCEAN DISCHARGE CRITERIA EVALUATION

Section 403 of the CWA, 33 USC § 1343, prohibits issuing a NPDES permit for discharges into the territorial seas, the contiguous zones, and the oceans except in compliance with the ocean discharge guidelines, 40 CFR Part 125, Subpart M. The guidelines set out criteria that EPA must evaluate to ensure that point source discharges do not cause unreasonable degradation to the marine environment. The criteria are set out in 40 CFR § 125.122.

After an ocean discharge criteria evaluation, EPA: (a) may issue a NPDES permit if the proposed discharge will not cause unreasonable degradation to the marine environment (40 CFR § 125.123(a)); (b) will not issue a NPDES permit if the proposed discharge will cause unreasonable degradation (40 CFR § 125.123(b)); or (c) may issue a NPDES permit where there is insufficient information to make an unreasonable degradation determination, if EPA also determines that the discharge will not cause irreparable harm to the marine environment while further evaluation is undertaken, that there are no reasonable alternatives to on-site discharge, and that the discharge will comply with certain mandatory permit conditions, including a bioassay-based discharge limitation and monitoring requirements (40 CFR § 125.123(c)-(d)).

When reaching a determination that a proposed discharge will not cause unreasonable degradation, EPA may rely on any necessary conditions specified in 40 CFR § 125.123(d). These conditions include seasonal restrictions on discharges, process modifications, a monitoring program to assess discharge impacts, and any other conditions deemed necessary because of local environmental conditions. In addition, 40 CFR § 125.123(d)(4) authorizes EPA to modify or revoke a permit at any time if, on the basis of new data, the EPA determines that continued discharges may cause unreasonable degradation of the marine environment.

EPA has prepared a draft ODCE for this permit. The evaluation process informed EPA's permit development process. Due to the limited discharge quantities, the remote offshore location and short duration of the ice camp activities, EPA has determined that discharges authorized under the Arctic Ice Camp Permit will not cause unreasonable degradation to the marine environment.

EPA will refine and finalize the ODCE document prior to issuing the final permit decision.

D. TECHNOLOGY-BASED EFFLUENT LIMITATIONS BASED ON BEST PROFESSIONAL JUDGMENT

In the absence of applicable effluent guidelines for the discharge or pollutant, technology-based effluent limitations (TBELs) are determined by the permit writer on a case-by-case basis, in accordance with the statutory factors specified in CWA Sections 301(b)(2) and 304(b), 33 U.S.C. §§1311(b)(2), (3), 1314(b), 1342(a)(1).

The site-specific TBELs reflect the best professional judgment (BPJ) of the permit writer, taking into account the same statutory factors EPA would use in promulgating a national ELG, but they are applied to the circumstances relating to the applicant. BPJ controls can be developed using one of two methods: (1) transferring limits from an existing source (e.g. from other existing ELGs or a similar NPDES permit); or (2) deriving new limits (U.S. EPA, 1996). For purposes of this analysis, EPA has derived new limits and requirements.

The NPDES regulations at 40 CFR 125.3 provide that permits developed on a case-by-case basis must consider: (1) the appropriate technology for the category of point sources for which the applicant is a member, based on all available information; and (2) any unique factors related to the applicant. The analysis in this document uses facility-specific information submitted in the Navy's NPDES permit application, discharge monitoring report (DMR) data for similar graywater discharges under EPA's 2004 North Slope General Permit (Outfall 002; AKG-33-0000), and DMR data for graywater discharges under the Alaska Department of Environmental Conservation's (ADEC) 2012 Greywater General Permit (AKG-42-6000), all of which operate similar screening/filtration graywater systems in the same region.

1. GRAYWATER DISCHARGE (OUTFALL 001)

a) **Flow:** The Permittee is required to record the daily graywater discharge volume (Outfall 001) and report the weekly average and maximum daily rates in gallons per day (*gpd*). As discussed in Section II.B.1. of this Fact Sheet, the Permittee estimates that the average daily discharge rate will be 100 *gpd* with a daily maximum discharge rate of 300 *gpd* during periods of food preparation and dishwashing.

b) **pH:** The Permittee is required to monitor the pH of the graywater discharge weekly, and report the maximum and minimum values in standard units (*s.u.*).

c) **Floating Solids, Foam or Garbage:** No discharge of floating solids, foam or garbage is a typical technology-based requirement established by EPA and the U.S. Coast Guard for graywater discharges to control debris and the use of potentially harmful detergents. EPA is applying

the same requirement based on BPJ. The screening technology and the use of biodegradable non-phosphate detergents by the Permittee should effectively meet this requirement for Discharge 001.

d) **Oil and Grease:** The Permittee is prohibited from discharging oil and grease (Permit Part I.C.2.). Oil and grease is listed as a conventional pollutant under 40 CFR 401.16 and, therefore, the factors considered are the same as those used in the development of best practicable control technology currently available (BPT) and best conventional pollutant control technology (BCT) effluent limits. The potential source of oil and grease in the graywater discharge would result from excess cooking oils in the waste stream. The Permittee is required to observe the vicinity of the outfall during periods of maximum discharge to ensure there is no oily sheen. If a visual sheen is observed, then the Permittee must collect an effluent sample for quantification and report the result in the annual DMR.

