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Is this a deviation from Contract Documents (Yes/No)? No

CQCSM Verification:

- Review by CQCSM not performed/required
- (a) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown (no exceptions), and the submittal is required by the Contract Documents.
- (b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (list deviations; attach a separate sheet as necessary), and the submittal is required by the Contract Documents

CQCSM Signature: Jim Page - CQCSM 02-02-2021

Owner's Representative Review:

- No Exceptions Taken
- Exceptions Noted
- Revise and Resubmit
- Rejected
- Review Not Required

Notes (additional notes/comments may be attached):

Owner's Representative Signature: _____

Corrections or Comments made relative to submittals during this review do not relieve the Contractor from compliance with the requirements of the Drawings and Specifications. This submittal is only for review of general conformance with the design concept of the Project and general compliance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of other trades; and performing his work in a safe and satisfactory manner.

Port of Alaska Modernization Program Petroleum and Cement Terminal - 2020 Construction

Monthly Marine Mammal Monitoring Report

1 November to 30 November 2020

Prepared for

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The logo consists of the number '61' followed by a vertical bar and the letter 'N', all in a dark blue font. The logo is positioned in the bottom right corner of the page, which has a teal background.

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Acronyms and Abbreviations

61N	61 North Environmental
ESA	Endangered Species Act
HDR	HDR, Inc.
IHA	Incidental Harassment Authorization
ITS	Incidental Take Statement
MMO	marine mammal observer
MOA	Municipality of Anchorage
NEX	North Expansion
NMFS	National Marine Fisheries Service
PAMP	Port of Alaska Modernization Program
PCT	Petroleum and Cement Terminal
POA	Port of Alaska
PPM	Pacific Pile and Marine
PW	Point Woronzof
SC	Ship Creek

1 Introduction

The National Marine Fisheries Service (NMFS) issued the Port of Alaska (POA) an Incidental Harassment Authorization (IHA) under the Marine Mammal Protection Act on 31 March 2020, effective 1 April 2020 for construction of the Petroleum and Cement Terminal (PCT) (NOAA 2020a) as described in the Federal Register, Volume 85, Number 66, page 19294 (NMFS 2020; 85 FR 19294). NMFS also completed a consultation under Section 7 of the Endangered Species Act (ESA) and issued a biological opinion of the effect the project may have to threatened and endangered species. NMFS issued an incidental take statement (ITS) under the ESA that mirrors and complements the IHA for ESA-listed species.

The PCT is a component of the Port of Alaska (POA) Modernization Program (PAMP). The Municipality of Anchorage (MOA) owns the POA and is the PCT project owner. Pacific Pile and Marine (PPM) is the prime contractor for PCT construction work in 2020 and 61 North Environmental (61N) is a subcontractor to PPM. The MOA contracted with CH2M Hill, Inc. (now a subsidiary of Jacobs Engineering Group) and HDR, Inc. (HDR) to provide permitting and compliance services for the PCT project.

The IHA and ITS require implementation of mitigation measures such as shutdowns and delays of pile installation or removal during construction of the PCT to reduce the impacts to protected marine mammal species. Beginning on 27 April 2020, 61N deployed eleven marine mammal observers (MMO) to four observation locations near the POA to monitor the waters of lower Knik Arm in Upper Cook Inlet. During the month of November 2020, the MMO team was prepared and available to work every day from 1 November to 25 November (except Veteran's day) but conducted monitoring for 19 days. The final day of in-water work was 24 November. In-water work was planned for the afternoon of 25 November, but by the time MMOs mobilized to begin watch, PPM determined they would not be removing piles in-water, and the MMOs instead removed and stored equipment.

The MMOs assist PPM in implementation of the mitigation measures by alerting the construction crew when marine mammals are within or approaching harassment zones. Typically, the MMOs communicate with PPM superintendents and foreman by radio and mobile phone. The MMOs document in-water construction activities including pile installation and removal, vessel traffic, anchor handling, and other relevant activity; sightings of marine mammals, group composition, behaviors, and location; and environmental and visibility conditions. All observation stations are equipped with laptops and high-speed data connections. All data is entered into Microsoft Access forms, and saved instantaneously to a cloud-hosted SQL server.

This report contains descriptions and summaries of the preliminary data collected including monitoring effort and environmental conditions, in-water operations and pile work completed,

mitigation measures implemented, marine mammal species present and behavioral observations, and potential exposures or takes of marine mammals.

2 Monitoring Effort and Environmental Conditions

The waters of lower Knik Arm in upper Cook Inlet, Alaska near the PCT are monitored from four observation stations: near Point Woronzof (PW), at Ship Creek (SC), at the PCT, and at the North Expansion (NEX) of the POA (Figure 1).



Figure 1 - Observation Stations and the In-bound (white line) and Out-bound (green line) Pre-Pile Driving Clearance Demarcation Lines

The PCT station is staffed by two MMOs including the field lead. The PCT station monitors marine mammal activity near the PCT, pile driving and removal, other in-water activity, and the harassment and shutdown zones near the PCT. The NEX, SC, and PW stations are staffed by three MMOs each, rotating between duties including: scanning with 7X50 binoculars or unaided eye, scanning with the 25X150 “big eye” tripod mounted binoculars (NEX and PW) or 20X/40X tripod mounted binoculars (SC), and a data collection/rest shift in a data shack.

Each morning, pre-clearance monitoring begins when all three of the large binoculars are set up and active scanning has begun at all four stations. The monitoring ends approximately 10 hours after the start time unless additional time is required by construction activities. MMOs are afforded a 15-minute break (or combination of smaller breaks) in the morning and again in the afternoon. They also take an unpaid half-hour lunch break. The lunch breaks typically occur between 11:30 and 13:00 but may be taken earlier or later if there is an active sighting or planned in-water activity, or both.

Monitoring Effort

Observation hours are summarized on a project level, a per-station level, and a per-MMO level. The project-level observation hours are calculated as the duration between the beginning of pre-clearance and the end of observations each day. Observations generally end at a scheduled time (17:15), unless in-water activity occurs late in the day, and the 30-minute post pile driving monitoring period extends past the scheduled shift. The station-level hours are calculated based on the project hours multiplied by four stations. Actual station start times may be a few minutes earlier because pre-clearance does not begin until the last station reports the start of monitoring. The MMO observation duration is calculated by multiplying the project-level hours by seven “on watch” MMOs, subtracting break periods (30-minute lunch, and a 15-minute break each morning and afternoon). In practice, breaks are typically taken during the data collection rotation, and the actual total “on watch” hours may be greater than estimated.

During the month of November 2020, observations occurred on 21 of the 30 days in the month. No in-water work was conducted on days were observations were not conducted. The monthly observation hours are presented in Table 1.

