

Michael Wells

Hello,

Please find attached comments from the Valdez Fisheries Development Association Inc., regarding draft changes to AKG130000 Aquaculture Facilities in Alaska General Permit. Thank you for the opportunity to provide comment.

Sincerely

Mike Wells  
Executive Director

VALDEZ FISHERIES DEVELOPMENT ASSOCIATION, INC.  
SOLOMON GULCH HATCHERY

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(907) 835-4874 Fax (907) 835-4831 Mike.Wells@valdezfisheries.com



January 31, 2023

Alaska Dept. of Environmental Conservation  
Wastewater Discharge Authorization Program  
Attn: Anne Weaver  
555 Cordova Street  
Anchorage, AK 99501  
anne.weaver@alaska.gov

RE: VFDA Comments for the AKG130000 Aquaculture Facilities in Alaska General Permit

Dear Ms. Weaver,

The Valdez Fisheries Development Association Inc., (VFDA) owns and operates the Solomon Gulch Hatchery (SGH) located in Valdez, Alaska. The success of our fisheries enhancement programs depends on a pristine aquatic environment. As one of the larger hatcheries in the state, we strive to ensure that our salmon culture and rearing operations are clean, efficient, and conducted with minimal impact to the environment. Given these considerations, we have reviewed the proposed changes to the AKG130000 Aquaculture Facilities in Alaska General Permit and offer the following comments, questions, and recommendations for the department's consideration.

VFDA submitted comments on October 13, 2022, in response to the comment period provided for the AKG130000 APDES Preliminary Draft Permit. We would like to thank the ADEC for its consideration of those comments, and those of other Alaska hatchery operators, and ADEC's willingness to address areas of concern that we found burdensome or problematic.

After reviewing the draft AKG130000 Aquaculture Facilities in Alaska General Permit, released for public comment on December 21, 2022, VFDA provides these additional comments on items that remain of significant concern for hatchery operators. Specifically, we provide comment on the following:

### **1.5 Notification of Intent Requirements**

1.5.6 – The facility must comply with current regulatory engineering plan review and approval requirements of 18 AAC 72.

Comment: As stated in our previous comments, we find this item requires further clarification by ADEC so that operators will know the expectations of ADEC to comply with Section 1.5.6. To the best of our knowledge, ADEC has not required previous submittal of engineered drawings of hatchery non-domestic waste water systems for ADEC approval.

We respectfully request responses to the following questions:

- Because this is a new requirement, how does ADEC intend to address existing facilities and systems?
- Is it the intent of ADEC to implement this requirement retroactively, and should operators plan for renovations on existing systems?

- Will ADEC grant a grandfathering of existing systems moving forward?
- 18 AAC 72.600. Application for department approval 6. (e) states that plans must be submitted within 90 days of construction. Is there a time limit by which the ADEC must render its findings of engineering plans it reviews?

Our primary concern is that this regulation may be used to investigate or require modifications to existing non-domestic systems that were constructed using state and local building codes at time of construction. In addition, we are concerned with the undefined response time for returning review and approval findings, and its effect on construction schedules for planned projects.

### **3.2 Flow Through and Recirculating Facilities**

#### **3.2.1. - Effluent Monitoring**

Comment: VFDA appreciates ADEC's efforts to eliminate unnecessary sampling, which reduces monitoring and cost burdens for hatchery operators; particularly, when data collected over the previous permit cycle has shown that such monitoring shows little environmental impact. Concerning the requirements to monitor pH, as provided in comments to ADEC Commissioner Brune in November of 2022, there appears to be conflicting information on the importance of this monitoring, and it appears that pH is of little concern to the Environmental Protection Agency for the permitting of other hatchery facilities outside of Alaska.

ADEC's proposed solution for effluent readings outside of the 6.5 to 8.5 AWQS, either occasionally or as a cause of naturally occurring influent conditions, is to provide hatchery operators the ability to apply for mixing zones. VFDA does not consider this an effective resolution to hatchery operators concerns because it adds significant additional monitoring requirements for what may truly be of insignificant impact to the environment. We would urge ADEC eliminate the requirement to monitor pH altogether.

- We respectfully request ADEC provide its reasoning for requiring effluent monitoring for pH by salmon aquaculture facilities when the EPA does not.