2. RO REJECT WATER (OUTFALL 002)

As discussed in Section II.A. and II.B.2. of this Fact Sheet, freshwater will be generated at the facility via ice mining of multiyear sea ice, and through the desalination of first-year sea ice and/or seawater using an RO treatment system.

a) **Flow:** The Permittee is required to record the RO reject water discharge volume (Outfall 002) daily and report the weekly average and maximum daily discharge volume in gallons per day (*gpd*). As discussed in Section II.B.2. of this Fact Sheet, the Permittee estimates that the average daily discharge rate will be 144 gallons per day (*gpd*) with a daily maximum discharge rate of 288 *gpd* during periods when the system is being operated 24 hours a day.

b) **pH:** The Permittee is required to monitor the pH of the RO reject water weekly. The data collected during this permit term will inform future permitting activities.

E. PROPOSED EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. REQUIREMENTS FOR ALL DISCHARGES

a) The Permittee must notify the Director in writing, within 14 calendar days of establishing the facility location, of the specific latitude and longitude of the Arctic Ice Camp. The notification described in this paragraph must be signed in accordance with the Signatory

Requirements (VI.E) of this permit and is applicable each year that the Arctic Ice Camp is in operation.

b) The Permittee must submit all monthly Discharge Monitoring Reports (DMRs) in an Annual Report (See Permit Part III.B.) and must include the dates of when each authorized discharge commenced and ceased. If no discharges occur during a particular month (i.e. the months when the facility is not in operation), the Permittee must indicate "no discharge" on the applicable month's DMR.

c) The Permittee must comply with the effluent limits in this permit at all times, unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit.

d) All effluent samples collected from any effluent stream must be taken after the last treatment unit and before discharge into receiving waters, except as otherwise required by discharge-specific provisions of this permit.

e) The Permittee must report all violations of the requirements established in Table 1 in accordance with the 24-hour reporting requirement in Permit Part III.G.1. Violations of all other permit requirements are to be reported in the Annual Report (See Permit Parts III.B., III.G. and III.H.).

f) This permit does not authorize the discharge of any waste streams, including spills and other unintentional or non-routine discharges of pollutants, that are not part of the normal operation of the facility as disclosed in the permit application.

g) For purposes of reporting on the DMR for a single sample, if a value is less than the method detection limit (MDL), the permittee must report "less than {numeric value of the MDL}" and if the value is less than the minimum level (ML), the permittee must report "less than {numeric value of the ML}."

h) The Permittee is prohibited from discharging floating solids, garbage, debris, sludge, deposits, foam, scum or other residues of any kind.

i) The Permittee is prohibited from discharging surfactants and dispersants under this permit.

j) Any commingled discharges are subject to the most stringent effluent limitations for each individual discharge. If any individual discharge is not authorized, then a commingled discharge is not authorized.

k) When visual monitoring is required, the permittee must conduct visual monitoring at the time of maximum estimated or measured discharge.

2. GRAYWATER DISCHARGE (OUTFALL 001)

a) The Permittee must limit and monitor discharges of graywater from Outfall 001 as specified in Table 1. The values represent maximum effluent limits unless otherwise indicated. The Permittee must comply with the effluent limits in Table 1 at all times, unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit.

b) The Permittee is prohibited from discharging food solids and kitchen oils from food preparation.

c) The Permittee must use phosphate-free and minimally-toxic soaps and detergents for any purpose if graywater will be discharged into waters subject to this permit. Soaps and detergents must be free from toxic or bioaccumulative compounds.

TABLE 1: *Graywater Effluent Limitations and Monitoring Requirements (Outfall 001).*

PARAMETER	EFFLUENT LIMITATIONS	SAMPLING FREQUENCY[1]	SAMPLE TYPE	REPORTED VALUES[6]
Flow	--	Daily	Estimate[5] or Meter	Average Weekly and Maximum Daily; *gpd*
pH	--	Weekly	Grab	Minimum and Maximum Values; *s.u.*
Total Suspended Solids (TSS)	--	Twice per year [2, 3]	Grab	*mg/L*
Biological Oxygen Demand (BOD_5)	--	Twice per year [2, 4]	Grab	*mg/L*
Oil and Grease	No Discharge	Daily	Observation	*Report*[7]
		When visual sheen observed	Grab	Average Monthly and Maximum Daily; *mg/L*
Floating Solids	No Discharge	Daily	Observation	*Report*[7]
Foam	No Discharge	Daily	Observation	*Report*[7]
Garbage	No Discharge	Daily	Observation	*Report*[7]
Oily Sheen	No Discharge	Daily	Observation	*Report*[7]

NOTES: [1] Required during periods of discharge.
[2] The Permittee must monitor TSS and BOD_5 no less than twice (2) per year and may cease monitoring if a total of five (5) samples do not exceed numeric monitoring triggers for the respective parameters. The permittee may collect and analyze all five samples during one operation season. All samples must be collected during maximum occupancy at the facility and during periods of maximum discharge. *See Footnotes 3 and 4.*
[3] The numeric monitoring trigger for TSS is 298 mg/L. If there is no exceedance of this value for a total of five (5) samples, then the Permittee may cease TSS monitoring for the duration of the permit term.
[4] The numeric monitoring trigger for BOD_5 is 914 mg/L. If there is no exceedance of this value for a total of five (5) samples, then the Permittee may cease BOD_5 monitoring for the duration of the permit term.
[5] Any estimation of effluent flow must include a narrative discussion of how the estimate is derived and a description of the procedures in the QAP (Permit Part II.B.).
[6] Refer to Permit Part I.B.2.
[7] The daily observations must occur during periods of maximum discharge.

