ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT FACT SHEET – Proposed Final

Permit Number: AKG371000

Medium-Size Suction Dredge Placer Miners General Permit

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

Public Comment Period Start Date: October 1, 2015
Public Comment Period Expiration Date: November 2, 2015

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Proposed issuance of an Alaska Pollutant Discharge Elimination System (APDES) general permit for:

MEDIUM-SIZE SUCTION DREDGE PLACER MINERS

The Alaska Department of Environmental Conservation (hereinafter referred to as the Department or DEC) proposes to issue an APDES general permit (hereinafter referred to as permit or GP) for medium-size suction dredge placer miners. The general permit authorizes and sets conditions on the discharge of pollutants from medium-size suction dredges 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 medium-sized suction dredges and outlines best management practices that must be adhered to.

This fact sheet explains the nature of potential discharges from medium-size suction dredges and the development of the permit including

- information on appeal procedures;
- a description of the industry;
- a listing of effluent limitations, monitoring requirements, and other conditions; and
- technical material supporting the conditions in the permit.

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.

Commenters are requested to submit a concise statement on the permit condition(s) and the relevant facts upon which the comments are based. Commenters are encouraged to cite specific permit requirements or conditions in their submittals.

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. The Department will hold a public hearing whenever the Department finds, on the basis of requests, a significant degree of public interest in a draft permit. The Department may also hold a public hearing if a hearing might clarify one or more issues involved in a permit decision or for other good reason, in the Department's discretion. A public hearing will be held at the closest practicable location to the site of the operations. If the Department holds a public hearing, the Director will appoint a designee to preside at the hearing. The public may also submit written testimony in lieu of or in addition to providing oral testimony at the hearing. A hearing will be tape recorded. If there is sufficient public interest in a hearing, the comment period will be extended to allow time to public notice the hearing. Details about the time and location of the hearing will be provided in a separate notice.

All comments and requests for public hearings must be in writing and should be submitted to the Department at the technical contact address, fax, or email identified above (see also the public comments section of the attached public notice). Mailed comments and requests must be postmarked on or before the expiration date of the public comment period.

After the close of the public comment period and after a public hearing, if applicable, the Department will review the comments received on the draft permit. The Department will respond to the comments received in a Response to Comments document that will be made available to the public. If no substantive comments are received, the tentative conditions in the draft permit will become the proposed final permit.

The proposed final permit will be made publicly available for a five-day applicant review. After the close of the proposed final permit review period, the Department will make a final decision regarding permit issuance. A final permit will become effective 30 days after the Department's decision, in accordance with the state's appeals process at 18 AAC 15.185.

The Department will transmit the final permit, fact sheet (amended as appropriate), and the Response to Comments to anyone who provided comments during the public comment period or who requested to be notified of the Department's final decision.

The Department has both an informal review process and a formal administrative appeal process for final APDES permit decisions. An informal review request must be delivered within 15 days after receiving the Department's decision to the Director of the Division of Water at the following address:

Director, Division of Water
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review.

See http://www.dec.state.ak.us/commish/InformalReviews.htm for information regarding informal reviews of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department within 30 days of the permit decision or a decision issued under the informal review process. An adjudicatory hearing will be conducted by an administrative law judge in the Office of Administrative Hearings within the Department of Administration. A written request for an adjudicatory hearing shall be delivered to the Commissioner at the following address:

Commissioner
Alaska Department of Environmental Conservation
410 Willoughby Street, Suite 303
Juneau AK, 99811-1800

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. See http://www.dec.state.ak.us/commish/ReviewGuidance.htm for information regarding appeals of Department decisions.

Documents are Available

The permit, fact sheet, and related documents can be obtained by visiting or contacting DEC between 8:00 a.m. and 4:30 p.m. Monday through Friday at the addresses below. The permit, fact sheet, and other information are located on the Department's Wastewater Discharge Authorization Program website: http://www.dec.state.ak.us/water/wwdp/index.htm.

Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 555 Cordova Street Anchorage, AK 99501 (907) 269-6285	Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 610 University Avenue Fairbanks, AK 99709 (907) 451-2136

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1.0 PERMIT COVERAGE

1.1 Coverage and Eligibility

Section 301(a) of the Clean Water Act (CWA) and the Alaska Administrative Code (AAC) 18 AAC 83.015 provide that the discharge of pollutants is unlawful except in accordance with an Alaska Pollutant Discharge Elimination System (APDES) permit. Although such permits are usually issued to individual dischargers, DEC regulations at 18 AAC 83.205 also authorize the issuance of "general permits" to categories of discharges when a number of point sources are:

- Located within the same geographic area and warrant similar pollution control measures;
- Involve the same or substantially similar types of operations;
- Discharge the same types of wastes;
- Require the same effluent limitations or operating conditions;
- Require the same or similar monitoring requirements; and
- In the opinion of the Department, are more appropriately controlled under a general permit than under individual permits.

Permit Part 1.1 summarizes coverage and eligibility requirements for existing facilities, new or recommencing facilities, and moving or expanding facilities. The permit provides statewide coverage for discharges to fresh and marine waters of the U.S. located in the State of Alaska with certain limitations.

1.2 Authorized Placer Mining Operations

The original 1994 permit (Fact Sheet Section 2.0) covered suction dredges with intake hoses of greater than four inches. In the modified 1996 permit, the U.S. Environmental Protection Agency (EPA) defined medium-size suction dredges as those with nozzles greater than four inches and less than or equal to eight inches. In the 2000 reissuance of the permit, EPA redefined the medium-size suction dredge range as greater than four inches and less than or equal to ten inch dredges. When EPA reissued the Alaskan Small Suction Dredge Placer Miners General Permit (AKG375000) in 2002, it changed the maximum allowed nozzle size from four inches to a maximum of six inches. As a result of the change to the Alaskan Small Suction Dredge General Permit, the Medium-Size Suction Dredge Placer Miners General Permit was changed upon reissuance in 2005 to cover facilities with intake nozzles greater than six inches and less than or equal to ten inches. The 2015 Medium Suction Dredge Placer Miners General Permit retains the same nozzle size allowances as the 2005 and 2011 permits. However, to accommodate dredge configurations that may be a combination of smaller intake hoses, the permit authorizes discharges from dredges that have a combination of intake hoses with combined intake areas greater than that of a six inch suction dredge (28.27 square inches) and less than or equal to that of a ten inch suction dredge (78.54 square inches).

Prior permits limited hose size to two inches larger than the intake nozzle diameter. The stipulation, as described in the 1996 Fact Sheet, was based on concerns that some operators may use smaller-than-standard-size nozzles on large hoses in order to be considered for coverage under the permit. Thus, the permit effectively limited hose size to a maximum of twelve inches. Due to the difficulty of managing a hose larger than twelve inches, it is unlikely that a diver would consider the use of a larger hose. Furthermore, the Department is unaware of any operators attempting to use of an oversized hose. Therefore, the hose size limit has been removed from the 2015 permit.

The 2015 permit includes a provision allowing coverage of smaller dredges, with intake nozzles less than or equal to six inches, that are not eligible for or otherwise denied coverage under another general permit. The provision incorporates flexibility into the permit and provides the Department additional coverage options for smaller dredges. Because the permit includes more restrictive requirements than the alternative Small Suction Dredge General Permit (AKG375000), the provision would not result in the relaxation of any permit limits or conditions.

APDES regulations state that "a general permit must specify when a discharger that is eligible for coverage under the permit and has submitted a complete and timely notice of intent in compliance with the general permit, is authorized to discharge under the permit. The permit may allow discharge to begin upon the department's receipt of the notice of intent, after a waiting period specified in the general permit, on a date specified in the general permit, or when the department notifies the discharger that it is covered under the general permit" [18 AAC 83.210(f)]. Authorization to discharge under the permit requires written notification from the Department that coverage has been granted.

1.3 Limitations on Coverage

Permit Part 1.3 describes discharges that are either not authorized or subject to additional requirements prior to authorization under the permit. Operations that are not authorized must gain coverage under another applicable general permit or apply for and obtain an individual permit. Prohibited discharges, with the exception of those described below, are retained from the 2011 permit and included because the discharges potentially contain pollutants that require monitoring beyond the scope of the permit; are from operations that are not appropriately controlled under the permit; are subject to additional water quality standards and regulatory requirements; or occur in protected waters. Significant changes are discussed below.