### **3.3 Net Pen facilities**

Comment: VFDA appreciates that ADEC has permitted additional time, up to 60 days after the last release of aquatic animals, to assess the benthos under hatchery net pens. This greatly improves our ability to schedule a dive contractor to conduct this work. However, we still have questions as to why this is required, particularly after five years of data has been gathered under the previous permit cycle showing little, if any, long term impact to the environment, particularly for net pen rearing locations in deep water.

VFDA is one of the largest production hatcheries in Alaska, raising to release nearly 250 million juvenile Pink and Coho salmon each year. Over the last permit cycle, from 2018 – 2022, VFDA conducted annual visual assessments of the seafloor using a Remote Operated Vehicle (ROV) at a cost of \$4300/day. These formal findings are submitted to ADEC each year in our Annual Reports. Over this five-year period of bottom assessment, it was found that some organic residue from hatchery operations was detectable immediately within 15 days of release of our salmon. However, no residue was found to be accumulating from year to year. It should be noted that VFDA has conducted rearing operations in the same area for nearly 40 years. In this span of time, permitted capacity has increased from 50 million to 270 million green eggs. In addition, brood stock carcasses from annual egg takes were ground and discharged in the same approximate area. Note: VFDA currently markets all brood stock carcasses to pet food manufacturers, eliminating this practice. In spite of this previous discharge activity, no level of detectable long-term residue accumulation exists, or has produced any large areas of benthic bacterial or fungal matting, which would have degraded the benthic environment under the next pens at SGH.

ADEC approved a waiver from the requirement to conduct bottom assessments at SGH in 1994. This waiver remained in effect under AKG52000 General Permit until 2018, see attachment A. It was determined by ADEC at that time that the depth of water and the presence of strong currents at the hatchery site would quickly disperse any residues generated from such short intervals of activity, and likely contributed to the prevention of accumulation over time. This waiver was denied to VFDA with the implementation of AKG130000. Given these factors, VFDA would request clarification from ADEC on the following:

- We respectfully request ADEC provide its reasoning why it will not permit hatchery operators, who can reasonably demonstrate that the effects of hatchery net pen operations do not create a long-term impact on the marine environment, the pathway to receive relief from annual benthic surveys.
- We respectfully request ADEC provide its reasoning why it does not consider Alaska salmon hatcheries exempt under the EPA CAAP Effluent Guidelines Subpart B Net Pen Category 451.20 Applicability, which states:

*“This subpart applies to the discharge of pollutants from a concentrated aquatic animal production facility that produces 100,000 pounds or more per year of aquatic animals in net pen or submerged cage systems, except for net pen facilities rearing native species released after a growing period of no longer than 4 months to supplement commercial and sport fisheries.”*

We would argue that this same exemption should apply to wild Alaska salmon of hatchery origin because they are considered by the State of Alaska to be a native species. Alaska hatchery operators do release salmonids after a growing period of no longer than 4 months in salt water, and finally these fish are propagated to supplement commercial and sport fisheries of Alaska.

Further, VFDA would reference that ADEC itself petitioned the EPA in 2003 in a letter (attachment B) from Tom Chappel Director of the Division of Air and Water to Marta Jordan of the EPA requesting that:

*“The EPA CAAP guidelines exclude Alaska net pens that are part of the rearing phase of non-profit salmon hatcheries. This exclusion recognizes the site-specific conditions in Alaskan waters. DEC recommends that all flow-through hatcheries in the state also be exempted from these guidelines or that EPA revise the guidelines to include a separate subcategory for Alaskan hatcheries”.*

- We respectfully request ADEC provide clarification why it no longer considers hatchery net pen sites of little impact to the marine environment, which it had previously for nearly three decades, and in consideration that its findings may be inconsistent with current EPA guidelines?

### **6.3 Zone of Deposit**

Comments: Again, VFDA appreciates that ADEC has permitted additional time, up to 60 days after discharging at least 30,000 pounds of ground waste or feeding at least 5,000 pounds at a net pen site to conduct seafloor surveys. However, VFDA has significant concerns with ADEC’s new proposed sea floor monitoring requirements for Zones of Deposit (ZOD) at hatchery net pen sites. These new requirements, which have not previously been part of the AKG1300000 permit, will introduce significant costs for most operators to comply. In addition, we make the argument that these new regulations are unnecessary, in many instances will not provide any new information, are increasingly burdensome, and expensive.