- **Monitoring Triggers for Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)**

Biological oxygen demand (BOD_5) and total suspended solids (TSS) are conventional pollutants and, therefore, the factors considered are the same as those used in the development of best practicable control technology currently available (BPT) and best conventional pollutant control technology (BCT) effluent limits. Factors considered in the BPT analysis include the age of equipment and facilities

involved, the process(es) employed, the engineering aspects of the types of control technologies, process changes, non-water quality environmental impacts, and the cost of the technology versus the effluent reduction benefits. EPA has considered these factors and determined that the current proposed screening treatment technology using a $^{1}/_{16}$-inch mesh (see Section II.B.1.) is the most appropriate technology.

As the Arctic Ice Camp is not a publicly-owned treatment works (POTW), federally promulgated secondary treatment requirements do not apply to the discharge, nor are there any applicable effluent limitations guidelines for BOD_5 and TSS discharged from graywater facilities. However, due the lack of existing effluent data, EPA has determined that monitoring for BOD_5 and TSS is necessary to inform future permitting actions.

EPA proposes to incorporate numeric monitoring triggers for BOD_5 and TSS. This requirement includes collection of no less than two (2) samples of BOD_5 and TSS per operating season. EPA calculated the BOD_5 and TSS numeric monitoring triggers consistent with the approach outlined in EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD; US EPA 1991) for the calculation of TBELs. In the absence of facility-specific effluent data, permit writers may supplement their analysis with data from existing facilities and permits (US EPA, 2010). In this case, EPA has used performance data submitted in the DMRs for similar graywater discharges under the EPA's 2004 North Slope General Permit (Outfall 002; AKG-33-0000) and ADEC's 2012 Greywater General Permit (AKG-42-6000) (see Appendix B). Both general permits authorize discharges of graywater from similarly operated facilities located on the North Slope of Alaska.

The DMR data set was used to calculate the average effluent discharge concentration, standard deviation, and coefficient of variation. After analyzing the data, EPA used a data set that comprised of 31 and 32 data points to calculate the numeric monitoring triggers for BOD_5 and TSS, respectively. If there are no exceedances of the triggers established by the permit after five (5) samples of the particular parameter, then the Permittee may cease monitoring for BOD_5 or TSS, as applicable.

The Permittee may collect all five samples during the course of one operating season.

See Appendix B of this Fact Sheet for a summary of EPA's calculations of the numeric monitoring triggers.

3. OUTFALL 002 – REVERSE OSMOSIS REJECT WATER

The Permittee must monitor reverse osmosis reject water discharges from Outfall 002 as specified in Table 2. The Permittee must comply with the requirements in Table 2 at all times, unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit.

TABLE 2: *Reverse Osmosis Reject Water Effluent Limitations and Monitoring Requirements (Outfall 002)*

PARAMETER	SAMPLING METHOD	FREQUENCY[1]	REPORTED VALUES[3]
Flow	Estimate[2] or Meter	Daily	Average Weekly and Maximum Daily; *gpd*
pH	Meter	Weekly	Maximum and Minimum; *s.u.*

NOTE: [1] Required during periods of discharge.
[2] Any estimation of effluent flow must include a narrative discussion of how the estimate is derived and a description of the procedures in the QAPP (Permit Part XX).).
[3] See Permit Part I.B.2.

IV. MONITORING AND REPORTING REQUIREMENTS

A. BASIS FOR EFFLUENT AND SURFACE WATER MONITORING

Section 308 of the CWA and federal regulations under 40 CFR § 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and/or 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) to the EPA. Table 1 and Table 2 present the proposed monitoring requirements based on the minimum sampling necessary to adequately monitor the facility's performance.

Sampling of bypass and upset. The proposed permit requires sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if such a discharge could cause a violation of an effluent limit.

B. EFFLUENT MONITORING

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. The Permittee has 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 Part 136) and if the Method Detection Limits (MDLs) are less than the effluent limits.

Table 1 and Table 2 present the monitoring requirements for the facility covered under this draft permit. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR. Since the facility has not previously been covered under a NPDES permit and, it will not be established until February 2016, there is a lack of available facility-specific effluent data for use in developing site-specific TBELs. As a result, the draft permit includes "monitoring-only" provisions to collect data for future permitting decisions.

C. REQUEST FOR A MONITORING WAIVER

In the NPDES permit application submitted to EPA by the Navy on April 21, 2015 and revised on May 19, 2015, the Navy requested a monitoring waiver for the following parameters: BOD_5, TSS, oil and grease, and ammonia (as N) (US Navy, 2015a and 2015b). Pursuant to 40 CFR §122.44, EPA cannot grant a waiver request until a permittee has demonstrated through sampling "or other technical factors" that the pollutant is not present is the discharge or is only present at background levels.