The 2011 permit excluded coverage for operations in National Parks System Units (i.e., Parks and Preserves), National Monuments, National Sanctuaries, National Wildlife Refuges, National Conservation Areas, National Wilderness Areas, National Critical Habitat Areas, and waters designated as wild under the Wild and Scenic Rivers Act. However, agencies with jurisdiction over those areas, have occasionally granted permission, or provided additional recommendations, for applicants who have indicated a desire to operate in historically mined regions, or less sensitive regions. Because the prior general permits did not provide case-by-case exceptions, EPA issued individual permits that mirrored the general permit requirements, to dredgers that proposed to operate and discharge within those areas. Given the occasional historical determination to allow for operation in these typically excluded areas and to conserve agency resources, the permit provide exceptions wherein the Department may authorize a facility in an otherwise excluded location provided that the Department receives an approval or statement of non-objection from the lead agency with jurisdiction over the area and the authorization ensures protection of the receiving water (Permit Parts 1.3.2 and 1.3.3). Based on input from the lead agency, the Department may limit the authorization to seasonal windows or reduced coverage areas. If the Department determines the discharge is not appropriately controlled under the general permit, an individual permit would be required.

Based on input from the U.S. Fish & Wildlife Service (USFWS), the 2011 permit excluded coverage within locations listed as critical habitat for spectacled and Steller's eiders under the Endangered Species Act (ESA). To offer additional protections to wintering and molting eiders, the 2015 permit expands the limitation to include a one-mile buffer around ESA critical habitat for eiders. The 2011 permit also excluded coverage from September 1 to April 30 within 4.0 nautical miles of locations used by 125 or more Steller's eiders as wintering areas. To align the 2015 permit with similar restrictions of the Small-Size Suction Dredge General

Permit (AKG375000), establish consistency with buffers for other protected and sensitive resources, and simplify authorizations for operators, the language has been changed to "within 1.0 nautical mile." Because operations are limited to a 500 feet mixing zone and very few facilities have proposed to operate in the remote wintering areas, the Department does not foresee the change resulting in adverse impacts to Steller eider wintering areas from dredges under this permit.

The 2015 permit adds language clarifying that discharges to locations not described in the Notice of Intent (NOI) are not authorized. The language includes an exception wherein operations with NOIs listing locations within the Norton Sound offshore dredge area are authorized coverage for the entire offshore dredge area. Operations offshore of Nome work within a public recreation area or on nearby offshore leases or submerged claims; however, the operations frequently change locations based on contracts with mineral property owners. The fixed coverage area, as defined in Permit Appendix C, allows operators to move among the various mineral properties and allows for a streamlined authorization process. Permittees remain subject to all other coverage limitations and separation requirements within the permit.

The 2011 permit prohibited, or otherwise limited, discharges within polar bear critical habit. The permit also prohibited intentional harassment of polar bears. Limitations for polar bear sea ice critical habitat were subsequently changed under a 2013 permit modification. In a concurrent action, the U.S. District Court for the District of Alaska, on January 10, 2013, issued an order vacating and remanding to the U.S. Fish Wildlife Service a December 7, 2010, Final Rule designating critical habitat for the polar bear. Therefore, at this time, there is no critical habitat designated for the polar bear and related prohibitions have been removed from the general permit. Because the Department only has authority to regulate wastewater discharges, permit stipulations prohibiting intentional harassment of polar bears have also been removed. The Department retains the ability to include notice of such federal regulations within a separate cover letter or guidance document.

Finally, the 2011 permit contained language that recommended permittees contact the district offices of the agencies that administer certain systems, such as National Wild and Scenic Rivers, Conservation System Units, or anadromous streams, for additional restrictions and permitting requirements. Because 1) the language only provided recommendations and did not reflect a permit requirement and 2) most operations already obtain all necessary permits or provide notification through the APMA (Application for Permits to Mine in Alaska) process, the language has been removed from the permit. The Department retains the ability to provide such recommendations within a separate cover letter.

1.4 Operations Requiring an Individual Permit

As outlined in APDES regulations, "the department may terminate or revoke any discharger's coverage under a general permit, and may require the discharger to apply for and obtain an individual APDES permit" or "an interested person may petition the department to take action" under certain situations (18 AAC 83.215). For example, an individual permit may be required when 1) the permittee is not in compliance with the conditions of the general permit; 2) a change has occurred in the availability of demonstrated technology or practices for the control of pollutants applicable to the facility; 3) effluent limitations guidelines are promulgated for facilities covered by the general permit; or 4) circumstances have changed so that the permittee is no longer appropriately controlled under the general permit. The permit cites the regulation by reference under Permit Part 1.4.

1.5 Notification Requirements

Applicants with operations eligible for permit coverage must submit a NOI (18 AAC 83.210). An APMA submitted to the Alaska Department of Natural Resources (DNR) will be accepted as an NOI if all the required information is included. The notification requirements are outlined in Permit Part 1.5.

1.6 Permit Expiration

Under 18 AAC 83.210(a), a permit may be administered according to the individual permit regulations found in 18 AAC 83.115 and 18 AAC 83.120. Therefore, if the permit is not reissued prior to its expiration date, the permit will continue in force and effect until a new permit is issued. A permittee who submits a complete NOI at least 90 days prior to the permit expiration date will be covered by the administratively extended permit, unless the Department has granted the permittee permission to submit an application on a later date. However, the Department cannot grant coverage under an administratively extended permit if an NOI is submitted after the general permit's expiration date.

2.0 REGULATORY HISTORY OF PLACER MINING IN ALASKA

Regulation of discharges from gold placer mining operations in Alaska has been a matter of controversy since enactment of the CWA. Starting in 1976 and 1977, the EPA issued approximately 170 individual National Pollutant Discharge Elimination System (NPDES) permits to Alaskan gold placer miners. Those permits were challenged administratively. Some parties argued that the permits were not stringent enough. Others argued that the permits were too stringent. EPA issued an additional 269 individual NPDES permits for gold placer mining in 1983. All of those permits were challenged judicially in Trustees for Alaska v. EPA, 749 F.2d 549 (9th Cir. 1984).

EPA issued a new round of individual permits (446 in total) in 1984 to replace expiring permits and to incorporate new promulgated regulations. In 1985, EPA modified the 1984 permits, based on the Trustees for Alaska decision, and issued 93 additional permits. In 1987, EPA issued an additional 368 new permits. The 1987 permits were the subject of litigation based on allegations that EPA and the State unreasonably delayed acting on requests for hearings on those permits in Stein v. Kelso, Case No. F89-21 Civil (D. Alaska) (litigation against EPA). The case against EPA was eventually dismissed as moot on April 12, 1990.

The permits EPA issued in 1985 and 1987 were challenged administratively, and ultimately judicially, in Ackels v. EPA, 7 F.3d 862 (9th Cir. 1993). A decision by the State of Alaska to certify the 1985 permits was ultimately resolved by the Alaska Supreme Court in Miners Advocacy Council, Inc. v. State of Alaska, Department of Environmental Conservation, 778 P.2d 1126 (Alaska 1989), cert. denied, 493 U.S. 1077 (1990). The State's certification of the 1987 permits was also challenged in Stein v. Kelso, 846 P.2d 123 (Alaska 1993).

EPA also was sued in the United States District Court for the District of Alaska in 1986. That case raised a variety of statutory and constitutional issues that were ultimately dismissed or resolved in the federal courts. One of the concerns raised in the 1986 litigation, whether EPA had a duty to promulgate national effluent limitations guidelines for the gold placer mining point source category, was eventually resolved when EPA published such guidelines in 1988 [40 CFR Part 440, Subpart M, as adopted by reference at 18 AAC 83.010(g)(3)]. Those guidelines were the subject of litigation in Rybachek v. EPA, 904 F.2d 1276 (9th Cir. 1990).

On June 30, 1992, EPA received a notice of citizen suit alleging that EPA failed to perform a non-discretionary duty to regulate suction dredge gold placer mining operations in Alaska. At

that time, EPA decided it would issue individual permits for mechanical placer mining operations (for the 1993 mining season) and propose a general permit for suction dredge operations. On January 14, 1994, EPA proposed a general permit that extended coverage to mechanical, as well as suction dredge operations (59 FR 2504). After responding to public comment, EPA issued the final general permit on May 13, 1994 (59 FR 28079). On September 28, 1994, two environmental groups filed a petition for review of the general permit in the Ninth Circuit Court of Appeals.

On November 18, 1996, EPA and the two environmental groups entered into a settlement agreement to resolve the challenge to the general permit. Pursuant to the agreement, EPA agreed to issue three separate general permits to modify and supersede the original general permit challenged by the environmental groups in 1994. The settlement agreement also required EPA to complete two studies related to the impact of placer mining on the natural environment in Alaska. One study was to address the discharge of metals by placer mining operations and the other was to address the impact of suction dredge mining.