For reasons stated in our comments to Section 3.3 above, annual feeding of juvenile salmon at hatchery net pen sites poses little impact to the marine environment. That has been our observation through the last permit cycle at SGH, which feeds up to 150,000 pounds of feed annually. This is due in large part to the effectiveness of our feed conversion ratios and efficiencies that minimize feed waste. In addition, the net pen site is located in waters that range from 60-180 feet of depth and experience currents of up to 1.5 knots. I would also bring to your attention that since 2013, VFDA has only ground and disposed of approximately 1,350 pounds of brood carcasses and approximately 34,000 pounds of seafood processing waste; well within the annual threshold limit of 30,000 pounds of discharged ground waste. VFDA produces up to 1.5 million pounds of brood carcasses annually, which as we stated above are sold to various pet food producers, eliminating the need to discharge. VFDA has conducted robust benthos assessments around its pen complex most recently from 2018-2022. These professional, annual, third-party assessments have found no long-term accumulation of harmful materials.

The new mandatory ZOD seafloor monitoring requirements will be very expensive to conduct. VFDA received a quote from Global Diving in January of this year (attachment C) to conduct a seafloor assessment as per section 6.3.3 through 6.3.3.2.3. The cost estimate is approximately \$80,000 to conduct a preliminary survey for one day. However, if any residues are found this cost can possibly escalate to approximately \$160,000 due to the complexity of the required grid survey protocol. These estimates are based upon the use of an ROV. If divers are required to conduct this survey the cost will be even higher due to the depths and required decompression cycles for diver safety requirements. VFDA's primary concern is with the costs to perform the required surveys, as per Table 3 Seafloor Surveying Schedule. In addition, we have serious questions regarding the validity of the requirement itself, given that the 40-year history of operations at SGH have not created any measurable areas of deposit requiring the need for such monitoring. VFDA supports the implementation of monitoring where the risk to the environment is sufficient to require it. However, forcing the hatchery operator to bear the cost to conduct an initial survey for the permit cycle when no ground waste has or is anticipated to be discharged is wrong. The costs to comply with these new seafloor monitoring requirements may likely force VFDA to relinquish its ZOD in future NOI applications. For these reasons, VFDA respectfully requests responses to the following questions:

- We request ADEC provide its reasoning why it does not recognize prior, recent bottom surveys as sufficient confirmation of seafloor conditions of hatchery ZOD's, instead choosing to require a new mandatory bottom survey upon for the initial year of permit coverage.
- We would request ADEC provide its reasoning why it does not provide similar accommodations to aquaculture facilities for seafloor monitoring it provides on-shore seafood processors under the AKG521000 Onshore Seafood Processors General Permit.
  - It would appear that within Section 2.3.5.1., a permittee may request alternative protocols and methodology to conduct seafloor surveys.
  - Under Section 2.3.5.5.1, a permittee can provide rationale why a seafloor survey cannot be conducted within the 60 day timeline after last discharge due to weather or delayed surveyor services.
  - Under Section 2.3.5.6.1, a permittee may submit a written request to reduce the seafloor monitoring requirements under Section 2.3.5.6.1.1, when a permittee can include the results of at least two seafloor surveys conducted at the same actual single discharge location from different operating years, and each survey demonstrates deposits of less than 0.25 acres of coverage.
- We would request that ADEC provide its reasoning why it does not simply limit the requirement for seafloor monitoring to whether a hatchery operator discharges ground fish waste or not.

- Ground fish waste from brood stock is a larger impact to the environment; residue for net pen rearing has not shown to be.
- We request ADEC provide its reasoning why it requires ZOD seafloor surveys for hatchery rearing programs that feed at least 5,000 pounds at a net pen site.
  - This becomes an automatic seafloor survey requirement, regardless of prior findings, or even when the operator has no ground waste discharge above the 30,000 pounds threshold.
  - We would recommend that the 5,000 pounds feed threshold be removed as a condition of monitoring.
- We request that ADEC provide its reasoning why it no longer provides a pathway for site specific exemptions or waivers on a case by case basis, particularly when natural conditions prevent the long-term accumulation of residues on the seafloor.

In closing, we understand the need for monitoring of industries that discharge into the marine environment. However, Alaska's salmon aquaculture programs have shown to be exceedingly clean, and because of our need for a pristine environment to raise fish, to be good stewards of that environment. VFDA would like to thank the ADEC for the opportunity to provide comment on this new permit and its willingness to work with hatchery operators to address our concerns. We look forward to working further with the State of Alaska to achieve a permit authorization that protects the environment and works for the hatchery operators.