EPA is addressing this request in the permit as follows:

BOD_5 and TSS: As discussed in Section III.D.1.d., above, EPA has developed numeric monitoring triggers for these conventional pollutants for the graywater discharge. If there is no exceedance of the BOD_5 and TSS numeric monitoring triggers after analyzing a total of five (5) samples for each parameter, then the Permittee may cease monitoring BOD_5 and TSS for the duration of the permit term. The Permittee is required to collect no less than 2 samples per season, and may satisfy this requirement by collecting and analyzing all 5 samples during the course of one season. All samples must be collected during maximum occupancy at the facility and during periods of maximum discharge.

Oil and Grease: As discussed previously, the potential source of oil and grease in the graywater discharge would result from excess cooking oils in the waste stream. The Permittee is required to observe the vicinity of the outfall during periods of maximum discharge to ensure there is no oily sheen. If a visual sheen is observed, then the Permittee must collect an effluent sample for quantification and report the result in the annual DMR. EPA believes this requirement is necessary to ensure that the discharge would not result in an unreasonable degradation of the marine environment.

Ammonia (N): EPA does not believe ammonia is a pollutant of concern present in either the graywater or the RO reject water discharges. Ammonia is generally not

present in phosphate-free and minimally-toxic soaps and detergents, and sanitary (human) wastes are not discharged at the camp. Therefore, the EPA is granting the Navy's waiver request and the Navy does not have to monitor for ammonia.

V. OTHER PERMIT CONDITIONS

A. BEST MANAGEMENT PRACTICES PLAN (BMP)

Pursuant to Section 402(a)(1) of the Clean Water Act, development and implementation of BMP Plans may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements in permits on a case-by-case basis, which are deemed necessary to carry out the provisions of the Act. BMPs, in addition to numerical effluent limitations, are required to control or abate the discharge of pollutants in accordance with 40 CFR §122.44(k). The BMP Plan requirement has also been incorporated into this permit in accordance with EPA BMP guidance (EPA, 1993).

The draft permit requires the development and implementation of a BMP Plan, which prevents or minimizes the generation and potential release of pollutants from the facility to the waters of the United States through best management practices. This includes, but is not limited to, material storage areas, process and material handling areas, loading or unloading operations, spillage or leaks, sludge and waste disposal, or drainage from raw material storage. The BMP Plan should incorporate elements of pollution prevention as set forth in the Pollution Prevention Act of 1990. (42 U.S.C. 13101).

The BMP Plan must be amended whenever there is a change in the facility or in the operation of the facility that materially increases the potential for an increased discharge of pollutants. The BMP Plan will become an enforceable condition of the permit; a violation of the BMP Plan is a violation of the permit.

The BMP Plan must be consistent with the following objectives and the general guidance contained in the publication entitled *Guidance Manual for Developing Best Management Practices* (EPA 833-B-93-004, October 1993) or any subsequent revisions to this guidance document:

1. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps, and shall be developed in accordance with good engineering practices.

2. The number and quantity of pollutants and the toxicity of effluent generated, discharged or potentially discharged at the facility must be minimized by the Permittee to the extent feasible by managing each influent waste stream in the most appropriate manner.

3. The Permittee must establish specific objectives for the control of pollutants

by conducting the following evaluations:

(a) Each facility component or system must be exampled for its waste minimization opportunities and its potential for causing a release of significant amounts of pollutants to waters of the United States due to equipment failure, improper operation, and natural phenomena such as rain or snowfall, etc. The examination must include all normal operations and ancillary activities including loading or unloading operations or spillage or leaks.

(b) Where experience indicates a reasonable potential for equipment failure, natural condition (e.g. precipitation), or other circumstances to result in significant amounts of pollutants reaching the surface waters, the Plan should include prediction of the rate of flow and total quantity of pollutants that could be discharged from the facility as a result of each condition or circumstance.

4. Ensure that the requirements of the BMP Plan are considered as part of planned facility modifications, and that construction and supervisory personnel are aware of and take into account possible spills or releases of pollutants during facility construction or demobilization.

5. Ensure no debris is left on the ice during the end-of-season demobilization of the Arctic Ice Camp.

6. Establish specific best management practices for each component or system capable of generating or causing a release of significant amounts of pollutants, and identify specific preventative or remedial measures to be implemented.

7. Ensure proper management of solid and hazardous waste in accordance with regulations promulgated under the Resource Conservation and Recovery Act (RCRA). Management practices required under RCRA regulations shall be referenced in the BMP Plan.

8. Reflect requirements for Spill Prevention, Control, and Countermeasure plans under Section 311 of the Act and 40 CFR Part 112 and may incorporate any part of such plans into the BMP Plan by reference.

9. Ensure that solids, sludges, or other pollutants removed in the course of treatment or control of water and wastewaters are disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

10. Use of local containment devices such as liners, dikes, drip pans and other structures where chemicals, fuels, and/or oils are being managed or stored.

11. Include the following provisions concerning BMP Plan review:

(a) Annual review by engineering staff and the responsible manager.

(b) Annual review and endorsement by the permittee's BMP Committee.