EPA issued three modified general permits on December 6, 1996: one for mechanical operations, one for medium-size suction dredge operations, and one for small suction dredges (61 FR 64796). On April 4, 1997, three environmental groups challenged these permits. No. 97-70365 (9th Cir). In a separate action, the Alaska Miners Association (AMA) also challenged the general permits. No. 97-70379 (9th Cir.). These cases were consolidated on May 5, 1997. The challenge by the AMA was dismissed on January 21, 1999.

During the summers of 1997 and 1998, EPA staff and EPA contractors collected data at 31 placer mine sites and several suction dredge sites. These data were analyzed and presented in three final reports: one entitled “Alaska Placer Mining Metals Study” (EPA 1998), a second entitled “Alaska Placer Mining Metals Study - Year Two” (EPA 1999a), and a third entitled “Impact of Suction Dredging on Water Quality, Benthic Habitat, and Biota in the Fortymile River, Resurrection Creek, and Chatanika River, Alaska” (Prussian et al. 1999). The environmental groups believed that the suction dredge report did not address all of the required elements as set out in the 1996 settlement agreement.

To avoid further litigation over the general permits, EPA and the environmental groups entered into another settlement agreement. Pursuant to the agreement, EPA agreed that further study was necessary to quantify the full impact of suction dredge mining on the natural environment and that further research should be conducted before conclusions are reached about the impact of suction dredge mining on Alaska streams. EPA further agreed that by January 7, 2000, it would transmit to the Federal Register any necessary revisions to the modified general permits to address the results of the placer mining metals study (EPA 1998, 1999a). As a result, the environmental groups’ petition to review the three general permits was dismissed on August 31, 1999.

On October 31, 2008, EPA approved the State’s application to administer the NPDES Program. The State’s program is called the APDES Program. According to the Memorandum of Agreement between EPA and DEC (DEC 2008), authority to administer the APDES Program would transfer in phases over four years. Under this phased approach, mining permits transferred on October 31, 2010. The transfer of mining permits included the administratively extended 2005 Medium-Size Suction Dredge Placer Miners General Permit and all administratively extended authorizations for facilities that re-applied prior to the permit expiration. Prior to the transfer of authority of the mining sector, EPA drafted the 2011 permit, completed a 45-day comment period, and provided it to DEC for final issuance. DEC issued the permit on July 15, 2011 with an expiration date of October 31, 2015. The permit was modified on March 1, 2013.

As of August 12, 2015, approximately 179 operations had active coverage under the permit. Fifty-seven of those operations were located in freshwater creeks or rivers – mostly in the Fortymile and Hope mining districts. The remainder (122) of operations were located in the marine waters of Norton Sound.

Table 1 summarizes permit-related dates for the Medium-Size Suction Dredge Placer Miners General Permit.

Table 1: AKG371000 Permit Dates

Agency	Issuance Year	Public Notice		Signed Date	Effective Date	Expiration Date
		Start Date	End Date			
EPA	1994 [a]	01/14/1994	02/14/1994	05/13/1994	06/30/1994	06/30/1999
EPA	1996 [b]	01/31/1996	04/18/1996	11/18/1996	04/07/1997	06/30/1999
EPA	2000	01/14/2000	03/14/2000	08/23/2000	10/02/2000	10/03/2005
EPA	2005	04/21/2005	06/6/2005	08/24/2005	10/07/2005	10/07/2010
DEC	2011	10/25/2010	12/09/2010	07/15/2011	08/14/2011	10/31/2015
DEC	2013 [b]	01/10/2013	02/11/2013	03/01/2013	03/31/2013	10/31/2015
DEC	2015	10/01/2015	11/02/2015	Pending	Pending	Pending

Notes:

a. Alaskan Placer Miners General Permit (AKG370000)

b. Modification

3.0 INDUSTRY DESCRIPTION

Placer mining involves the mining and extraction of gold or other heavy metals and minerals primarily from alluvial deposits. These deposits may be in existing stream beds or ancient, often buried, stream deposits, i.e., paleo or fossil placers. Many Alaskan placer deposits consist of unconsolidated clay, sand, gravel, cobble and boulders that contain very small amounts of native gold or other precious metals. Most are stream deposits that occur along present stream valleys or on benches or terraces above existing streams. Beach placer deposits have been and continue to be important producers in Alaska. These deposits, most notable near Nome, include both submerged and elevated beach placer deposits.

Placer mining methods to extract gold bearing material (ore) from a deposit include both dredging systems and open-cut mining. Dredging systems consist of a supporting hull with a mining control system, excavating and lifting mechanism, gold recovery circuits (e.g., sluice box), and waste disposal discharge. All dredges are designed to work as a unit to dig, classify, beneficiate ores and dispose of waste. Because dredges work the stream bed or ocean floor, rather than terrestrial areas, the effluent consists entirely of *in situ* water and bed material.

Dredging systems are further classified as hydraulic (e.g., suction dredges) or mechanical (e.g., bucket dredging), depending on the methods of digging. Suction dredges, the most common hydraulic dredging system, are quite popular in Alaska with the small and medium scale gold placer miners for recreational and commercial purposes. A suction dredge, often handled by a diver, is akin to a vacuum cleaner used underwater and sucks up the bed material. The material

passes through a suction hose to a surface-mounted sluice box. The sluice box is a long, sloped trough into which water is directed to separate gold from ore. A slurry of water and ore flows down the sluice and the gold, due to its relatively high density, is trapped in riffles along the sluice. The concentrated material from the sluice box is then further separated by panning or use of specialized equipment, such as jigs or shaking tables.

4.0 RECEIVING WATERBODY

The permit authorizes discharges to fresh waters of the U.S., as defined in 18 AAC 83.990(77), statewide with certain limitations (Permit Part 1.0).

4.1 Water Quality Standards

Regulations in 18 AAC 70 require that the conditions in permits ensure compliance with the Alaska Water Quality Standards (WQS). The state's WQS are composed of use classifications, numeric and/or narrative water quality criteria, and an antidegradation policy. The use classification system designates the beneficial uses that each waterbody is expected to achieve. Protected use classifications include water supply for drinking, culinary, food processing, agriculture, aquaculture, and industrial; water recreation, both contact and secondary; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each waterbody. The antidegradation policy ensures that the beneficial uses and existing water quality are maintained.

Waterbodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230(e). Some waterbodies in Alaska can also have site–specific water quality criterion per 18 AAC 70.235, such as those listed under 18 AAC 70.236(b).

Receiving waters that have been reclassified as industrial use only include Franklin Creek; Isabell Creek (upper); Lillian Creek; Lucille Creek; Nolan Creek and all its tributaries, excluding Acme Creek near Wiseman; Olive Creek (upper); and Ruth Creek near Livengood.

This permit will be available for dischargers in reclassified waters and Permit Part 3.4 contains exceptions for facilities on waters reclassified as "industrial use only". However, the water quality-based effluent limits in the permit may be more stringent than would be applied in an individual permit in these locations. A facility located on any of the above receiving waters may apply to DEC for revised limits based on the most stringent criteria applicable to the reclassified waterbody, or an individual APDES permit. The Department will consider permit applications on a case-by-case basis and make the final determination as to which permit the applicant should receive.

4.2 Mixing Zone Analysis

State regulations grant the Department the authority to authorize a mixing zone in a permit (18 AAC 70.240, as amended through June 23, 2003). An authorized mixing zone must ensure that WQS will be met at all points outside of the mixing zone.

This general permit is intended to cover various locations throughout the state and the locations of potential discharges are not known until NOIs are received. Therefore, the permit authorizes standard-sized freshwater and marine mixing zones for turbidity. The freshwater mixing zone extends 500 feet down current of the suction dredge during operation. The marine mixing zone is circular with a 500 foot radius centered on the suction dredge during operation. A turbidity plume may exceed WQS within either the freshwater or marine mixing zones;

however, any visual increase in turbidity beyond the boundary of either the freshwater or marine mixing zone is considered a violation of the permit. The effluent limitations are specified in Permit Part 2.1. The mixing zone rationale follows below.

EPA has permitted medium-size suction dredge activities with a statewide general permit since 1994. Two significant studies were conducted by EPA and its contractors in the summers of 1997 and 1998 (Prussian et al. 1999) evaluating the impacts of suction dredging on water quality (including metals), benthic habitat, and biota in Alaska streams. Results indicated that the primary effects of suction dredging on water chemistry were increased turbidity, total filterable solids, and copper and zinc concentrations only in a localized area downstream of the dredge, but these variables returned to upstream levels within 262 – 525 feet downstream of the dredge. The studies also indicated that copper and zinc concentrations met water quality standards within the same distance downstream as turbidity. Therefore if a facility meets the turbidity limits, copper and zinc concentrations are only expected to be elevated within the turbidity plume and mixing zone.