Table 1 - Observation Effort

Date	Begin Time	End Time	Project Observation Hours	Station Observation Hours ¹	MMO Observation Hours ²
11/1/2020	7:59	14:06	6.12	24.5	35.8
11/2/2020	n/a	n/a	n/a	n/a	n/a
11/3/2020	7:54	17:41	9.78	39.1	61.5
11/4/2020	7:56	17:06	9.17	36.7	57.2
11/5/2020	7:58	14:25	6.45	25.8	38.2
11/6/2020	12:38	17:16	4.63	18.5	28.9
11/7/2020	n/a	n/a	n/a	n/a	n/a
11/8/2020	8:15	15:31	7.27	29.1	43.9
11/9/2020	8:09	16:38	8.48	33.9	52.4
11/10/2020	n/a	n/a	n/a	n/a	n/a
11/11/2020	n/a	n/a	n/a	n/a	n/a
11/12/2020	8:17	16:34	8.28	33.1	51.0
11/13/2020	8:08	17:15	9.12	36.5	56.8

Date	Begin Time	End Time	Project Observation Hours	Station Observation Hours ¹	MMO Observation Hours ²
11/14/2020	8:08	13:34	5.43	21.7	34.5
11/15/2020	10:22	15:43	5.35	21.4	34.0
11/16/2020	8:12	16:38	8.43	33.7	52.0
11/17/2020	8:16	13:34	5.30	21.2	33.6
11/18/2020	8:24	16:13	7.82	31.3	4 7.7
11/19/2020	8:18	15:18	7.00	28.0	42.0
11/20/2020	n/a	n/a	n/a	n/a	n/a
11/21/2020	8:30	13:34	5.07	20.3	32.0
11/22/2020	8:37	15:33	6.93	27.7	41.5
11/23/2020	8:40	13:00	4.33	17.3	26.8
11/24/2020	9:04	16:03	6.98	27.9	41.9
11/25/2020	n/a	n/a	n/a	n/a	n/a
11/26/2020	n/a	n/a	n/a	n/a	n/a
11/27/2020	n/a	n/a	n/a	n/a	n/a
11/28/2020	n/a	n/a	n/a	n/a	n/a
11/29/2020	n/a	n/a	n/a	n/a	n/a
11/30/2020	n/a	n/a	n/a	n/a	n/a
Total Hrs Observation:			131.95	527.80	811.65
Notes: ¹ equals project hours X 4 Stations					
² equals project hours X 7 MMOs “on watch” minus breaks					
n/a = No in-water pile installation or removal was conducted, and no marine mammal monitoring occurred.					

Environmental Conditions

MMOs at each station typically record the environmental conditions upon station setup and every half hour throughout the day. MMOs also make additional entries for major changes in weather and to record other relevant activity that is not related to PCT construction (i.e. dredge vessel, private vessel, etc.). All observations are conducted during daylight hours. The environmental attributes recorded include general observation conditions (a scale of 1 to 10; 1 = poor, 5 = moderate, 10 = excellent), weather condition (cloudy, sunny, raining, etc.), light conditions (light, dark, twilight), cloud cover (percent), ice cover (percent), sea state (Beaufort scale), glare (percent), and visibility

(distance at which a white beluga could be sighted with optics). During the 19 days of observation in November 2020, MMOs recorded 1167 observations of environmental conditions.

The overall observation conditions were good for most of observation days in November, but the conditions were the worst of the 2020 season. The average observation condition was 6.1 on a scale of 1 to 10 and was 7 or greater for 51 percent of the records entered. The average visibility was over 5,000 meters, the median was 6,000 meters, and was greater than or equal to 5,000 meters for 65 percent of the observations. Visibility was 2,000 meters or less for 21-percent of the observations. This was partially due to waning daylight and observations beginning in twilight some mornings and ending at dark some evenings. Fog or snow was recorded for a combined 23.1-percent of all observations, and nearly 70-percent of observations where visibility was 2,000 meters or less. Thermal distortion was mentioned 35 times as affecting visibility at long distances. Cloud cover averaged 52 percent and exceeded 50 percent about 53 percent of the time.

Ice was observed in the study area beginning on 3 November, and persisted through the remainder of the season. The average ice cover for November was 31-percent and the median 20-percent. Ice cover was greater than 50-percent for 29-percent of the observations in November.

High winds were predicted for 2 November, preventing safe operation of the cranes; therefore, no in-water work occurred, and no observations were conducted. A summary of the predominant weather condition observed is presented in Table 2 and a summary of the Beaufort sea state observed is presented in Table 3.

Table 2. Summary of Weather Conditions

Weather Condition	Percent Occurrence¹
Sun	32.0%
Partly Sunny	5.8%
Partly Cloudy	17.5%
Cloudy	20.5%
Fog	12.7%
Mist	0.5%
Light Rain	0.3%
Rain	0.2%
Snow	10.5%

Table 3. Summary of Beaufort Sea State Observations

0	5%
1	71%
2	17%
3	3%
4	3%
>=5	1%

The tidal stages were pre-loaded into the database and are auto-populated based on the time stamp of the observation. The definitions for the tidal stages used are presented in Table 4 and a summary of tidal stages recorded is presented in Table 5.

Table 4. Tidal Stage Definitions

Tide Stage	Definition
Low Slack	Plus or minus one hour from low tide
Low Flood	Begins at the end of low slack, ends half-way between ¹ the end of low slack and the start of high slack
High Flood	Begins half-way between ¹ the end of low slack and the start of high slack, ends at the start of high slack
High Slack	Plus or minus one hour from high tide
High Ebb	Begins at the end of high slack, ends half-way between ¹ the end of high slack and the start of low slack
Low Ebb	Begins half-way between ¹ the end of high slack and the start of low slack, ends at the start of low slack
Note: ¹ “half-way between” is time-based, and may not represent the actual, physical half-way point between high and low tide on the sinusoidal tidal graph. The time-based half-way point was used to simplify the calculation of tidal stage for over 300,000 tide prediction records.	

Table 5. Summary of Tide Stages Recorded

Low Slack	15%
Low Flood	15%
High Flood	14%
High Slack	18%
High Ebb	19%
Low Ebb	19%

Wind speed, direction, and air temperature are not recorded by the MMOs as these meteorological data are available from the National Oceanic and Atmospheric Administration (NOAA) tide station 9455920 located at the POA, a few hundred meters from the PCT (NOAA 2020b). The wind speed and direction for the 19 days worked in November were downloaded in six-minute intervals from the NOAA meteorological observations page for the Anchorage, Alaska tide station 9455920 (2020b) at the times observations were conducted. The meteorological station malfunctioned for a portion of 1 November and all of 13 – 15 November and did not record the wind speed. The air temperatures in November were significantly colder than in previous months with a minimum of 5.2°F, maximum of 36.1°F, and average of 20.8°F. The wind data are summarized and presented in Figure 2.