(c) Include a statement that the above annual review has been completed and that the BMP Plan fulfills the requirements set forth in this permit. The statement must include the dated signatures of each BMP Committee member as certification of the annual reviews.

(d) The Permittee must submit a copy of the annual certification statement and a report of all changes in the BMP Plan to the Director at least 14 calendar days prior the commencing activities at the facility.

B. QUALITY ASSURANCE PLAN (QAP)

Federal regulations at 40 CFR §122.41(e) require Permittees to properly operate and maintain their facilities, including "adequate laboratory controls and appropriate quality assurance procedures." To implement this requirement, the draft permit requires that the Permittee develop or update a Quality Assurance Plan (QAP) to ensure that the monitoring data submitted is complete, accurate, and representative of the environmental or effluent condition. The QAP must contain standard operating procedures that the Permittee must follow for collecting, handling, storing and shipping samples for laboratory analysis and data reporting. The facility is required to prepare (or update) a Quality Assurance Plan (QAP) within 60 days of the effective date of the final permit. The QAP shall be prepared in accordance with EPA guidance documents, EPA QA/R-5 (EPA Requirements for Quality Assurance Project Plans) and EPA QA/G-5 (Guidance for Quality Assurance Project Plans). The QAP must be retained on site and made available to EPA upon request.

C. ADDITIONAL PERMIT PROVISIONS

In addition to facility specific requirements, most of Parts II, III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are federal 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.

VI. OTHER LEGAL REQUIREMENTS

A. ENDANGERED SPECIES ACT

Pursuant to 40 C.F.R. § 122.49(c), EPA has made the determination that the proposed permit action is Not Likely to Adversely Affect the ringed seal (Arctic species, *Phoca hispida hispida*). EPA's effect determination is made based on the Informal Consultation Document developed by the Navy in close coordination with EPA. The Informal Consultation Document evaluates the proposed ice camp activities, including the potential effects from the wastewater discharges proposed to be authorized by EPA. The Informal Consultation Document serves as the consultation document with the National Marine Fisheries Service (NMFS) for both agencies under the Endangered Species Act (ESA) Section 7. EPA is requesting concurrence from NMFS on our effect determination.

EPA has made the determination that the proposed discharges will have No Effect on the polar bear (*Ursus naritimus*). EPA's analysis supporting this conclusion is included in the Administrative Record.

B. ESSENTIAL FISH HABITAT

Under the Magnuson-Stevens Fishery Conservation and Management Act, NMFS and various fisheries management councils must identify and protect "essential fish habitat" (EFH) for species managed under the Act. The EFH regulations define an *adverse effect* as any impact that reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species fecundity), site-specific, or habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.

The Arctic cod exists in the nearshore Beaufort Sea and will not be adversely affected by the permit action.

C. ENVIRONMENTAL JUSTICE (EXECUTIVE ORDER 12898)

The EPA has determined that the discharges authorized by the draft Arctic Ice Camp Permit will not have a disproportionately high and adverse human health or environmental effects on minority or low-income populations living on the North Slope, including coastal communities along the Beaufort Sea, due to the remote location of the discharges (100 – 200 nautical miles north of Deadhorse, Alaska); the requirements placed on the discharges; and the short-term nature of the activity (a six week period in late February through April). In making this determination, EPA considered the potential effects of the discharges on the communities, including subsistence areas, and the marine environment.

Executive Order 12898 entitled "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations" states in relevant

part that "each Federal agency shall make achieving environmental justices part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations..." The order also provides that federal agencies are required to implement the order consistent with and to the extent permitted by existing law. In addition, the EPA Region 10 adopted its "North Slope Communications Protocol: Communications Guidelines to Support Meaningful Involvement of the North Slope Communities in EPA Decision-Making" in May 2009. Consistent with the North Slope Communications Protocol, EPA sent early informational letters on June 3, 2015 to the following tribal governments: Native Village of Kaktovik, Native Village of Nuiqsut, and the Inupiat Community of the Arctic Slope (ICAS).

Finally, the EPA will notify these tribal governments and communities of the opportunity to provide public comment on the draft permit during the public comment period.

D. TRIBAL CONSULTATION (EXECUTIVE ORDER 13175)

Executive Order 13175 (November, 2000) entitled "Consultation and Coordination with Indian Tribal Governments" requires federal agencies to have an accountable process to assure meaningful and timely input by tribal officials in the development of regulatory policies on matters that have tribal implications and to strengthen the government-to-government relationship with Indian tribes. In May, 2011, the EPA issued the "EPA Policy on Consultation and Coordination with Indian Tribes" which established national guidelines and institutional controls for consultation.

Pursuant to the EPA Region 10's Tribal Consultation Procedures, in determining which tribal governments to invite for consultation, the EPA considered whether the action could potentially affect a tribe's resources, rights, or traditional way of life. On June 3, 2015, the EPA sent an invitation for tribal consultation to the following tribal governments: Native Village of Kaktovik, Native Village of Nuiqsut, and ICAS. Included with the invitation for tribal consultation was a summary of the Arctic Ice Camp activities, potential wastewater discharges, and a permit issuance timeline. Consistent with the executive order and the EPA tribal consultation policies, the EPA will honor requests for consultation meetings via teleconferences on the draft Arctic Ice Camp Permit from federally-recognized tribal governments.