A cooperative effort between the U.S. Geological Survey and Alaska Department of Natural Resources produced another study on the impacts of suction dredging on Alaska waters in 1997 (USGS 1997). The study concluded that at 500 feet downstream of suction dredging there was no measurable effect on water chemistry, and turbidity recovered to levels in compliance with WQS.

The studies and subsequent annual reports and inspections of suction dredge mining operations affirm that medium-size suction dredging, conducted in accordance with the permit conditions, has only localized impacts allowing for the temporary disturbance of sediments and increased turbidity during mining, but areas beyond the 500 foot mixing zone remain unaffected.

In authorizing these mixing zones, the Department considered all aspects required in 18 AAC 70.015, Antidegradation, and 18 AAC 70.240 to 18 AAC 70.270, Mixing zones, (as amended June 26, 2003), including, but not limited to, the potential risk to human health and to aquatic resources and analysis of the predicted effluent quality from the discharge.

The Department finds that the 500 foot mixing zones authorized for marine and freshwater discharges following the requirements in the permit are appropriate and provide reasonable assurance that designated and existing uses of the receiving waters outside of the mixing zones are maintained and fully protected.

5.0 EFFLUENT LIMITATIONS

5.1 Basis for Permit Effluent Limits

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 effluent 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 WQS for a waterbody are met. Water quality-based effluent limits may be more stringent than technology-based effluent limits. The permit limits reflect whichever requirements (i.e., technology-based or water quality-based) are more stringent.

5.2 Technology-Based Effluent Limits

EPA promulgated effluent limitation guidelines (ELGs) for the gold placer mining point source category in 1988 [40 CFR § 440.143 Subpart M, as adopted by reference at 18 AAC 83.010(g)(3)]. The ELGs specify the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT); the best available technology economically achievable (BAT); and New Source Performance Standards (NSPS). The ELGs also established Best Management Practices (BMPs). However, the gold placer mining ELGs are not applicable "to dredges which process less than 50,000 cu yd of ore per year, or to dredges located in open waters (i.e., open bays, marine waters, or major rivers)." Because the facilities covered under the permit either process less than 50,000 cu yd of ore per year or are located in open waters, the promulgated ELGs are not applicable and, therefore, the permit does not contain technology-based effluent limits.

5.3 Water Quality-Based Effluent Limits

The CWA requires the establishment of limitations in permits necessary to meet WQS by July 1, 1977 [CWA § 301(b)(1)]. All discharges to state waters must also comply with state and local coastal management plans, as well as with WQS, including the state's antidegradation policy. DEC regulations require that permits include water quality-based effluent limits that "achieve water quality standards established under CWA § 303, including State narrative criteria for water quality" [18 AAC 83.435(a)(1)].

Pursuant to CWA § 402(a)(2) and 18 AAC 83.475(3), BMPs must be included in a permit "when numeric effluent limitations are infeasible." Suction dredging's unique method of intake and displacement presents unusual permitting issues. As discussed above (Fact Sheet Section 3.0), a dredge is a mechanical device that operates on the water surface and elevates bed material and *in situ* water into a sluice box from which gold or other minerals may be recovered. The discharge from dredges consists entirely of intake water and bed material immediately released back into the receiving water. Because dredges do not contain treatment systems, nor add pollutants other than those already present in the intake water or bed material, numerical limitations are considered infeasible for most operations; therefore, BMPs have been established in the permit to control the discharges (Permit Part 3.1).

DEC determined that turbidity is a pollutant of concern and must be limited in order to meet State WQS. The BMPs include requirements to minimize and manage turbidity from the discharge and are applicable to all facilities authorized under the permit. Daily visual monitoring for turbidity within the mixing zone ensures that the BMPs are implemented properly (Fact Sheet Section 6.0). Any visual increase in turbidity beyond the boundary of the 500 foot mixing zone is a violation of the permit. If turbidity is observed beyond the mixing zone, permittees must decrease or cease operations in order to meet the permit limit. In most cases, water quality recovers rapidly when corrective actions are taken.

State WQS include fresh and marine water quality criteria for petroleum hydrocarbons and oils and grease [18 AAC 70.020(b), (5) and (7)]. To ensure the criteria for petroleum hydrocarbons and oils and grease are met and to align the permit with requirements in similar general permits, the 2015 permit establishes end-of-pipe narrative water quality criteria limits that prohibit "floating oils on the surface of the waterbody or cause a film or sheen from petroleum hydrocarbons, or oils and grease, on the surface or floor of the waterbody or adjoining shorelines" (Permit Part 2.1.4). Permittees must conduct daily monitoring for the presence of a sheen and take corrective actions if necessary. The daily observations during operation, combined with the BMPs for turbidity and hydrocarbons, ensure that the WQS are met.

As discussed in Fact Sheet Section 4.1, waterbodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230(e). DEC has received requests for modified permit conditions from facilities located on fresh waters that have been reclassified as industrial use only. In consideration of such reclassified waterbodies, the 2015 permit includes conditions wherein a permitee may be granted exemptions from turbidity related BMPs and alternative turbidity limits (Permit Part 3.4). State WQS for turbidity on fresh waters include industrial use criteria prohibiting discharges that "cause detrimental effects on established (industrial) water supply treatment levels" [18 AAC 70.020(b) (12)(A)(iv) (7)]. To protect established downstream industrial users on reclassified waterbodies and downstream waterbodies that are protected for other uses, discharges from approved facilities may not create 1) a visual increase in turbidity within 300 feet upstream of the intake of any established industrial user that is actively withdrawing water or 2) a visual increase in turbidity that extends into any downstream waterbody classified for other uses. Department approval is subject to input from the Alaska Department of Fish and Game (ADF&G) and the land manager. Upon approval, permittees must continue to adhere to all other permit requirements, including daily monitoring and annual reporting. The exemptions do not extend to limits or conditions for other pollutants, such as petroleum hydrocarbons and oils and grease.

6.0 MONITORING REQUIREMENTS

APDES regulations require that permits include monitoring to determine compliance with effluent limitations (18 AAC 83.455). Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The permit retains the monitoring requirements included in the prior permit issuance. Permittees must conduct daily visual monitoring and submit annual reports to DEC on before January 31 of each year (Permit Parts 2.2 and 4.0).

7.0 OTHER PERMIT CONDITIONS

7.1 Best Management Practices (BMPs)

BMPs are measures that are intended to prevent or minimize the generation and the potential for the release of pollutants from industrial facilities to the waters of the U.S. through normal operations and ancillary activities. APDES permits must include BMPs to control or abate the discharge of pollutants when 1) numeric effluent limitations are infeasible or 2) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA [18 AAC 83.475(3) – (4)].

The following sub-sections describe the required BMPs and rational:

7.1.1 Dredging in fresh waters is permitted only within the active stream channel. Dredging within the active stream channel that results in undercutting, littoral channeling, or that otherwise results in erosion of a stream bank is prohibited. This provision does not apply to facilities operating within disconnected ponds or meander cutoffs if the permittee has received an ADF&G determination that the location is not fish-bearing.

This practice ensures that erosion does not occur and that the finer sediments that may be found in these areas do not cause turbidity problems in the receiving waters. The second portion of this BMP aligns with conditions in the Small-Size Suction Dredge General Permit (AKG375000) and provides allowances for locations where fish are not present.

7.1.2 Motorized winches or other motorized equipment shall not be used in fresh water to move boulders, logs, or other natural obstructions within the active stream channel. This prohibition does not apply to the non-routine use of such equipment either to move obstructions that present an immediate safety hazard or to assist with reclamation upon completion of mining.

This practice 1) ensures that important habitat including large organic debris and boulders will not be destroyed and 2) prevents any erosion, and related turbidity problems from changes in the streamflow. Because many permittees operate in streams with large boulders or other obstructions, the obstructions must be moved to prevent possible entrapment or pinning of the diver. The BMP includes an allowance for the use of motorized equipment in situations where safety is a concern. The allowance provides for the efficient and safe removal of obstructions in non-routine situations.

7.1.3 Boulders, logs, or other natural obstructions must be kept as close to their original location within the active stream channel as possible. Material that is moved by the operator must not be placed in a manner that significantly alters the active stream channel or otherwise redirects the flow of water into the streambank causing erosion or undercutting.

This practice, similar to those described in Sections 7.1.1 and 7.1.2 above, ensures that stream habitat is kept as close to the original condition as possible and that relocated or dredged material will not contribute to undue erosion and related turbidity problems from changes in the streamflow.