Sincerely,



Mike H. Wells  
Executive Director

# STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

## DEPT. OF ENVIRONMENTAL CONSERVATION

SOUTHCENTRAL REGIONAL OFFICE  
3601 "C" STREET, SUITE 1334  
ANCHORAGE, AK. 99503

269-7500  
(907) 563-6529  
Fax 562-4026

CERTIFIED MAIL  
RETURN RECEIPT  
REQUESTED  
P 875 882 914

August 15, 1994

Ken Morgan, Mgr.  
Solomon Gulch Hatchery  
P.O. Box 125  
Valdez, AK. 99686

Dear Mr. Morgan:

Subject: Solomon Gulch Hatchery Fish Waste Outfall  
ADEC Permit 9240-DB006-2M

I have reviewed your proposal to install an outfall at your hatchery for the discharge of ground fish waste. The plan is approved in accordance with Part 4.b.1. of the general permit. The requirement for a bottom sampling plan is waived at this time since there is no expectation that there will be any long term accumulation of fish waste on the marine bottom based on the discharge location and the strong currents in Valdez Arm. All fish waste must be ground to a maximum of 1/2 inch in any dimension.

If you have any further questions concerning this matter, please contact me at 563-6529.

Sincerely,



Robert Dolan  
Wastewater Program Manager

RD/ji (SCRO/DWW) 924-6-2m.let

# STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

**DEPT. OF ENVIRONMENTAL CONSERVATION  
DIVISION OF AIR AND WATER QUALITY  
DIRECTOR'S OFFICE**

555 Cordova Street  
Anchorage, AK 99501-2617  
PHONE: (907) 269-7634  
FAX: (907) 269-3098  
<http://www.state.ak.us/dec/>

January 27, 2003

**CERTIFIED MAIL # 7099 3400 0016 8434 6231  
RETURN RECEIPT REQUESTED**

Marta Jordan  
Office of Water, Engineering and Analysis Division  
Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

RE: Proposed changes to 40 CFR Part 451 "Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category" DOCKET NO. W-02-01.

Dear Ms. Jordan

The Alaska Department of Environmental Conservation (DEC) reviewed the proposed effluent guidelines for Confined Aquatic Animal Production (CAAP guidelines) published September 12, 2002 [*Federal Register, Volume 6, Number 177*]. The department offers the following background information and recommendations regarding the application of the CAAP guidelines to Alaskan operations.

Finfish farming is prohibited by state law in Alaska to protect native salmon and other species. The CAAP guidelines recognize Alaska's unique aquaculture program. Alaskan CAAP facilities rear fish for juvenile stage release and do not bring fish to adult stage for marketing and direct human consumption. Therefore, the proposed effluent guidelines will only affect the 32 hatcheries in the state. Fish reared in Alaskan flow-through, raceway type facilities include all five species of Alaskan wild salmon, as well as steelhead, rainbow trout, char and grayling.

The main purposes of the hatchery program in Alaska are to: 1) stock lakes and streams for recreational fishing and 2) enhance runs of sport, subsistence and commercially caught salmon. Most Alaskan hatcheries are non-profit operations. Two are state-owned and operated by the Alaska Department of Fish and Game (ADF&G). Two are federal research facilities operated by the National Marine Fisheries Service (NMFS).

The intent of the proposed CAAP effluent guidelines is reduction of conventional pollutants (TSS, BOD, and pH for example), non-conventional pollutants (nutrients such as phosphorus) and toxic substances released into the waters of the United States. Another goal is closer

*Clean Air, Clean Water*



regulation of drugs and chemicals used in aquaculture operations. Proposals for preventing invasions of non-indigenous aquatic species are also described. The department shares EPA's goals for pollutant reduction in U.S waters. These proposed effluent guidelines, however, will not significantly improve Alaska's waters because wastewater permits are already in place for Alaska hatcheries.

EPA Region 10 has not issued an NPDES permit for hatcheries in Alaska to which these guidelines would apply. Although Alaska is not an NPDES-delegated state, DEC issues state permits for discharges that are considered "minor" by EPA Region 10. To ensure that fish hatcheries are not polluting state waters, the department issued a general permit (Permit No. 9640-DB005, attached) in 1996 for hatchery operations. Salient requirements of this permit include:

- Monitoring of flow rates, pH, total suspended solids (TSS), settleable solids, and bottom sampling under rearing pens;
- Submission of lists of any medications, drugs, disease control chemicals and disinfectants plus information on their use. Submission of the manufacturers' Material Safety Data Sheets for these substances.
- Prohibition of discharge of any non-natural substances causing visible sheen (e.g., from oil and grease) or other surface residue and debris.  
No violation of Alaska State Water Quality Standards
- Provisions for treatment, disposal and monitoring of domestic wastewater if the facility is remote and includes a sanitary treatment plant.  
Requirements for disposal of fish carcasses.