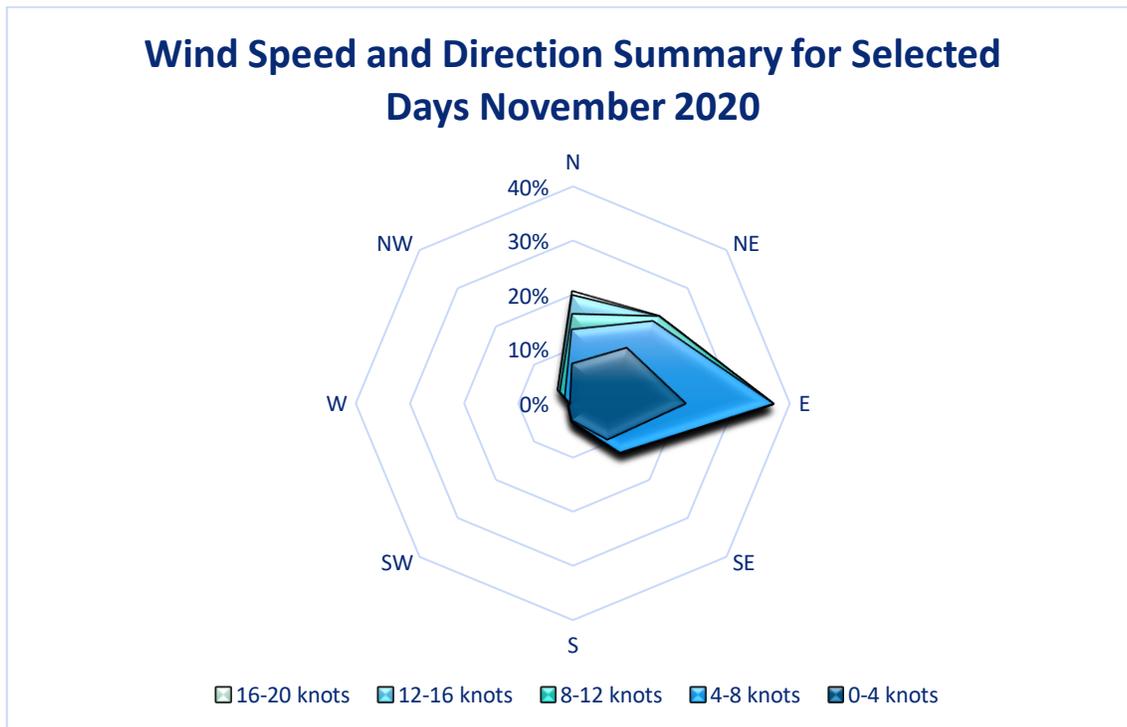


Figure 2. Wind Speed Rose, NOAA Tide Station 9455920, Anchorage Alaska, During Observation Times in November

The wind rose presented in Figure 2 shows that wind was typically out of the east, northeast, or north. Winds were generally low in November given that 90-percent of the wind speeds were at or below 8 knots, with only a small fraction between 8 and 20 knots.

3 In-Water Operations

During the month of November 2020, there were 42 in-water pile removal events, totaling 1410.5 minutes of activity. A summary of the in-water activity is presented in Table 6. Details of the in-water activity are provided in Appendix A.

Other nearby vessel activity, dredging, and personal watercraft operations are documented in the observation effort notes or sighting notes if interactions with marine mammals occur, but the duration of these other activities is not documented if unrelated to PCT construction.

Table 6 Monthly Summary of In-Water Activity

			#	Mins	#	Mins	#	Mins
Impact Hammer – Attenuated	0	0	42	1410.5	42	1410.5	42	1410.5
Impact Hammer – Unattenuated	0	0						
Vibratory Hammer – Attenuated	28	1135.0						
Vibratory Hammer – Unattenuated	14	275.5						
Vibratory Installation of Bubble Curtain	0	0						
Other In-Water Activity	0	0						

Other Non-PCT Activity

The MMOs documented other vessel activity not related to the PCT in lower Knik Arm. Other activities documented include: tug (3 times), barge (3 times), and boat (1 time). On 1 November, the MMOs at SC indicated that a barge was blocking a portion of their viewshed for about 1.5 hours.

4 Pile Driving Shutdowns, Delays, and Other Mitigation Measures

The IHA requires a delay of pile installation or removal if:

- Belugas are present within the pre-clearance zone and on a trajectory towards a Level B zone or are sighted within a Level B zone
- Any marine mammal is sighted within the 100-meter shutdown zone
- A marine mammal for which no takes have been authorized approaches or enters any harassment zone.

If pile installation or removal is already underway, then a shutdown is required if:

- Belugas are sighted within or about to enter a Level B zone
- Any marine mammal is sighted within the 100-meter shutdown zone
- A marine mammal for which no takes have been authorized approaches or enters any harassment zone.

If visibility of the applicable harassment zone is lost, then installation or removal of the next pile must be delayed until conditions improve such that the zone can be effectively monitored. If the Level B harassment zone cannot be monitored for more than 15 minutes, the entire Level B harassment zone must be cleared again for 30 minutes prior to pile driving.

During the month of November 2020, pile removal was delayed seven times due to poor visibility and was delayed five times due the presence of belugas within the pre-clearance zone or because they were approaching the Level B zone. There were five shutdowns of active pile removal. The delays and shutdowns are summarized in Table 7.

Table 7 - Monthly Summary of Delay and Shutdown Mitigation Measures

Delay/Shutdown Type	Start Time	End Time	Marine Mammal Group ID	Mitigation Duration (minutes)
Delay, marine mammal	11/05/2020 12:11	11/05/2020 14:23	729, 730	132
Delay, marine mammal	11/06/2020 16:12	11/06/2020 16:43	732	31
Delay, weather	11/08/2020 12:43	11/08/2020 13:37	n/a	54
Delay, marine mammal	11/12/2020 14:24	11/12/2020 15:20	737	56
Delay, weather	11/12/2020 15:20	11/12/2020 16:34	n/a	74

Delay/Shutdown Type	Start Time	End Time	Marine Mammal Group ID	Mitigation Duration (minutes)
Delay, weather	11/13/2020 8:49	11/13/2020 9:25	n/a	36
Delay, weather	11/14/2020 10:12	11/14/2020 10:30	n/a	18
Shutdown, marine mammal	11/15/2020 11:29	11/15/2020 12:49	743	80
Shutdown, marine mammal	11/16/2020 09:39	11/16/2020 10:25	748	46
Delay, weather	11/16/2020 10:25	11/16/2020 10:30	n/a	5
Delay, marine mammal	11/16/2020 10:30	11/16/2020 12:08	750, 751, 752	98
Shutdown, marine mammal	11/16/2020 12:29	11/16/2020 12:34	753	5
Shutdown, marine mammal	11/16/2020 12:54	11/16/2020 13:52	752	58
Delay, weather	11/17/2020 8:40	11/17/2020 9:17	n/a	37
Delay, marine mammal	11/17/2020 10:28	11/17/2020 11:31	756	63
Delay, weather	11/18/2020 8:57	11/18/2020 11:16	n/a	139
Shutdown, marine mammal	11/21/2020 9:30	11/21/2020 10:46	761	76
Total Monthly Mitigation Duration:				1,008

The marine mammal delays and shutdowns were described as follows:

Groups 729 and 730: At 12:04:43 construction had paused work using a vibrating hammer to remove a 36" pile with a bubble curtain (2,635-meter zone). Beluga whales in group 729 were first spotted at 12:07 inside the zone approximately 1km out from the construction site. When construction was informed of beluga whales in the zone, the request was made by Russ to start the delay at 12:11. This delay continued for quite some time as an additional group of beluga whales (730) also appeared inside the zone. Group 729 did exit the zone and proceed north. Group 730 continued to mill inside the zone and was last seen at 13:53. Clearance occurred 30 minutes later at 14:23, ending the delay.

Group 732: At 15:31:42 construction had paused work using a vibrating hammer to remove a 36" pile with a bubble curtain (2,635-meter zone) so that they could cut the top half off and remove it. The beluga whale in group 732 was first spotted at 16:12 just inside the zone to the north above the NEX station headed south. When construction was informed of beluga whale in the zone, the request was made by Russ to start the delay at 16:12. The delay ended following 30 minutes since the whale was last seen inside the zone which was 16:43.

11/8 Weather Delay: At 12:43 a weather delay was initiated since all stations did not have visibility of the level B zone following cessation of using the vibrating hammer to remove the top section of pile 3A36. Visibility of the zone remained obscured until 13:37 when the combined visibility across all stations was able to clear the entire zone.