7.1.4 Dredging of concentrated silt and clay should be avoided. The permittee shall use reasonable care to avoid dredging silt and clay materials that would result in a significant increase in turbidity. Reasonable care includes moving the dredge to a new location or reducing the volume of effluent discharge by limiting operation speed of the suction dredge.

This practice decreases the amount of fine material that will be released into the receiving water and minimizes the length of the turbidity plume.

7.1.5 Mercury from historical dredge operations or other pollutants may be encountered during dredge operations. The permittee must take measures to ensure mercury or other pollutants, such as lead, that are removed from the wastewater streams are retained in storage areas and not released to the waters of the U.S. Information on how to safely handle, store, and dispose of mercury or other pollutants can be obtained by contacting DEC at the address in Appendix A, Part 1.1.1.

Due to historical mining operations, hunting, fishing, and other factors, dredge operations may occasionally encounter mercury, lead (e.g., buckshot or fishing weights), or similar pollutants. The intent of this practice is to ensure that any collected pollutants are properly disposed of and not returned to the waterbody.

7.1.6 Dredging equipment must not house invasive species. Equipment must be self-inspected and cleaned prior to its placement in waters of the U.S. and when transferring from one waterbody to another.

Invasive species, such as Elodea, that pose threats to aquatic resources have begun to establish themselves in Alaskan waters. The intent of this practice is to ensure that invasive plants or animals are not transferred to waters of the U.S. from dredges, particularly those dredges that are new to the state.

7.1.7 Petroleum products must be properly managed during storage, refueling, and operation to prevent spillage into surface waters or groundwater. Equipment must be free of excess oils and grease and must not release petroleum products. Any spills must be cleaned up using materials, such as sorbent pads and booms, and reported, per Permit Part 4.3.

These practices ensure that petroleum contamination from equipment, fuel storage, or refueling is prevented or mitigated. The reporting requirement is included based on DEC regulations that state "a person must notify the [DEC] by telephone immediately in the result of a release or discharge of a hazardous substance" (18 AAC 75.300).

7.1.8 Removed BMPs

The 2011 permit contained a BMP stating that "if an ADF&G Fish Habitat Permit (Title 16 Permit) is necessary, no wheeled or tracked equipment may be used instream while dredging is in progress unless it is allowed by a Title 16 permit."

First, due to safety and visibility concerns, suction dredgers generally do not operate vehicles instream during dredging. Second, ADF&G retains the authority to permit the use of motorized vehicles in anadromous streams and applicants must consult ADF&G to obtain any necessary permits (Permit Part 1.5). Therefore, the BMP has not been retained in the 2015 permit.

7.2 Seasonal Restrictions

The permit requires operators to adhere to any seasonal restrictions contained in ADF&G Fish Habitat Permits and DNR mine plan approvals for marine waters (Permit Part 3.2). The seasonal restrictions supplement protections for spawning fish, red king crab, and other aquatic resources. Rather than include site-specific seasonal restrictions within authorizations under the general permit, DEC relies on the expertise of complementary State agencies. Permittees must maintain copies of the Fish Habitat Permits and/or mine plan approvals on site.

7.3 Separation Requirements

Permit Part 3.3.1 outlines separation requirements applicable to turbidity plumes. The separation requirements 1) minimize cumulative impacts from multiple facilities operating simultaneously in close proximity to each other and 2) prevent monitoring difficulties and turbidity limit violations due to plume overlap. To prevent barriers to fish migration, permittees must allow for a zone of passage for fish around turbidity plumes at all times. Dredge operations in freshwater must maintain an 800 feet separation between other active dredge operations. The 800 feet separation distance provides a 300 feet long buffer between the downstream boundary of a mixing zone (500 feet) and the next downstream discharge. The Department has received requests from permittees to allow partner dredges to operate in closer proximity to facilitate fuel storage, minimize river travel, and improve safety allowing the adjacent operators to monitor each other. To accommodate partner operations, the 2015 permit changes the definition of "dredge operation" to include "two medium-sized suction dredges operating within 800 feet of one another with no single or combined plume length greater than 500 feet long" (Permit Appendix C). Because dredges of varying sizes with different plume lengths often operate in the same areas within marine waters (e.g., Norton Sound), and the relative positions of marine operations with regard to currents differs considerably from flowing streams, the permit does not implement specific separation distances between dredges in marine waters. Marine dredges must operate to ensure that discharged turbidity plumes do not overlap with the plumes of other equipment used in the same waters.

Permit Part 3.3.2 implements a 500 feet separation between discharges and locations where anadromous fish are spawning or where anadromous fish eggs, anadromous fish alevins, or resident fish spawning redds are known to exist at the time dredging occurs. DEC mixing zone regulations prohibit the authorization of mixing zones in areas of anadromous fish spawning or resident fish spawning redds [18 AAC 70.255(h), as amended through June 23, 2003]. This prohibition, along with seasonal restrictions based on ADF&G Fish Habitat Permits (Fact Sheet Section 7.2), establishes accordance with 18 AAC 70.255(h) and ensures that spawning anadromous fish are not disturbed and that anadromous fish eggs, anadromous fish alevins, and resident fish spawning redds are not buried or otherwise harmed. Permit Appendix C defines "anadromous fish," "resident fish," and "spawning" based on regulations at 18 AAC 70.255(h)(2) and 18 AAC 70.990.

To ensure discharges do not interfere with drinking water sources for public water system (PWS) intakes, Permit Part 3.3.3 implements a 500 feet separation from downstream PWS intakes. Dredge operations are unlikely to interfere with ground water intakes; therefore, the separation distance is not applicable to ground water systems that are not under the direct influence of surface water. Permittees who wish to obtain further information, such as locations of known intakes, are advised to visit the interactive web map at or contact the DEC Drinking Water Protection group.

Critical habitat for northern sea otter occurs near Kodiak Island and along the Aleutian Chain. Based on coordination with USFWS and conditions in the APDES Small-Sized Suction Dredge General Permit (AKG375000), Permit Part 3.3.4 requires operations in critical habitat for northern sea otter (see Permit Appendix D, ESA Habitat Areas) to maintain a distance of 800 feet from any northern sea otter during operation. To account for otter movements, the distance provides a 300 feet buffer between the otter and boundary of the mixing zone (500 feet).

Essential Fish Habitat for red king crab occurs in Norton Sound offshore of Nome. To ensure red king crabs are not disturbed, Permit Part 3.3.5 requires that operations avoid red king crab mating pairs and clusters and either move to an alternate location or cease operation if crabs are observed.

To align with conditions under the Small-Size Suction Dredge General Permit (AKG375000) and Norton Sound Large Dredge General Permit (AKG374000), additional language has been added prohibiting discharges to coral beds, eelgrass beds, seagrass beds, kelp beds, vegetated shallows, or shellfish beds.

7.4 Recording and Reporting Requirements

Per regulations at 18 AAC 83.455, Permit Part 4.0 contains recording and reporting requirements that are either based on standard regulatory language (Fact Sheet Section 7.5) or are specific to the general permit. The permit requires the facility to maintain daily records and submit an annual report to DEC by January 31 for the previous calendar year. Specific report requirements are outlined under Permit Part 4.2.

Additionally, Permit Appendix A, Part 3.4 (Twenty-four Hour Reporting), requires reports of any noncompliance event that may endanger health or the environment to be submitted orally within 24 hours after the permittee becomes aware of the circumstances and in writing within five days after the permittee becomes aware of the circumstances.

The twenty-four hour reporting requirement is based on State regulations and must be contained in all APDES permits [18 AAC 83.410(f)]. The State regulation is based on the CWA and federal regulations. The regulation does not consider the logistical or

communication difficulties present in many remote locations in Alaska. DEC has received requests to modify Permit. Appendix A, Part 3.4 to consider logistical and communication difficulties of remote sites. However, DEC is unable to modify permit requirements that are based on State regulations. Although DEC is aware of the logistical difficulties of remote operations and recognizes that some operators may have difficulties meeting the 24-hour noncompliance reporting requirement, operators are still required to notify DEC of any noncompliance. DEC encourages permittees who report after the deadlines, due to the remoteness of the activities, to also include a separate statement that explains the reason for any late reports.

7.5 Standard Conditions

Appendix A of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on the regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general provisions.

7.6 Reclassified Waters

Based on requests for modified permit conditions from facilities located on fresh waters reclassified as industrial use only under [18 AAC 70.230(e)], the 2015 permit includes conditional exemptions from turbidity-related BMPS and modified turbidity limits (Permit Part 3.4). See Fact Sheet Section 5.3.