Only two of the Alaskan hatcheries in the state, both located in Anchorage, discharge to fresh water. Their locations in Alaska's only metropolis ensure scrutiny by State inspectors and by the public since they are also tourist attractions. Most remote hatcheries are located at tidewater where nearby freshwater is available for intake, used in hatchery operations, and then discharged to marine waters. Discharge is by way of outfall pipes at depths that allow effective mixing of effluent plumes. The large amplitude tides and fast currents in many marine waters result in high flushing rates and dilution. In fact, many EPA-permitted POTWs in the state, including the largest one in Anchorage, operate with primary treatment because of rapid dispersal of pollutants.

Alaskan flow-through hatcheries are not rearing fish to market size, but release them as smolt. This reduces food consumption and keeps feces production low. Most facilities operate seasonally or reduce operations during winter months. These facilities discharge to high quality waters with few, if any, downstream users or any upstream activities degrading water quality.

These waters tend to be low nutrient, high dissolved oxygen waters. Because there is little human activity near many of the hatcheries, nutrient loading from agricultural runoff, POTWs, CAFOs or other sources is negligible. Recent studies show that much of the nutrient cycling in the creeks and rivers of coastal Alaska is the result of spawned out and decomposing salmon.

DEC reviewed seven years of TSS and settleable solids data from a typical seasonal hatchery during normal and cleaning operations (data attached). Outfall TSS concentrations were at or near non-detection during normal operations. The spikes of higher TSS during ten-minute clean out operations averaged 100 mg/l, well below the end-of-pipe concentrations at most Alaskan POTWs. The proposed guidelines [page 57891] state that control of TSS is effective in controlling other pollutants present in CAAP facilities wastewater. In DEC's view, Alaskan hatcheries are effectively controlling TSS in their discharges.

During 2002 inspections of hatcheries in the state (four in remote Prince William Sound locations, two in Anchorage and one in Valdez), staff noted that the use of high-quality, low residue food is standard. Overfeeding is not economical when hatcheries must ship supplies to remote locations. Feed management is a priority, and waste production from uneaten food and feces is minimized.

The EPA CAAP guidelines exclude Alaska net pens that are part of the rearing phase of non-profit salmon hatcheries. This exclusion recognizes the site-specific conditions in Alaskan waters. DEC recommends that all flow-through hatcheries in the state also be exempted from these guidelines or that EPA revise the guidelines to include a separate subcategory for Alaskan hatcheries. An Alaskan hatchery subcategory could establish Alaska-specific Best Management Practices in lieu of effluent limits since the DEC State permit already includes them. This would give guidance to EPA Region 10 and DEC if a hatchery NPDES permit is ever issued.

DEC finds the existing State permit is effective in regulating Alaska's flow-through hatcheries. The department reviewed the CAAP pollution reduction and monitoring requirements for flow-through, raceway rearing systems. The retrofitting of facilities that produce more than 100,000 pounds to meet these requirements would not bring appreciable benefit to water quality in the state. These facilities are remotely situated in areas that experience few, if any, other man-made sources of TSS to impair state waters.

Constructing settling basins or other treatment works for solids removal would impact additional coastal land, require shipping of construction materials to remote sites, and would require a land disposal site for solids and sludge. The negligible TSS removal would require other environmental tradeoffs. The costs of retrofit would be prohibitive and would likely cause many of these facilities to shut down. Any proposed, larger hatcheries in the state would also find costs to meet New Source Performance Standards a disincentive for construction and operation.

These proposed guidelines would also address control of non-indigenous species and potential escapes from CAAP facilities. As previously mentioned, no non-native finfish species are reared in Alaska. Other federal agencies such as USF&W and NMFS appear to be more appropriate federal agencies than EPA to oversee regulations on non-native species. Similarly,

it is our understanding that the FDA has a process in place to oversee the use of medications and drugs at hatcheries.