Group 737 and 11/12 weather delay: Beluga whales were seen inside the Level B zone starting at 13:34. When construction was lowering the vibrating hammer with intention of pulling out the lower half of a 36" pile using a bubble curtain (2,635 meter Level B zone), the call was made to Ross to start the marine mammal delay at 14:24. Group 737 beluga whales did exit the zone to the north past the NEX station at 15:20. At which point Ross was radioed the marine mammal delay had ended. After a phone call with Chris it was indicated the depth for the pile to be pulled was greater than 3 meters. Visibility was limited inside the Level B zone at the time, so the marine mammal delay was ended and a weather delay was started at 15:20. Weather delay ended at 16:34 when the combined visibility across PCT, NEX, SC covered the entire level B zone.

11/13 weather delay: Weather delay from 8:49 to 9:25 (36 minutes) was due to dense fluctuating fog that eventually moved through to the south. Delay ended when all stations combined visibility covered the entire Level B zone of 2,635 meters (36" attenuated using vibratory hammer). Observations began at 8:08 and mist/fog limited visibility of much of the Level B zone. At 08:49 the pre-clearance transitioned to a weather delay. Visibility at Ship Creek was 500 meters at 8:30. At 9:00 NEX had visibility to the south of 700 meters but noted good visibility to the north and west, indicating the MMOs were progressively clearing the zone as fog moved southward before 9:00. At 9:17 PCT had 1500 meters of visibility writing the note "1500 to the south past SC, full viz of 6km everywhere else," further indicating that the fog was moving southwest through the project area. By 9:30 Ship Creek had 6,500 meters of visibility, indicating that full visibility of the zone was achieved sometime between 9:17 and 9:25. Between 8:30 and 9:25, MMOs had been monitoring and progressively clearing the zone for 55 minutes.

11/14 weather delay: Weather delay from 10:12 to 10:30 (18 minutes) was due to dense fluctuating fog which limited the view of the level B zone to approximately 30%. Delay ended when crane operator Ross announced the water depth for the pile to be pulled was less than 3 meters. A decision was made that a pile in water less than 3 meters is considered to be "in the dry" and therefore full visibility of the Level B zone is not required. With that basis, construction proceeded to use the vibrating hammer with the bubble curtain to remove the lower half of pile 4D36 out when visibility was limited inside the zone (2,635-meter zone).

Group 743: Vibrating hammer was pulling 36" pile without a bubble curtain (Level B zone 5,406-meters). Beluga in group 743 were seen inside the zone at 11:29, fix 4039 shows the two white beluga whales were 2,474 meters from pile 5D36 when first seen. Shutdown was called at 11:29 for

those beluga whales inside the zone. Radio call was made to Ross, crane operator, shutdown was achieved immediately following request. Shutdown started at 11:29 and lasted until 12:49 when construction resumed pulling pile.

Group 748: 2 belugas surfaced at 09:39 inside the 2,635-meter Level B zone while the vibratory hammer was removing a 36-inch pile. A shutdown was initiated immediately at 09:39 and remained in effect until 30 minutes after the last sighting.

11/16 weather delay: At 10:25 the belugas in group 748 were not resighted in 30 minutes, but the zone could not be cleared due to fog.

Groups 750, 751, and 752: At 10:30, during the weather delay, more belugas were sighted within the Level B zone (2,635-meters) and the weather delay was converted to a marine mammal delay.

Group 753: At 1229, a single beluga surfaced inside the 2,635-meter Level B zone while the vibratory hammer was removing a 36-inch pile. A shutdown was called, and the hammer was turned off immediately. At 12:34, the beluga was seen traveling outside of the Level B zone, and the shutdown was lifted. Vibratory removal resumed at 12:39.

Group 752: At 12:54, belugas were sighted at 2,810 meters, just outside of the 2,635-meter Level B zone approaching the PCT and a shutdown was called.

11/17 weather delay: Weather delay was due to dense fog that obscured the Level B zone. The MMOs began observations at 8:16, and pre-clearance should not have ended until at least 8:46. It is unclear why a weather delay was initiated at 8:40 before pre-clearance ended. Visibility was initially limited by fog and darkness (civil twilight was 8:19 on 11/17). By 8:32, NEX had at least 1000 meters of visibility and could begin clearing the northern portion of the zone. Point Woronzof reported 4,000 meters of visibility reported at 8:42, but fog was obscuring portions of the Level B zone in front of the PCT. At 8:47 NEX reported clear visibility of the zone to the west, but limited visibility (800 meters) south. At 9:00 NEX reported an increase to 1200 meters to the south, indicating the fog was progressively lifting southward. Ship Creek reported 400 meters of visibility at 09:00, but 5,000 meters by 9:12. Between 8:32 when NEX had 1000 meters of visibility and 9:17 when the "all clear" was given, MMOs had been monitoring and progressively clearing the zone for 45 minutes as fog lifted. By the time pile removal began, 58 minutes had passed.

Group 756: A group of six belugas surfaced approximately 2,200 meters from the PCT. Pile removal was not occurring at the time, and a delay was initiated until the group moved south, past the port. Last sighting of the group was at 11:01 and delay ended at 11:31 .

11/18 weather delay: A weather delay was initiated at 8:57 due to dense fog at the south end of the zone and persisted until 11:16.

Group 761: A single beluga was sighted within the Level B zone for unattenuated pile driving. A shutdown was initiated and persisted until 30 minutes after the beluga was last seen at 10:16.

Other Mitigation Measures

In accordance with the IHA, the MMOs monitored for 30 minutes post-completion of every in-water pile installation or removal. Generally, the post-completion period is within the normally scheduled day. On days when pile driving extends beyond the normal schedule, the MMOs stay on watch for at least another 30 minutes after completion of in-water pile installation or removal.

The PPM operators have used “soft start” techniques when initiating impact pile driving for in-water installation or removal of piles.

5 Marine Mammal Observations

All marine mammal sightings are documented in the database. A parent record is entered for each marine mammal group with group-level attributes such as species, age/color class, primary and secondary behavior, distribution, formation, and pace. Once a group is identified, one or more group position “fixes” are measured and calculated.

Marine Mammal Sighting Summary

During the 19 days of observation in the month of November, 26 groups of marine mammals were sighted totaling 99 individual animals. There were 25 groups of belugas comprised of 97 individuals and 1 group of harbor porpoises comprised of 2 individuals.

The number of groups and individuals are presented by species in Table 8 Appendix B. Additional sighting details including group composition, locations, sighting times, behaviors, sighting notes, and location maps are provided in Appendices C through E¹. The data field information for the sighting reports is presented in Appendix F.

Table 8 - Number of Marine Mammal Groups and Individuals for November 2020

Species	Number of Groups	Number of Individuals
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¹ No sightings occurred on 1, 23, or 24 November; therefore, there are no sighting forms or maps for these weeks.

Beluga	25	97
Harbor Porpoise	1	2
Harbor Seal	0	0
Pinniped Unid.	0	0
Totals:	26	99

Marine Mammal Exposures

During the month of November, there were four in-water pile removal events that caused the potential exposure of 6 belugas to underwater noise exceeding the Level B threshold. Table 9 contains a summary of the potential exposures for the month of November 2020.