8.0 ANTIDEGRADATION

The antidegradation policy of the Alaska Water Quality Standards requires that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected (18 AAC 70.015). The following analysis provides rationale for the Department's decisions with respect to the antidegradation policy.

The Department's approach to implementing the antidegradation policy is based on the requirements in 18 AAC 70 and the *Interim Antidegradation Implementation Methods* (DEC 2010). Using these requirements and policies, the Department determines whether a waterbody or portion of a waterbody is classified as Tier 1, Tier 2, or Tier 3. A higher tier indicates a greater level of water quality protection. This analysis conservatively requires that all operations under the general permit will be in Tier 2 waters, and this antidegradation analysis focuses on that level of protection. The permit specifically excludes coverage in Tier 3 waters (Permit Part 1.3).

At this time, the Department has not designated any Tier 3 waters in Alaska. However, if an applicant applies for authorization under the permit to discharge to certain sensitive habitats (Permit Part 1.3.1), the Department will decline general permit coverage and require an application for an individual permit. An operation proposed for a National Park System Unit, National Wildlife Refuge, water designated as wild under the Wild and Scenic Rivers Act, or similar protected area requires additional approval from the lead agency with jurisdiction over the area and may be subject to additional seasonal or geographic restrictions on the authorization (Permit Part 1.3.2).

The permit implements water-quality based effluent limits based on the most stringent WQS under 18 AAC 70.020(b), best management practices, and monitoring, recording, and reporting requirements. Authorizations under the permit provide each permittee a mixing zone for

turbidity. An initial analysis was applied on a parameter-by-parameter basis, and the Department concluded authorizing turbidity mixing zones should be subjected to an antidegradation analysis.

The State of Alaska's antidegradation policy states that existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected; and if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected. The Department will authorize a reduction in water quality only after the applicant submits evidence in support of the application and the Department finds that the five specific requirements of the antidegradation policy at 18 AAC 70.015(a)(2)(A)-(E) are satisfied. The Department's findings follow.

- **(A). Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.**

  Rationale: Placer mining has occurred in Alaska since the late 1800s and has contributed to the economic and social development of the state. A 2014 survey of placer mine operators, open-cut and suction dredge, conducted by McDowell Group (McDowell 2014) indicates that placer mining continues to have a significant economic impact in Alaska. Although the survey did not distinguish between open-cut and suction dredge operations, the McDowell report found that overall in 2013:

  - placer mining-related employment statewide (indirect and induced) totaled 1,700 jobs with a total statewide labor income of $65 million;
  - placer mine production totaled approximately 82,000 ounces of gold, with a total gross production value of approximately $105 million; and
  - placer miners spent approximately $65 million on goods and services for their operations, with 88% (or $57.1 million) spent in Alaska.

  The placer mining sector also creates revenue to the State of Alaska through a number of mechanisms, including royalty payments, taxes (for example, mining license tax, corporate net income tax, and state fuels tax), annual claim rental, annual labor, and mining permit fees. Payments are also made to various state and local government departments for programs, fees, services, and local sales tax (where levied).

  Many placer mines continue to act as small family business. Survey results from the 2014 McDowell report indicate that in 2013, 27% of placer operations were only worked by a single permit holder with no additional employees; 30% of placer operations had two workers, and approximately 44% of placer operations had three or more workers. On average, 4.1 workers worked on active placer operations. Nearly half (47%) of the active placer operators with employees had at least one family member working on their claim. On average, these family-oriented operations have 1.7 family members employed.

  Approximately 68% of the facilities covered under the permit occur in the Nome area. Placer gold mining has occurred near Nome for over 100 years and has played an integral role in the economy and community development. From 1898 to 1993, an estimated 4,822,569 ounces gold were produced from stream, hillslope or colluvial, glacial, and marine strandline placer deposits throughout the area, making the Nome district Alaska's second largest producer of placer gold (Bundtzen et al. 1994). Reports estimate 3.3 million to 10 million ounces of gold remain offshore of Nome (Lasley 2011).

  DNR held a competitive sale for offshore mineral leases in Norton Sound on September 28, 2011. The lease sale conveyed a total acreage of 23,793 acres and brought in $7.6 million in

sales (personal communication, Bill Cole, Geologist, DNR, November 23, 2012). Mineral leases were purchased by a range of bidders, from local residents to global mining companies. The lease sale, increased gold prices from 2011 to 2012, and media coverage from television shows, such as Bering Sea Gold, has spurred a modern-day gold rush in the area.

As described in the DNR Final Finding and Decision for the lease sale (DNR 2011), a vibrant offshore mining industry provides jobs for Alaskans, particularly in the Nome area. A number of offshore dredgers presently live in Nome. Some currently have leases or operate on leases held by other miners. These dredgers benefit from the opportunity to operate on new leases. Mining operations also purchase significant amounts of equipment, parts, fuel, food, freight, and other services; bring business to local merchants and suppliers; and expand and diversify the local economic base.

After the 2010 opening of the West Nome Beach Public Mining Area in Nome and the 2011 offshore lease sale, the increase in mining activity brought significant economic growth to Nome. The influx of commercial and recreational mining activity has increased city tax revenue and added a new sector to Nome's seasonal tax base. A 2015 study conducted by the Department of Commerce, Community, and Economic Development (DCCED) indicates the City of Nome has seen a significant increase in tax revenue, along with increased revenue from the collection of docking permits and harbor storage fees, since the influx of miners began in 2011 (DCCED 2015). During the 2010 to 2014 timeframe, the city population remained relatively unchanged, increasing by 1.6 percent. Outside of the construction of the Norton Sound Regional Hospital, which was completed in 2012, no other large economic drivers entered the region. From 2010 to 2013, sales tax revenue increased by 21 percent, rising from $4,443,756 to $5,373,835. Total property taxes (excluding oil and gas property taxes) increased by 68 percent, rising from $1,577,427 to $2,653,922. The local bed tax increased by 25 percent, growing from $126,575 to $157,913 (DCCED 2015).

Increased offshore operations also provided revenue to the State of Alaska total from rental payments and production royalties. In 2013, total rent paid to the State on offshore mining leases and submerged land mining claims within the Norton Sound area was approximately $50,000; total production royalties were approximately $8,000 (DCCED 2015). Although resource depletion in Nome may eventually lessen recreational interest in the offshore public mining areas, the economically viable placer gold found in large offshore lease tracts is expected to sustain a long-term commercial mining industry (DCCED 2015).

As a secondary economic benefit, placer gold operations in Alaska have attracted media attention and resulted in the production of multiple cable television series. Expenditures on goods and services during production stimulate the local and statewide economy. Alaska Film Office reports, available at http://www.film.alaska.gov/reports/index.html, indicate that $984,157 in Alaska production expenses was incurred during production of Bering Sea Gold – Season 1 in 2011 and submitted to the State for tax credit approval. Production costs are not available for the following years; however, the series is now filming the fourth season. Although not all of these expenditures were necessarily spent in Alaska, it is reasonable to assume that a significant amount provided economic benefit to Alaska's economy.

The Department finds that operation and authorization of suction dredge discharges under the permit accommodates important economic and social development and that this requirement is met.

- **(B). The reduced water quality will not violate applicable water quality criteria, except as allowed under 18 AAC 70.015(a)(2).**

  Rationale: For the permit, a 500 foot mixing zone for turbidity ensures that applicable criteria are met outside the mixing zone. Moreover, suction dredging is a mobile operation, and impacts are localized and transient. See Fact Sheet Appendix A for a summary of the June 1999 final report prepared for EPA titled "Impact of Suction Dredging on Water Quality, Benthic Habitat, and Biota in the Fortymile River, Resurrection Creek, and Chatanika River, Alaska" (Prussian et al. 1999), and "Studies of Suction Dredge Gold-Placer Mining Operation Along the Fortymile River, Eastern Alaska" by the U.S. Geological Survey (USGS 1997). Monitoring in Permit Part 2.2, BMPs in Part 3.1, and annual reporting in Permit Part 4.2 will protect water quality under 18 AAC 70.240(b).

  The Department finds that the effluent limitations, monitoring requirements, and BMPs will ensure that water quality criteria are not violated and that this requirement is met.

- **(C). Resulting water quality will fully protect existing uses.**

  Rationale: Previous versions of the general permit, and other individual permits that authorize similar discharges, have authorized mixing zones for turbidity effluent limits since 1994. When compared to previous permits, the permit does not include any changes that would contribute to the discharge of lower quality wastewater.