E. POLLUTION PREVENTION ACT

It is national policy that, whenever feasible, pollution should be prevented or reduced at the source, that pollution which cannot be prevented should be recycled in an environmentally safe manner, and that disposal or release into the environment should be employed only as a last resort and should be conducted in

an environmentally safe manner. The Permittee will discharge at the facility in accordance with best management practices which will address the provisions of the Pollution Prevention Act.

F. OIL SPILL REQUIREMENTS

Section 311 of the Clean Water Act prohibits the discharge of oil and hazardous materials in harmful quantities. Discharges specifically authorized by the draft permit are excluded from the provisions of Section 311 because these discharges are limited to amounts and concentrations which are deemed to be protective of State water quality standards. However, the permit does not preclude the institution of legal action or relieve the Permittee from any responsibilities, liabilities, or penalties for other unauthorized discharges of pollutants which are covered by Section 311 of the Act.

VII. MODIFICATION OF PERMIT LIMITS OR OTHER CONDITIONS

When EPA receives information that demonstrates the existence of reasonable cause to modify a permit in accordance with 40 CFR § 122.62(a), EPA may modify the permit. "Reasonable cause" includes alterations or additions to the facility or activity, new federal regulations or standards, new state water quality standards, the completion or modification of total maximum daily loads or wasteload allocations for the receiving water of the facility (also, see 40 CFR § 122.44(d)((1)(vii)(B)), failure of the permit to protect state water quality standards, a change in a Permittee's qualification for net limits, any relevant compliance schedule, the need to incorporate or revise a pretreatment or land application plan, when pollutants which are not limited in the permit exceed the level which can be achieved by technology-based treatment, the correction of technical mistakes and legal misinterpretations of law made in determining permit conditions, and the receipt of new information relevant to the determination of permit conditions. Minor modifications to a permit may be made by EPA with the consent of a Permittee in order to correct typographical errors, change an interim compliance schedule, allow for a change in ownership, change a construction schedule, or delete an outfall. Pursuant to 40 CFR § 122.63, such minor modifications may be made without public notice and review.

VIII. PERMIT EXPIRATION

The permit will expire five years from its effective date. In accordance with 40 CFR § 122.6(a), the conditions of an expired permit continue in force under 5 U.S.C. § 558(c) until the effective date of a new permit, when a Permittee submits an application for permit reissuance 180 days before the expiration of the permit. Permits that are administratively continued remain fully effective and enforceable.

IX. LIST OF ACRONYMS AND DEFINITIONS

§ means section or subsection.

Act means the Clean Water Act.

Administrator means the Administrator of the EPA, or an authorized representative.

AML means average monthly limit; "monthly average limit" is synonymous.

Annual means once per calendar year

Average Monthly Discharge Limitation means the average of "daily discharges" over a monitoring month, calculated as the sum of all daily discharges measured during a monitoring month divided by the number of daily discharges measured during that month. It may also be referred to as the "monthly average discharge."

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Biochemical Oxygen Demand (BOD_5) means the amount, in milligrams per liter, of oxygen used in the biochemical oxidation of organic mater in five days at 20oC.

BOD_5 means five-day biochemical oxygen demand.

BPJ means Best Professional Judgment as described within 40 CFR §§ 122.43, 122.44 and 125.3.

Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

ºC means degrees Celsius.

CFR means Code of Federal Regulations.

CV means coefficient of variation.

CWA means the Clean Water Act, (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483 and Public Law 97-117, 33 U.S.C. 1251 et seq.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Daily Maximum Discharge means the highest allowable "daily discharge" and is also referred to as the "maximum daily discharge."

Director means the Director of the Office of Water and Watersheds, or Director of the Office of Compliance and Enforcement, EPA, or authorized representatives.

Discharge of a Pollutant means any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source" or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by "approved States" as well as by EPA.

Effluent Limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

EPA means U.S. Environmental Protection Agency.

ESA means the Endangered Species Act.

ºF means degrees Fahrenheit.

Facility or activity means any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

gpd means gallons per day.

gpm means gallons per minute.

Ice Floe means a cohesive sheet of ice floating in the water.

LTA means longterm average.

MA/NLAA means "may affect, but not likely to adversely affect".

Maximum means the highest measured discharge or pollutant in a waste stream during the time period of interest.

Maximum Daily Discharge Limitation means the highest allowable "daily discharge."

MDL means Method Detection Limit.

MGD means million gallons per day.

mg/L means milligrams per liter.

ML means the minimum level of detection, which is defined as the lowest concentration that gives recognizable signals and an acceptable calibration point for laboratory analysis.

Month means the time period from the 1st of a calendar month to the last day in the month.

Monthly Average means the average of daily discharges over a monitoring month calculated as the sum of all daily discharges measured during a monitoring month divided by the number of daily discharges measured during that month.

Multiyear ice means ice that has survived at least one melt season; it is typically 2 – 4 meters (6.6 – 13.1 feet) thick and thickens as more ice grows on its underside.

NMFS means National Marine Fisheries Service.

National Pollutant Discharge Elimination System ("NPDES") means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of CWA.

O&M means Operation and Maintenance.