Table 9 - Potential Marine Mammal Exposures from 1 November to 30 November 2020

Date	Species	Number of Marine Mammals	Group ID	Activity
11/15/20				Vibratory removal of a 36-inch pile without a bubble curtain
11/16/20	Beluga	2	748	Vibratory removal of a 36-inch pile with a bubble curtain
11/16/20	Beluga	1	753	Vibratory removal of a 36-inch pile with a bubble curtain
11/21/20	Beluga	1	761	Vibratory removal of a 36-inch pile without a bubble curtain

The marine mammal exposures were described as follows:

Group 743: Vibrating hammer was pulling 36" pile without a bubble curtain (Level B zone 5,406-meters). Beluga in group 743 were seen inside the zone at 11:29, fix 4039 shows the two white beluga whales were 2,474 meters from pile 5D36 when first seen. Shutdown was called at 11:29 for those beluga whales inside the zone. Radio call was made to Ross, crane operator, shutdown was achieved immediately following request. Shutdown started at 11:29 and lasted until 12:49 when construction resumed pulling pile.

Group 748: 2 belugas surfaced at 09:39 at just over 2,100 meters from the PCT, inside the 2,635-meter Level B zone while the vibratory hammer was removing a 36-inch pile. A shutdown was initiated immediately at 09:39 and remained in effect until 30 minutes after the last sighting.

Group 753: At 1229, a single beluga surfaced inside the 2,635-meter Level B zone while the vibratory hammer was removing a 36-inch pile. A shutdown was called, and the hammer was turned off immediately. At 12:34, the beluga was seen traveling outside of the Level B zone, toward the larger beluga group 752, and the shutdown was lifted. Vibratory removal resumed at 12:39. At 12:44, another fix that was initially recorded under group 753 (single beluga), but was stated in the notes as belonging to group 752, shows at least one animal at 2,646 meters, or 11 meters outside the Level B zone. At 1254, the bulk of the larger group (752) was moving south towards the Level B zone, and a shutdown was again called when the group was at 2,800 meters from the PCT. The single beluga of group 753 is the only animal of the larger combined 752/753 group that was sighted within the Level B zone during active pile driving.

Group 761: At 09:30 single beluga was sighted at 2,300 meters from the PCT, within the Level B zone for unattenuated pile driving (5,406-meters). A shutdown was initiated and persisted until 10:46, 30 minutes after the beluga was last seen at 10:16.

The monthly and cumulative potential Level A and Level B exposures for all marine mammal species are presented in Table 10.

Table 10. Monthly and Cumulative Level B and Level A Exposures

Species:	Beluga	Harbor Seal	Harbor Porpoise	Steller Sea Lion	Killer Whale	Humpback Whale	Pinniped Unidentified
# Level B Takes Authorized	55	711	43	13	12	6	N/A
Monthly Potential Level B Exposures	6	0	0	0	0	0	0
Cumulative Potential Level B Exposures	21	39	1	0	0	0	1
# Level A Takes Authorized	0	305	21	0	0	2	N/A

Monthly							
Cumulative Potential Level A Exposures	0	2	0	0	0	0	1

6 References

NMFS (National Marine Fisheries Service). 2020 (March 31). *Incidental Harassment Authorization*. Issued to the Port of Alaska for the Construction of the Petroleum and Cement Terminal, by Donna S. Wieting, Director, Office of Protected Resources, National Marine Fisheries Service. Federal Register, Vol. 85, No. 66, page 19294 (85 FR 19294).

NOAA (National Oceanic and Atmospheric Administration). 2020a (April 6). *Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Construction of the Port of Alaska's Petroleum and Cement Terminal, Anchorage, Alaska*. Federal Register, Vol. 85, No. 66, page 19294 (85 FR 19294).

NOAA. 2020b (December 7). *Tides and Currents, Meteorological Obs., NOAA/NOS/CO-OPS, Winds at 9455920, Anchorage, AK*. Accessed 7 December 2020 at: <https://tidesandcurrents.noaa.gov/met.html?id=9455920>

Appendix A – In-Water Activity Detail

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
928	11/1/2020 10:15:49 AM	Vibratory hammer with bubble curtain	24

Comments	Water Depth
	>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1649	11/1/2020 1:04:53 PM	11/1/2020 1:19:02 PM	14.2
1650	11/1/2020 1:26:03 PM	11/1/2020 1:33:36 PM	7.6
1651	11/1/2020 1:34:04 PM	11/1/2020 1:36:12 PM	2.1
Total Duration			23.9

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
938	11/3/2020 4:39:07 PM	Vibratory hammer with bubble curtain	24

Comments	Water Depth
First Stop activity potentially delayed on our records when vibratory work was paused.	>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1663	11/3/2020 4:42:43 PM	11/3/2020 4:56:30 PM	13.8
1665	11/3/2020 5:05:53 PM	11/3/2020 5:09:09 PM	3.3
1666	11/3/2020 5:10:03 PM	11/3/2020 5:10:52 PM	0.8
1667	11/3/2020 5:11:07 PM	11/3/2020 5:11:44 PM	0.6
Total Duration			18.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
942	11/4/2020 9:03:49 AM	Vibratory hammer with bubble curtain	24
Comments			Water Depth
Vibing out 2C24 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1671	11/4/2020 9:21:29 AM	11/4/2020 9:21:40 AM	0.2
1672	11/4/2020 9:21:50 AM	11/4/2020 9:21:55 AM	0.1
1673	11/4/2020 9:22:11 AM	11/4/2020 9:22:13 AM	0
1674	11/4/2020 9:22:20 AM	11/4/2020 9:22:26 AM	0.1
1675	11/4/2020 9:29:11 AM	11/4/2020 9:39:56 AM	10.7
1676	11/4/2020 9:47:50 AM	11/4/2020 9:50:39 AM	2.8
Total Duration			13.9

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
944	11/4/2020 11:28:04 AM	Vibratory hammer with bubble curtain	24
Comments			Water Depth
Vibing out 2B24 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1678	11/4/2020 11:49:21 AM	11/4/2020 11:49:43 AM	0.4
1679	11/4/2020 11:50:48 AM	11/4/2020 11:50:50 AM	0
1680	11/4/2020 11:50:56 AM	11/4/2020 11:51:03 AM	0.1
1681	11/4/2020 11:52:19 AM	11/4/2020 12:02:56 PM	10.6
1682	11/4/2020 12:09:37 PM	11/4/2020 12:11:56 PM	2.3
Total Duration			13.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
946	11/4/2020 2:40:23 PM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibing out 2A36 using a bubble curtain. (Depth > 3 meters); 1643 hammer removed			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1684	11/4/2020 3:04:37 PM	11/4/2020 3:04:41 PM	0.1
1685	11/4/2020 3:04:52 PM	11/4/2020 3:04:57 PM	0.1
1686	11/4/2020 3:05:00 PM	11/4/2020 4:25:51 PM	80.9
1687	11/4/2020 4:31:23 PM	11/4/2020 4:36:22 PM	5
Total Duration			86.1