  The Department finds that the resulting water quality will be adequate to fully protect existing and designated uses and that these requirements are met.

- **(D). The most effective and reasonable methods of pollution prevention control and treatment will be applied to all wastes and other substances to be discharged.**

  Rationale: The Department finds the most effective and reasonable methods of pollution prevention, control, and treatment are the practices and requirements set out in the permit and currently in use at these facilities. The nature of suction dredge operations allows for limited treatment options (Fact Sheet Section 5.3); therefore, mine operators must implement BMPs and adhere to effluent limitations, monitoring requirements, seasonal restrictions, and separation distance requirements to prevent and control pollution (Fact Sheet Sections 5.0 - 7.0).

  The Department finds that this requirement to address pollution prevention, control, and treatment is met.

- **(E). Wastes and other substances discharged will be treated and controlled to achieve the highest statutory and regulatory requirements.**

  Rationale: Applicable "highest statutory and regulatory requirements" are defined in 18 AAC 70.990(30) (June 26, 2003). Accordingly, there are three parts to the definition. The first part of the definition includes all federal technology-based ELGs, as found in 40 CFR Part 440 Subpart M, as adopted by reference at 18 AAC 83.010(g)(3). Pursuant to Subpart M (b), the provisions of Subpart M are not applicable to applicants under the Small-Size Suction Dredge Placer Miners GP. Therefore, as described in Fact Sheet Section 5.2, the permit does not contain technology-based effluent limits. The second part of the definition, 18 AAC 70.990(30)(B) (2003) appears to be in error, as 18 AAC 72.040 describes discharges to sewers and not minimum treatment. The correct reference appears to be the minimum treatment standards found in 18 AAC 72.050, which refers to domestic wastewater discharges only. However, because the permit does not authorize discharge of domestic wastewater, further analysis under this regulation is not necessary. The third part

includes any more stringent treatment required by state law, including 18 AAC 70 and 18 AAC 72. The correct operation of equipment, visual monitoring, and BMP implementation, as well as other permit requirements, will control the discharge and satisfy all applicable federal and State permit conditions and requirements. This achieves the highest statutory and regulatory requirements.

The Department finds that the treatment required in the permit achieves the highest statutory and regulatory requirements and that this requirement is met.

9.0 OTHER LEGAL REQUIREMENTS

9.1 Ocean Discharge Criteria Evaluation

Section 403(c) of the CWA requires that permits for ocean discharges be issued in compliance with EPA's Ocean Discharge Criteria for preventing unreasonable degradation of ocean waters. The purpose of the Ocean Discharge Criteria Evaluation (ODCE) report is to identify pertinent information and concerns relative to the Ocean Discharge Criteria and wastewater discharges.

EPA's Ocean Discharge Criteria set forth specific determinations of "unreasonable degradation of the marine environment" that must be made prior to permit issuance [40 CFR Part 125, Subpart M, as adopted by reference at 18 AAC 83.010(c)(8)]. For this permitting action, DEC is relying on 40 CFR 125.122(b) which states "Discharges in compliance with section 301(g), 301(h), or 316(a) variance requirements or State water quality standards shall be presumed not to cause unreasonable degradation of the marine environment, for any specific pollutants or conditions specified in the variance or the standard." Because the permit implements BMPs, and monitoring requirements, that ensure applicable water quality standards are being met, pursuant to 40 CFR 125.122(b), DEC determined discharges authorized under the permit not to cause unreasonable degradation of the marine environment.

9.2 Endangered Species Act

The Endangered Species Act of 1973 (ESA) was signed on December 28, 1973, and provides for the conservation of species that are listed as endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. The National Marine Fisheries Service (NMFS) is responsible for ESA administration of listed cetaceans, seals, sea lions, sea turtles, anadromous fish, marine fish, marine plants, and corals. All other species (including polar bears, walrus, eiders, and sea otters) are administered by the USFWS. The ESA requires federal agencies to consult with NMFS and USFWS (collectively referred to as the Services) if their actions could beneficially or adversely affect any threatened or endangered species. As a state agency, DEC is not required to consult with the Services regarding permitting actions. However, the Department values input from the Services and solicited comments from them on reissuance of this permit.

Prior to noticing the draft permit, DEC submitted letters to NMFS and USFWS on August 4, 2015, requesting a species list for the coverage area of the permit and providing early notice of the draft permit.

As of the Draft Public Notice on October 1, 2015, As of the Draft Public Notice on October 1, 2015, the Department has not received a response from NMFS. However, in a letter dated March 17, 2010 (personal communication, James W. Balsinger, Acting Regional Administrator, Alaska Region) regarding the 2011 permit issuance, NMFS reaffirmed the conclusions of the previous EPA consultations on the permit. At that time, NMFS concurred with the EPA determination that the proposed action would not adversely affect the following

species under NMFS jurisdiction in Alaska: blue whale, bowhead whale, fin whale, humpback whale, Northern right whale, Sei whale, sperm whale, and both eastern and western Distinct Population Segments of Steller sea lion. The letter also indicated that since the 2005 consultation between EPA and NMFS, the Cook Inlet beluga whale (*Delphinapterus leucus*) has been listed as endangered; however, the final designation of Critical Habitat had not yet been completed. A follow up email from NMFS, dated April 18, 2011, (personal communication, Katharine Savage, DVM, Office of Protected Resources) stated that critical habitat for Cook Inlet beluga whales had been formally designated on April 11, 2011.

As of the Draft Public Notice on October 1, 2015, the Department had not received a formal response from USFWS. However, in prior communications, USFWS provided a website link (http://ecos.fws.gov/ipac/) to help determine the presence of threatened and endangered species within the permit coverage area. Review of the USFWS website indicated six threatened and endangered species may occur in the statewide coverage area. Threatened species include the spectacled eider, Steller's eider, northern sea otter, and polar bear. Endangered species include the short-tailed albatross and Aleutian shield fern. Critical habitat is designated for the spectacled eider, Steller's eider, and northern sea otter. All listed species under USFWS jurisdiction in Alaska occur in remote marine or coastal areas and are unlikely to occur near most operations covered under this permit.

The general permit authorizes discharges to fresh and marine waters; however most discharges occur either in fresh waters in the interior of the state or in marine waters immediately offshore of Nome. To provide additional protections, based on past ESA coordination with USFWS, the permit 1) excludes coverage for operations in spectacled eider and Steller's eider critical habitat, 2) establishes seasonal windows for Steller's eider wintering areas, and 3) includes additional stipulations for facilities proposing to operate in northern sea otter habitat. Furthermore, the general permit retains a level of water quality protection equal to or more stringent than the prior issuance. Therefore, the Department does not anticipate adverse effects on threatened and endangered species that fall under NMFS or USFWS jurisdiction. If additional comments are submitted, DEC will consider them prior to final issuance of the permit.

9.3 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended through October 11, 1996, designates Essential Fish Habitat (EFH) in waters used by anadromous salmon and various life stages of marine fish under NMFS jurisdiction. EFH refers to those waters and substrates (sediments, etc.) necessary to fish from commercially-fished species to spawn, breed, feed, or grow to maturity. NMFS describes freshwater EFH for Alaskan stocks of Pacific Salmon as "those waters identified in ADF&G's Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fish Species … and wherever there are spawning substrates" (ADF&G 1998, NMFS 2005). Freshwater EFH applies to eggs, larval and juvenile stages, and adult salmon.

The Magnuson-Stevens Act requires federal agencies to consult with NMFS when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. As a state agency, DEC is not required to consult with NMFS regarding permitting actions. However, the Department values NMFS input and solicited comments from them on reissuance of this permit.

Prior to noticing the draft permit, DEC submitted a letter to NMFS on August 4, 2015 and provided an opportunity to submit EFH comments on the permit. To date, the Department has not received a response from NMFS. If additional comments are submitted, DEC will consider them prior to final issuance of the permit.

In streams where suction dredging occurs, the most critical life stage for salmon is the egg stage. The permit prohibits suction dredging within 500 feet of locations where fish are spawning or where fish eggs or alevins are known to exist. Additionally, permittees must obtain any necessary ADF&G Fish Habitat Permits and adhere to the seasonal restrictions within the permits. ADF&G Fish Habitat Permits limit or prohibit mining in anadromous streams while the eggs are in the gravel and during spawning periods. In freshwaters, the permit is unlikely to be used during the critical phase and if it were, the suction dredge studies, as discussed in Appendix A, have shown that the impacts of an operation are minimal after 500 feet. Therefore, the 500 foot buffer would provide sufficient protection. DEC has determined that no adverse impact to EFH in freshwaters would result from the reissuance of the permit. During the 2005 and 2011 permit issuances, NMFS concurred with EPA determinations that actions authorized by the permit would not adversely affect EFH in anadromous streams.