OWW means EPA Region 10's Office of Water and Watersheds.

Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

QAP means Quality Assurance Plan.

Regional Administrator means the Regional Administrator of Region 10 of the EPA, or the authorized representative of the Regional Administrator.

Report means report results of an analysis.

Reverse Osmosis means a water purification technology that uses a semipermeable membrane to remove dissolved solids (e.g. salts) from water. Reverse osmosis is commonly used to purify drinking water and desalinate seawater to produce potable water.

R.O. means reverse osmosis.

Reverse Osmosis Reject Water means the concentrated waste stream that does not pass through the reverse osmosis membrane and is discharged from the system. The reject water consists of dissolved solids (e.g. salts) and a portion of the source water.

Sheen means an iridescent appearance on the water or ice surface.

s.u. means standard units for pH measurements.

Technology-based effluent limit means a permit limit or condition based upon EPA's technology-based effluent limitation guidelines or EPA's best professional judgment.

Total Suspended Solids (TSS) means a measure of the filterable solids present in a sample, as determined by the method specified in 40 CFR Part 136.

TSD means Technical Support Document.

USFWS means U.S. Fish and Wildlife Service.

µg/L means micrograms per liter.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Water quality-based effluent limit (WQBEL) means a permit limit derived from a state water quality standard or an appropriate national water quality criteria.

WLA means wasteload allocation.

WQBEL means water-quality-based effluent limitation.

APPENDIX A. MAP OF FACILITY LOCATION

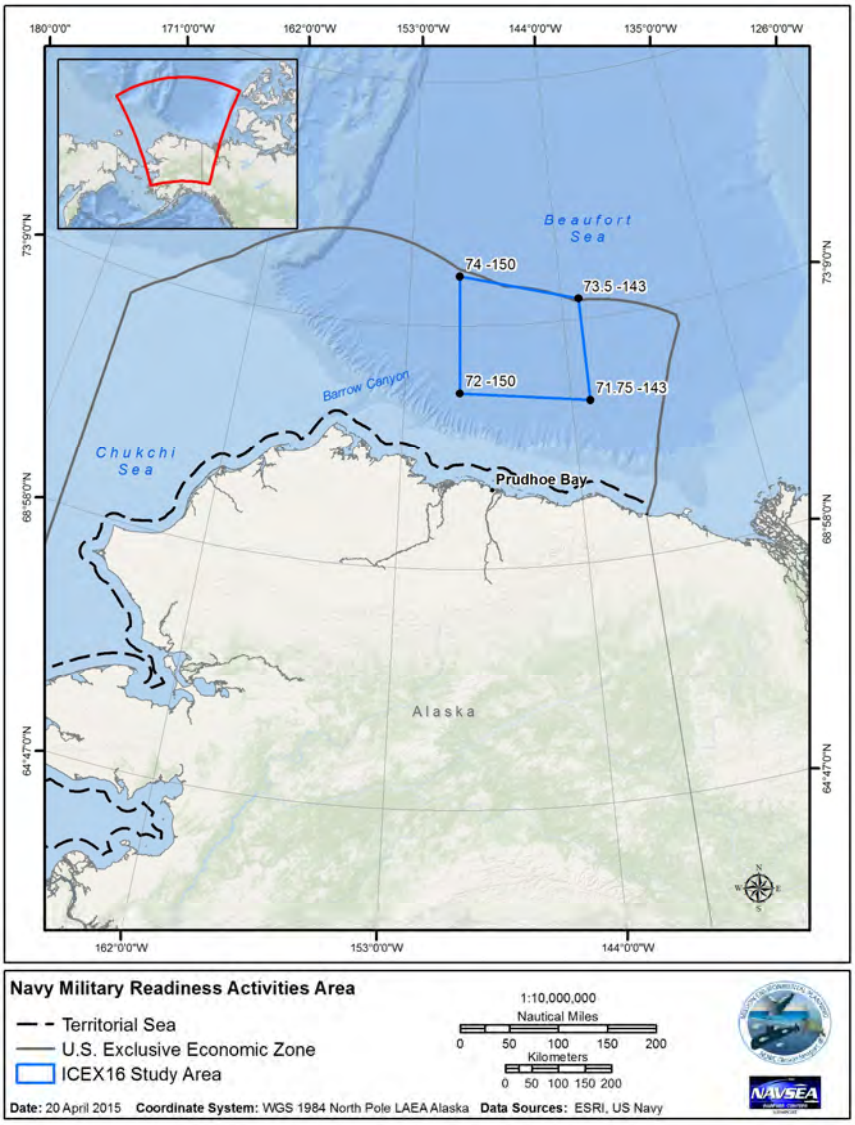

FIGURE A-1: *Activity area of the U.S. Navy Arctic Ice Camp.*

APPENDIX B. NUMERIC MONITORING TRIGGER CALCULATIONS

1. Best Professional Judgment (BPJ) Determination

There are no effluent limitations guidelines for BOD_5 and TSS discharged from graywater facilities, nor is there facility-specific effluent data available. In the absence of such data, permit writers may supplement the analysis with data from existing facilities and permits. In this case, EPA has used data reported in DMRs under the 2004 North Slope NPDES General Permit and the 2012 Greywater APDES General Permit Section. Both general permits authorize discharges of graywater from facilities operating on the North Slope of Alaska.