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
949	11/5/2020 8:25:12 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibbing out lower half of 2A36 using a bubble curtain. (Depth > 3 meters). 0852 Hammer removed			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1690	11/5/2020 8:47:35 AM	11/5/2020 8:47:37 AM	0
1691	11/5/2020 8:47:42 AM	11/5/2020 8:47:46 AM	0.1
1692	11/5/2020 8:47:53 AM	11/5/2020 8:50:44 AM	2.9
Total Duration			3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
951	11/5/2020 10:10:41 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Depth > 3 meters			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1694	11/5/2020 10:12:29 AM	11/5/2020 10:12:30 AM	0
1695	11/5/2020 10:12:45 AM	11/5/2020 10:12:47 AM	0
1696	11/5/2020 10:14:18 AM	11/5/2020 12:04:43 PM	110.4
Total Duration			110.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
955	11/6/2020 2:50:30 PM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vib out of 2D36 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1700	11/6/2020 3:05:47 PM	11/6/2020 3:05:48 PM	0
1701	11/6/2020 3:08:20 PM	11/6/2020 3:08:20 PM	0
1702	11/6/2020 3:08:30 PM	11/6/2020 3:31:42 PM	23.2
Total Duration			23.2

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
957	11/6/2020 4:07:27 PM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vib out of lower half of 2D36 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1705	11/6/2020 4:43:26 PM	11/6/2020 4:45:52 PM	2.4
Total Duration			2.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
962	11/8/2020 10:03:06 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibing out 3A36 using a bubble curtain. (Depth > 3 meters) 1246 Hammer removed; pile being cut			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1709	11/8/2020 10:15:40 AM	11/8/2020 10:15:41 AM	0
1710	11/8/2020 10:19:06 AM	11/8/2020 12:24:29 PM	125.4
1711	11/8/2020 12:33:46 PM	11/8/2020 12:43:01 PM	9.2
Total Duration			134.6

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
967	11/8/2020 2:34:59 PM	Vibratory hammer with bubble curtain	36

Comments

Removing lower half of 3A36 (Depth > 3 meters). 1442 Hammer lost connection to pile. 1443 reattaching vibe. 1445 Hammer came free of pile during vibe. 1446 reattaching vibe; several stop/starts. 1447 vibe maintenance. 1501 pulling pile up.

Water Depth

>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1716	11/8/2020 2:41:29 PM	11/8/2020 2:41:59 PM	0.5
1717	11/8/2020 2:42:02 PM	11/8/2020 2:42:08 PM	0.1
1718	11/8/2020 2:43:25 PM	11/8/2020 2:43:26 PM	0
1719	11/8/2020 2:43:30 PM	11/8/2020 2:43:32 PM	0
1720	11/8/2020 2:43:36 PM	11/8/2020 2:43:37 PM	0
1721	11/8/2020 2:44:15 PM	11/8/2020 2:44:16 PM	0
1722	11/8/2020 2:44:19 PM	11/8/2020 2:44:20 PM	0
1723	11/8/2020 2:44:24 PM	11/8/2020 2:44:27 PM	0.1
1724	11/8/2020 2:44:32 PM	11/8/2020 2:45:02 PM	0.5
1725	11/8/2020 2:46:36 PM	11/8/2020 2:46:37 PM	0
1726	11/8/2020 2:46:48 PM	11/8/2020 2:46:49 PM	0
1727	11/8/2020 2:46:50 PM	11/8/2020 2:46:51 PM	0
1728	11/8/2020 2:46:59 PM	11/8/2020 2:46:59 PM	0
1729	11/8/2020 2:47:02 PM	11/8/2020 2:47:27 PM	0.4
1730	11/8/2020 2:57:28 PM	11/8/2020 3:00:56 PM	3.5
Total Duration			5.1

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
970	11/9/2020 8:37:33 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
0841 vibe is attached. Vibing out 3D36 using a bubble curtain. (Depth > 3 meters) 1006 hammer removed from pile.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1733	11/9/2020 8:42:45 AM	11/9/2020 8:42:48 AM	0.1
1734	11/9/2020 8:42:53 AM	11/9/2020 8:42:54 AM	0
1735	11/9/2020 8:43:00 AM	11/9/2020 8:43:03 AM	0.1
1736	11/9/2020 8:43:15 AM	11/9/2020 9:44:56 AM	61.7
1737	11/9/2020 9:57:39 AM	11/9/2020 10:04:52 AM	7.2
Total Duration			69.1

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
972	11/9/2020 10:48:59 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibing out lower half of 3D36 (Depth > 3 meters).			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1739	11/9/2020 10:58:23 AM	11/9/2020 10:58:24 AM	0
1740	11/9/2020 10:58:30 AM	11/9/2020 10:58:32 AM	0
1741	11/9/2020 11:04:16 AM	11/9/2020 11:07:25 AM	3.2
Total Duration			3.2

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
974	11/9/2020 1:09:35 PM	Vibratory hammer with bubble curtain	24
Comments			Water Depth
Vibing out 3B24 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1743	11/9/2020 1:38:50 PM	11/9/2020 1:38:51 PM	0
1744	11/9/2020 1:38:56 PM	11/9/2020 1:38:57 PM	0
1745	11/9/2020 1:39:03 PM	11/9/2020 1:39:05 PM	0
1746	11/9/2020 1:39:11 PM	11/9/2020 1:51:38 PM	12.4
Total Duration			12.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
976	11/9/2020 2:21:30 PM	Vibratory hammer with bubble curtain	24
Comments			Water Depth
1445 hammer on top of pile. Vibing out 3C24 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1748	11/9/2020 2:45:21 PM	11/9/2020 2:45:22 PM	0
1749	11/9/2020 2:45:24 PM	11/9/2020 2:45:26 PM	0
1750	11/9/2020 2:45:30 PM	11/9/2020 2:45:31 PM	0
1751	11/9/2020 2:45:38 PM	11/9/2020 2:45:39 PM	0
1752	11/9/2020 2:45:51 PM	11/9/2020 2:48:27 PM	2.6
1753	11/9/2020 2:52:00 PM	11/9/2020 3:00:08 PM	8.1
Total Duration			10.7

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
978	11/9/2020 3:47:10 PM	Vibratory hammer with bubble curtain	24
Comments			Water Depth
Vibing out 3E24 using a bubble curtain. (Depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1755	11/9/2020 3:48:58 PM	11/9/2020 3:49:09 PM	0.2
1756	11/9/2020 3:49:15 PM	11/9/2020 3:55:13 PM	6
1757	11/9/2020 3:59:31 PM	11/9/2020 4:06:45 PM	7.2
1758	11/9/2020 4:07:42 PM	11/9/2020 4:08:07 PM	0.4
Total Duration			13.8

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
983	11/12/2020 11:14:52 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibing out 4A36 using a bubble curtain. (Depth < 3 meters). A decision was made that pile 4A36 being in water less than 3 meters meant that it was in the dry. Construction proceeded with vib out, visibility constraint from snow/fog inside the zone reported from the SC station. 1249 attaching line to pile			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1763	11/12/2020 11:15:03 AM	11/12/2020 11:51:15 AM	36.2
1764	11/12/2020 12:15:22 PM	11/12/2020 12:47:27 PM	32.1
1765	11/12/2020 12:55:26 PM	11/12/2020 1:00:25 PM	5
Total Duration			73.3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
990	11/13/2020 9:26:38 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibing out lower half of pile 4A36 with a bubble curtain. (Depth > 3 meters until 0930 as per Ross). 0933 hammer removed.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1772	11/13/2020 9:28:18 AM	11/13/2020 9:32:26 AM	4.1
Total Duration			4.1