Most marine waters surrounding the state of Alaska have been designated EFH. During the issuance of a general permit, it is difficult to determine where facilities might be located during the life of the permit. Therefore, it is difficult to determine the potential impact on EFH. In general, suction dredges of the size covered by the permit do not operate in waters greater than 30 feet in depth, and the timing is restricted by weather, water conditions (e.g., clarity), and ice cover.

Most facilities that operate in marine waters are located in Norton Sound immediately offshore of Nome. Based on prior consultations, the area offshore of Nome is designated as EFH for red king crab (RKC), Alaska plaice, yellowfin sole, and all five Pacific salmon species with a critical period from March 1 to May 31 when RKC are near shore and spawning in conjunction with the ice edge retreat and spring plankton bloom. Due to ice cover, very few operations are expected to operate during this period. Operations that do operate under-ice are limited to water depths of 30 feet to prevent conflicts with crab fisherman that are known frequent deeper waters. If RKC mating pairs or clusters are observed, permitted operations must move to an alternate location where no crabs are observed or cease operation until the crabs move away on their own. Additionally, authorized operations must adhere to any additional seasonal limits for under-ice operations implemented by DNR.

During the 2012 and 2103 mining seasons, DEC staff collected discharge samples offshore of Nome from four suction dredges, with nozzle diameters ranging from 10 to 18 inches. All sampled operations had observed turbidity plume lengths less than 50 feet and the discharges met WQS for turbidity within ten feet of the discharge point. The relatively short plume lengths were likely due to slow currents within Norton Sound and course near-shore substrate sediments that settled quickly upon discharge. Discharges from such dredges authorized under the permit would not be expected to have adverse effects on RKC spawning or larvae.

Because of 1) the practical restrictions on depth and timing, 2) seasonal restrictions and separation requirements within the permit (Permit Part 3.0), and 3) relatively short turbidity plumes expected from near-shore operations within Norton Sound, adverse impacts to EFH in marine waters from the permit issuance are unlikely to occur.

10.0 REFERENCES

ADF&G (Alaska Department of Fish and Game). 1998. Catalog of waters important for spawning, rearing, or migration of anadromous fishes. ADF&G, Habitat Division, 6 vols., Anchorage, Alaska. Revised periodically.

Bundtzen, T. K., R. D. Reger, G. M. Laird, D. S. Pinney, K. H. Clautice, S. A. Liss, and G. R. Cruse. 1994. Progress report on the geology and mineral resources of the Nome mining district. State of Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys, Public-Data File 94-39, Fairbanks, Alaska.

Crock, J.G., L.P. Gough, R.B. Wanty, W.C. Day, B. Wang, B.M. Gamble, M. Henning, Z.A. Brown, A.L. Meier. 1999. Regional geochemical results from the analyses of rock, water, soil, stream sediment, and vegetation samples--Fortymile River watershed, east-central Alaska. Department of Interior, United States Geological Survey, Open-File Report 99-33.

DCCED (Alaska Department of Commerce, Community, and Economic Development). 2015. Nome suction dredge study. State of Alaska, DCCED, Division of Economic Development.

DEC (Alaska Department of Environmental Conservation). 2008. National Pollutant Discharge Elimination System memorandum of agreement between State of Alaska and United States Environmental Protection Agency Region 10, as amended through August 11, 2011. State of Alaska, Department of Environmental Conservation.

DEC. 2010. Interim antidegradation implementation methods, effective July 14, 2010. State of Alaska, Department of Environmental Conservation, Policy and procedure No. 05.03.103.

DNR (Alaska Department of Natural Resources). 2011. Final finding and decision: Nome offshore lease sale for locatable minerals ADL 231169. Alaska Department of Natural Resources.

EPA (Environmental Protection Agency). 1998. Alaska placer mining metals study. US Environmental Protection Agency, Office of Environmental Assessment, Region 10, EPA-910-R-98-003, Seattle, Washington.

EPA. 1999a. Alaska placer mining metals study - year two. Environmental Protection Agency, Office of Environmental Assessment, Region 10, EPA910-R-99-004, Seattle, Washington.

EPA. 1999b. Permit recommendations resulting from the EPA metals study. Environmental Protection Agency, Office of Environmental Assessment, Office of Water, Region 10, unpublished, Anchorage, Alaska.

Lasley, S. 2011. Sunken gold draws global miners to Nome. North of 60 Mining [In] Petroleum News 16 (44):3-4. http://www.petroleumnews.com/pntruncate/948275969.shtml Accessed August 2015.

McDowell (McDowell Group, Inc.) 2014. The economic impacts of placer mining in Alaska. Prepared by McDowell Group Inc. for the Alaska Miners Association, Inc., Anchorage, Alaska.

NMFS (National Marine Fisheries Service). 2005. Final environmental impact statement for essential fish habitat identification and conservation in Alaska, Appendix D: D77-D81. US Department of Commerce, National Oceanic and Atmospheric Administration, NMFS, Alaska Region, Juneau.

Prussian, A.M., T.V. Royer, and G.W. Minshall. 1999. Impact of suction dredging on water quality, benthic habitat, and biota in the Fortymile River, Resurrection Creek, and Chatanika River, Alaska. Prepared by Idaho State University for the Environmental Protection Agency, Region 10, Seattle, Washington.

USGS (United States Geological Survey). 1997. Studies of suction dredge gold-placer mining operation along the Fortymile River, Eastern Alaska. Department of Interior, USGS, Fact Sheet 154-97.

Wanty, R.B., B. Wang, J. Vohden, P.H. Briggs, and A.H. Meier. 1999. Regional baseline geochemistry and environmental effects of gold placer mining operations on the Fortymile River, eastern Alaska. Department of Interior, United States Geological Survey, Open-File Report 99-328.

APPENDIX A. SUMMARY OF SUCTION DREDGE STUDY

The U.S. Environmental Protection Agency (EPA) commissioned a suction dredge study that was conducted on the Fortymile River in 1997 and 1998 by Idaho State University (Prussian et al. 1999). Two sites were chosen, Site 1 in the vicinity of a ten inch suction dredge, and Site 2 in the vicinity of an eight inch suction dredge. The United States Geological Survey (USGS) also conducted studies in the same area (Crock et al. 1999, USGS 1997, Wanty et al. 1999).

The studies demonstrated that the primary effect of dredging on water chemistry was increased turbidity, total filterable solids, and copper and zinc concentrations downstream of the dredge.

The turbidity plume was visually dramatic at Site 1; however, spatially confined to less than 525 feet. At 100 feet downstream, the turbidity values were reported at 19 Nephelometric Turbidity Units (NTU) which, with background levels reported at 2.2 - 2.3 NTU, would exceed the Alaska Water Quality Standard (WQS) of 5 NTU above background. However, at 200 feet downstream from the dredge, the turbidity values were 3.7 NTU, which is 1.4 - 1.5 NTUs above background and well within the WQS and the permit requirements. The USGS report states that the turbidity values for Site 2 were less than Site 1. In their study, USGS attributes higher turbidity for Site 1 to the increased volume of the larger dredge and the finer material being mined. It should be noted that even with these adverse conditions, the 10-inch dredge was well within compliance with the discharge requirements of the EPA-issued National Pollutant Discharge Elimination System (NPDES) permit.

As the sediments were transported downstream, the total copper and zinc concentrations declined. Within 262 feet downstream of the dredge, copper and zinc concentrations were similar to those measured upstream of the dredge. The USGS report found that, based upon chemical and turbidity data, any variations in water quality due to suction dredging activity fell within the natural variations in water quality.

In general, the observed decrease in water clarity was unlikely to have altered ecosystem function in the area of the Fortymile River where the dredge was located. There also did not appear to be any downstream influence on bed morphology by dredged sediments, indicating that dredging had little effect beyond the substrates immediately adjacent to the dredged area. Based on observations made in both studies, it appears that the dredge piles at the examined locations will remain in place no longer than one to three years and in many cases the stream channel will return to its pre-dredge condition in one year.

As with water clarity, the effect of suction dredging on macroinvertebrate abundance and diversity was confined spatially to a relatively small area downstream of the dredge. Both abundance and diversity were notably reduced for 33 feet downstream of Site 1, with similar occurrence at Site 2. Within 262 feet, both streams appeared to be unaffected by the dredge plumes. The results from 1998 indicate that substantial recovery of the macroinvertebrate community occurs within one year after suction dredging ceases, and that the effects of suction dredge mining on macroinvertebrates are local and short lived.