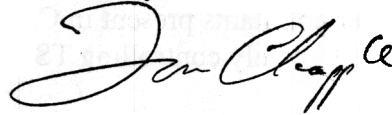
Ms. Marta Johnson

-4-

January 27, 2003

Thank you for the opportunity to respond to the proposed CAAP guidelines. Please refer any technical questions on these comments to Sharmon Stambaugh, Industrial Wastewater permits @ 907.269.7565 or [Sharmon\\_Stambaugh@envircon.state.ak.us](mailto:Sharmon_Stambaugh@envircon.state.ak.us).

Sincerely,



Tom Chapple  
Director

Enclosure:

ADEC General Permit No. 9640-DB005  
Hatchery Wastewater Sampling Data

cc. Alaskan Hatchery Operators  
Nancy Sonafrank, DEC Water Quality Standards  
Glenn Haight, DCED Fisheries Development  
Steve McGee, DF&G/Comm. Fish



**GLOBAL**  
a MER company

January 5, 2023

**Estimate Number:** 22AKRO091

**Customer:** Valdez Fisheries Development Association

**Project:** ZOD Bottom Survey

Global Diving & Salvage, Inc. is pleased to provide this estimate for ZOD -ROV Inspection of the Valdez Fisheries Development Association's (VFDA) authorized ZOD. This estimate is based upon email correspondence and phone conversations regarding updated permitting requirements. Based on discussion and email correspondence this estimate provides costs for the following scope of work; Global to provide equipment, personnel and expertise to conduct a survey of a 200'x200' square area centered on the provided permit coordinates of 61.08936, -146.29828 with survey data points every 50 ft transect. (25 data points) full survey only required, if residue deposits are found at the offal outfall. If a full survey is required, at each sample point the following would be reported:

- Still image representation of residue deposits, showing a 3ft x 3ft area
- Description of types of deposits and/or bacterial mats observed, with the percentage of seafloor covered if noted.
- Determine the residue deposit maximum thickness, measured to the nearest 0.5 inch.
- Report any anoxic conditions, identifying if gas is being released from undisturbed deposits or if released when disturbed by measuring thickness.

Global to provide written report of findings, including positional data, images, and video of the survey completed.

In order to effect the described scope of work, Global to provide the following:

- A three man Remote Operated Vehicle Team, consisting of a ROV Supervisor, Pilot and Technician
- A SAAB Falcon DR with digital recording capabilities.
- Third Party USBL Navigation equipment and Navigator/Technician, to provide survey level positioning data of survey area and vehicle position.
- Local Charter Vessel as a work platform for deployment of the vehicle and to conduct operations from.

ROV Survey Inspection	Units	Unit Description	Total
<b>Mobilization/Demobilization:</b> Provides for all labor, lodging, travel, cargo, air fare and other mobilization expenses to complete the work. Includes deliverable report and video.	1	Lump Sum	\$ 63,100.00
Provides vessel, SAAB Falcon DR ROV, labor, lodging, and per diem for the ROV crew to conduct the ZOD survey..	Est. 5 Day	\$ 16,281.00/ weekday	\$ 81,405.00
	Est. 1 Day	\$ 17,522.00/ weekend day	\$ 17,522.00
<b>Estimated Project Total</b>			<b>\$ 162,027.00</b>

<b>On Site Standby:</b> Rate provided for any unforeseen delays, such as adverse weather, or logistical delays in which the crew would be in mobilized at location and unable to conduct operations. *Note any directed work onsite is to be considered an operations day and invoiced as such.	<b>\$ 13,242.00 per day</b>
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Owner to provide the following:

- To provide unrestricted access to the required work site

Notes/Terms

- This estimate is based on a single mobilization to conduct all requested operations. The durations are estimated to conduct the full survey, should no deposits be found, it is Globals understanding that a full survey is not required and that an inspection of the outfall and the area at the end should be conducted and report generated indicating that no deposits were observed.
- All rates are based on a 12-hour operational day; Any additional hours worked beyond 12-hours at the clients request to be invoiced at the \$1,222.00/hour.

- Standby rates have been provided for any circumstances beyond Global's direct control, such as weather or other access issues. Rates include minimum labor requirements and reductions in equipment.
- Estimate includes all expected expenses based on the described scope of work, any additional unforeseen expenses to be invoiced at cost plus 10%.

This estimate is good for 30 days.

Regards,  
Bernie Rosenberger  
Operations Manager, Alaska