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
992	11/13/2020 9:53:26 AM	Vibratory hammer, no bubble curtain	36
Comments			Water Depth
Vibing out 4D36 without a bubble curtain. (Depth < 3 meters). 1100 Approx. 40% of the zone is obscured by fog. 1111 Hammer removed.			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1774	11/13/2020 9:57:08 AM	11/13/2020 9:57:09 AM	0
1775	11/13/2020 9:57:42 AM	11/13/2020 9:57:43 AM	0
1776	11/13/2020 9:57:45 AM	11/13/2020 9:57:46 AM	0
1777	11/13/2020 9:58:00 AM	11/13/2020 9:58:01 AM	0
1778	11/13/2020 9:58:02 AM	11/13/2020 9:58:03 AM	0
1779	11/13/2020 9:58:09 AM	11/13/2020 11:07:56 AM	69.8
Total Duration			69.8

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
994	11/13/2020 1:26:18 PM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Vibing out 4D36 using a bubble curtain. (Depth > 3 meters.) 1646 hammer removed.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1781	11/13/2020 1:48:30 PM	11/13/2020 4:45:12 PM	176.7
Total Duration			176.7

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
998	11/14/2020 8:43:50 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
Continuing to vib out the top half of 4D36 using a bubble curtain. (depth > 3 meters)			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1785	11/14/2020 9:02:11 AM	11/14/2020 9:41:02 AM	38.9
Total Duration			38.9

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1001	11/14/2020 10:15:27 AM	Vibratory hammer with bubble curtain	36

Comments

Vibing out lower half of 4D36 (depth < 3 meters). Based on the decision from a few days ago, a pile in water less than 3 meters will be considered to be in the dry. Based on that assumption construction proceeded to vib the lower half of this pile out when visibility was limited inside the zone. 1032 30% of zone is visible.

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1788	11/14/2020 10:30:25 AM	11/14/2020 10:30:26 AM	0
1789	11/14/2020 10:30:27 AM	11/14/2020 10:30:28 AM	0
1790	11/14/2020 10:30:32 AM	11/14/2020 10:35:28 AM	4.9
Total Duration			4.9

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1003	11/14/2020 11:24:45 AM	Vibratory hammer, no bubble curtain	24

Comments

Vibing out pile 4B24 without using a bubble curtain. (Depth < 3 meters). Based on the decision from a few days ago, a pile in water less than 3 meters will be considered to be in the dry. As per Chris we will still be shutting down for any beluga whales seen inside or about to enter the 5406 meter zone.

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1792	11/14/2020 11:29:38 AM	11/14/2020 11:29:43 AM	0.1
1793	11/14/2020 11:29:46 AM	11/14/2020 11:36:25 AM	6.6
1794	11/14/2020 11:41:11 AM	11/14/2020 11:42:48 AM	1.6
Total Duration			8.3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1005	11/14/2020 12:11:27 PM	Vibratory hammer, no bubble curtain	24

Comments

Vibing out pile 4C24 without using a bubble curtain. (Depth < 3 meters). Based on the decision from a few days ago, a pile in water less than 3 meters will be considered to be in the dry. As per Chris we will still be shutting down for any beluga whales seen inside or about to enter the 5406 meter zone. 1213 False stop.

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1796	11/14/2020 12:12:33 PM	11/14/2020 12:13:28 PM	0.9
1797	11/14/2020 12:13:33 PM	11/14/2020 12:17:41 PM	4.1
1798	11/14/2020 12:21:55 PM	11/14/2020 12:24:21 PM	2.4
Total Duration			7.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1007	11/14/2020 12:41:02 PM	Vibratory hammer, no bubble curtain	24

Comments

Vibing out pile 4E24 without using a bubble curtain. (Depth < 3 meters). Based on the decision from a few days ago, a pile in water less than 3 meters will be considered to be in the dry. As per Chris we will still be shutting down for any beluga whales seen inside or about to enter the 5406 meter zone. 1800-1802 using hammer to knock ice off of pile.

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1800	11/14/2020 12:48:52 PM	11/14/2020 12:48:53 PM	0
1801	11/14/2020 12:48:54 PM	11/14/2020 12:48:55 PM	0
1802	11/14/2020 12:48:56 PM	11/14/2020 12:48:57 PM	0
1803	11/14/2020 12:50:19 PM	11/14/2020 12:50:20 PM	0
1804	11/14/2020 12:50:26 PM	11/14/2020 12:50:27 PM	0
1805	11/14/2020 12:50:32 PM	11/14/2020 12:55:58 PM	5.4
1806	11/14/2020 1:01:21 PM	11/14/2020 1:04:19 PM	3
Total Duration			8.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1012	11/15/2020 11:24:58 AM	Vibratory hammer, no bubble curtain	36

Comments

Vibing out 5D36 without using a bubble curtain. (Depth less than 3 meters.) SHUTDOWN called for group 743 beluga inside the zone. 1250 Spoke to Chris via cell phone after seeing vibrating hammer on; he considers pile to be in the dry meaning water is no longer bounded at the base of the pile, we are unable to verify. DELETE PortActivityID 1012 PortStatus ID 1816 based on phone conversation with Chris. (ATL post-proceesd PS ID 1816 deleted)

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1811	11/15/2020 11:26:46 AM	11/15/2020 11:27:47 AM	1
1812	11/15/2020 11:27:49 AM	11/15/2020 11:27:50 AM	0
1813	11/15/2020 11:27:51 AM	11/15/2020 11:27:52 AM	0
1814	11/15/2020 11:27:58 AM	11/15/2020 11:29:10 AM	1.2
Total Duration			2.2

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1016	11/15/2020 2:39:42 PM	Vibratory hammer with bubble curtain	36

Comments

Removing lower half of pile 5D36 using a bubble curtain. (Depth less than 3 meters)

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1818	11/15/2020 3:08:35 PM	11/15/2020 3:08:36 PM	0
1819	11/15/2020 3:08:44 PM	11/15/2020 3:08:47 PM	0.1
1820	11/15/2020 3:08:55 PM	11/15/2020 3:08:59 PM	0.1
1821	11/15/2020 3:09:10 PM	11/15/2020 3:09:11 PM	0
1822	11/15/2020 3:09:40 PM	11/15/2020 3:11:50 PM	2.2
1823	11/15/2020 3:13:02 PM	11/15/2020 3:13:50 PM	0.8
Total Duration			3.2

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1020	11/16/2020 9:22:11 AM	Vibratory hammer with bubble curtain	36

Comments

0926 vibe is attached. Vibing out 5A36 using a bubble curtain. (Depth >3 meters) Activity stopped by Marine Mammal shutdown at 0939. Shutdown from 0939 to 1025 (46 minutes). 1208 cleared zone to continue vibing out 5A36 using a bubble curtain. 1210 continue to vibrate out 5A36 with a bubble curtain (Depth >3 meters), stopped at 12:29 for Marine Mammal shutdown. DELAY ON TIMESTAMPS BETWEEN Marine Mammal Shutdown START (12:29pm) AND Vibratory Hammer with bubble curtain activity STOP (12:36pm). 1239 Vibratory Hammer begins again on 5A36 with a bubble curtain. Vibing stopped at 1254 for Marine Mammal delay. 1353 vibing out 5A36 in the dry. 1436 crane operator informed us we would be vibing in the wet again, vibratory hammer turned on. 1448 attached safety chain to pile. 1455 continue vibing 5A36 pile. Vibratory hammer stopped at 1501 to cut pile in half. Vibe back on with bubble curtain on 5A36 at 1527. Pile out, vibe off at 1535. (ATL post-processed: changed PSID 1833 stop time from 1236 to 1229)