2. Data Set

The Arctic Ice Camp has not previously been covered under an NPDES permit and, therefore does not have facility-specific effluent data to evaluate in the development effluent limitations. Table B-1 lists the dataset used to evaluate BOD_5 and TSS in effluent from graywater facilities operating on the North Slope of Alaska. It was determined that there were three outliers for both the BOD_5 and TSS datasets using a Grubb's Outlier Test. A box-whisker plot, Figure B-1, graphically demonstrates the results of the outlier test. These data points have been marked with an asterisk (*) in the table and were not used in the calculations.

TABLE B-1: BOD_5 AND TSS EFFLUENT DATA FROM GRAYWATER DISCHARGES

BOD_5 (mg/L)		TSS (mg/L)	
3.05	230	8	70
523	154	19	16
117	40.1	37	886*
576	2420*	175	165
1600*	247	325*	170
166	124	94	129
34.7	90.1	33	93
1500*	279	490*	79
360	111	277	204
300	109	26	143
60	26	37	160
410	330	160	103
274	462	50	106
292	702	91	89
318	242	112	100
227	415	67	110
91.5	651	30	95
--	--	90	--

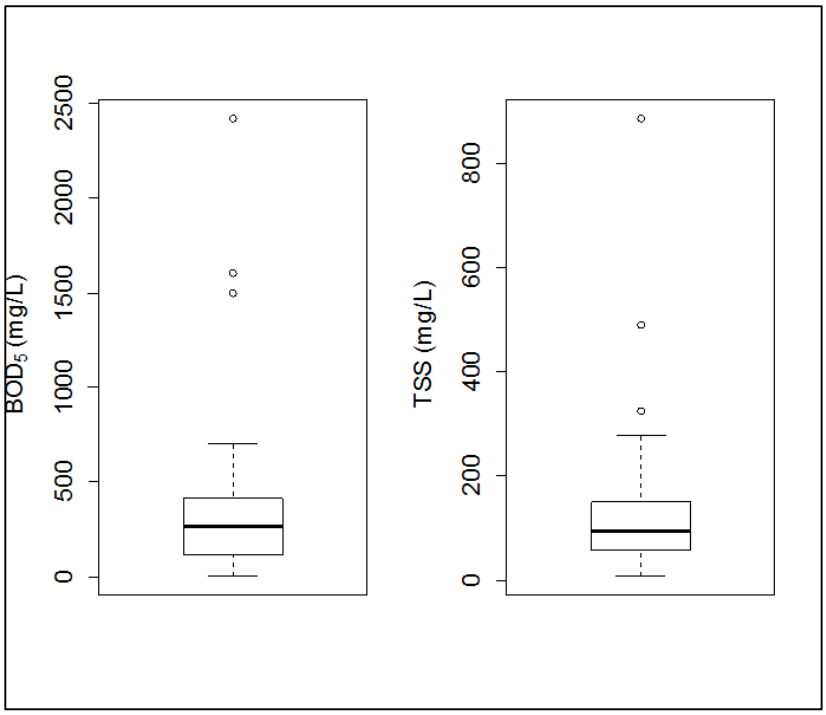

Figure B - 1: *Box-and-whisker plot analyzing effluent data for outliers. A box plot is a way of graphically depicting groups of numerical data through their quartiles. The lines extending vertically above and below the box, (whiskers), indicates the variability outside the upper (75%) and lower (25%) quartiles. The outliers have been plotted as individual points.*

3. Biological Oxygen Demand (BOD_5; Outfall 001)

Using procedures in the TSD, EPA calculated numeric monitoring triggers consistent with the methods outlined in the TSD for the development of technology-based effluent BOD_5 limits. A long-term average (LTA) was calculated using the dataset provided in Table B-1. A strict evaluation of the 99th percentile for determining the Long-Term Average (LTA) results in the following numeric monitoring trigger value:

(1) LTA = 265 *mg/L*

Standard Deviation = 57.5 mg/L

Coefficient of Variation (CV) = 0.61

(2) Numeric Trigger = LTA $\times e^{[z\sigma - 0.5\sigma^2]}$ = <u>914 *mg/L*</u>

Where: $\sigma_n^2 = \ln(CV^2/n + 1)$

z = 2.326 for 99th percentile probability basis

4. Total Suspended Solids (TSS; Outfall 001)

Using procedures in the TSD, EPA calculated numeric monitoring triggers consistent with the methods outlined in the TSD for the development of

technology-based effluent TSS limits. A long-term average (LTA) was calculated using the dataset provided in Table B-1. A strict evaluation of the 99th percentile for determining the Long-Term Average (LTA) results in the following numeric monitoring trigger value:

(1) LTA = 95 *mg/L*

Standard Deviation = 57.5 *mg/L*

Coefficient of Variation (CV) = 0.61

(2) Numeric Monitoring Trigger = LTA $\times e^{[z\sigma - 0.5\sigma^2]}$ = <u>298 *mg/L*</u>

Where: $\sigma_n^2 = \ln(CV^2/n + 1)$

z = 2.326 for 99th percentile probability basis

APPENDIX C. REFERENCES

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