Water Depth

>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1828	11/16/2020 9:26:31 AM	11/16/2020 9:39:01 AM	12.5
1833	11/16/2020 12:10:27 PM	11/16/2020 12:29:00 PM	18.5
1836	11/16/2020 12:39:44 PM	11/16/2020 12:54:03 PM	14.3
1839	11/16/2020 2:36:33 PM	11/16/2020 2:48:38 PM	12.1
1841	11/16/2020 2:55:38 PM	11/16/2020 3:01:19 PM	5.7
1843	11/16/2020 3:43:42 PM	11/16/2020 3:49:52 PM	6.2
Total Duration			69.3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1028	11/17/2020 9:20:14 AM	Vibratory hammer with bubble curtain	24

Comments

0922 Hammer in air. 0928 Vibe Hammer on pile. 0930 Vibing 24" pile with bubble curtain (Depth >3 meters). 0950 Crew attached safety chain to pile. 0953 Continue Vibe on pile with bubble curtain (Depth >3 meters). 0956 Vibe off, Hammer is off pile, lifting remainder of pile with safety chain.

Water Depth

>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1848	11/17/2020 9:30:17 AM	11/17/2020 9:48:17 AM	18
1850	11/17/2020 9:53:04 AM	11/17/2020 9:54:15 AM	1.2
1851	11/17/2020 9:54:34 AM	11/17/2020 9:56:47 AM	2.2
Total Duration			21.4

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1031	11/17/2020 11:32:50 AM	Vibratory hammer with bubble curtain	24

Comments

1135 Vibe on 24" pile with a bubble curtain (Depth >3 meters).

Water Depth

>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1856	11/17/2020 11:35:31 AM	11/17/2020 11:53:48 AM	18.3
Total Duration			18.3

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1032	11/17/2020 12:19:00 PM	Vibratory hammer with bubble curtain	24
Comments			Water Depth
1235 Hammer sitting on pile. 1239 Vibe on 24" pile with bubble curtain (Depth >3 meters).			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1858	11/17/2020 12:39:43 PM	11/17/2020 12:54:24 PM	14.7
1860	11/17/2020 1:02:40 PM	11/17/2020 1:04:00 PM	1.3
Total Duration			16

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1037	11/18/2020 1:08:52 PM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
1400, Issues with bubble curtain.			>3 Meters

In-Water Duration

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1040	11/19/2020 8:40:43 AM	Vibratory hammer with bubble curtain	36
Comments			Water Depth
0844 Hammer resting on pile. Vibe on 36" pile with bubble curtain (Depth >3 meters). 1004 Vibe off, construction crew attaching safety chain to remainder of pile.			>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1869	11/19/2020 8:52:12 AM	11/19/2020 10:04:54 AM	72.7
1871	11/19/2020 10:14:21 AM	11/19/2020 10:27:48 AM	13.5
1873	11/19/2020 11:09:25 AM	11/19/2020 11:11:44 AM	2.3
Total Duration			88.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1042	11/19/2020 11:36:22 AM	Vibratory hammer with bubble curtain	36

Comments

1245 Vibe on 36" pile with a bubble curtain (Depth >3 meters). 1346 vibe on remaining 36" pile with a bubble curtain. 1437 vibe is sitting on top of pile. 1445 vibe on 36" pile with a bubble curtain.

Water Depth

>3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1875	11/19/2020 12:45:43 PM	11/19/2020 1:38:18 PM	52.6
1877	11/19/2020 1:46:03 PM	11/19/2020 2:05:14 PM	19.2
1879	11/19/2020 2:45:03 PM	11/19/2020 2:49:50 PM	4.8
Total Duration			76.6

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1046	11/21/2020 8:58:01 AM	Vibratory hammer, no bubble curtain	36

Comments

0904 Vibe on remaining half of 36" pile with no bubble curtain (Depth <3 meters).

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1883	11/21/2020 9:04:54 AM	11/21/2020 9:08:22 AM	3.5
Total Duration			3.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1048	11/21/2020 9:26:07 AM	Vibratory hammer, no bubble curtain	36

Comments

0928 Hammer is resting on the pile. 0929 Vibe on 36" pile with no bubble curtain (Depth < 3 meters). 1046 vibe on 36" pile no bubble curtain. 1155 Vibe on 36" pile with no bubble curtain. 1240 Hammer is resting on pile. 1243 vibe on second half of 36" pile with no bubble curtain.

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1885	11/21/2020 9:29:07 AM	11/21/2020 9:29:57 AM	0.8
1888	11/21/2020 10:46:41 AM	11/21/2020 11:50:34 AM	63.9
1890	11/21/2020 11:55:44 AM	11/21/2020 12:08:03 PM	12.3
1892	11/21/2020 12:43:38 PM	11/21/2020 12:45:09 PM	1.5
Total Duration			78.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1052	11/22/2020 1:07:02 PM	Vibratory hammer, no bubble curtain	24

Comments

Less than 3 m of water (Ross stated that all vibratory hammer activity would be in under 3 m of water)

Water Depth

<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1896	11/22/2020 1:18:55 PM	11/22/2020 1:38:03 PM	19.1
1898	11/22/2020 1:38:32 PM	11/22/2020 1:39:12 PM	0.7
Total Duration			19.8

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1053	11/22/2020 1:52:52 PM	Vibratory hammer, no bubble curtain	24
Comments			Water Depth
Less than 3 m of water (Ross stated that all vibratory hammer activity would be in under 3 m of water)			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1900	11/22/2020 2:05:23 PM	11/22/2020 2:20:18 PM	14.9
1902	11/22/2020 2:23:58 PM	11/22/2020 2:25:34 PM	1.6
Total Duration			16.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1054	11/22/2020 2:40:34 PM	Vibratory hammer, no bubble curtain	24
Comments			Water Depth
Less than 3 m of water (Ross stated that all vibratory hammer activity would be in under 3 m of water)			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1904	11/22/2020 2:44:59 PM	11/22/2020 2:57:34 PM	12.6
1906	11/22/2020 3:02:10 PM	11/22/2020 3:04:41 PM	2.5
Total Duration			15.1

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1060	11/24/2020 1:13:41 PM	Vibratory hammer, no bubble curtain	36
Comments			Water Depth
Ross informed us we'd be using the vibratory hammer in under 3 m of water			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1913	11/24/2020 1:15:15 PM	11/24/2020 1:34:49 PM	19.6
1915	11/24/2020 1:39:15 PM	11/24/2020 1:48:12 PM	8.9
Total Duration			28.5

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1061	11/24/2020 2:35:48 PM	Vibratory hammer, no bubble curtain	36
Comments			Water Depth
Ross informed us we'd be using the vibratory hammer in under 3 m of water			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1917	11/24/2020 2:36:34 PM	11/24/2020 2:37:13 PM	0.6
1919	11/24/2020 2:39:03 PM	11/24/2020 2:39:26 PM	0.4
Total Duration			1

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1062	11/24/2020 2:41:55 PM	Vibratory hammer, no bubble curtain	36
Comments			Water Depth
Ross informed us we'd be using the vibratory hammer in under 3 m of water			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1921	11/24/2020 2:42:33 PM	11/24/2020 2:43:46 PM	1.2
Total Duration			1.2

In-Water Construction Activity

Port Activity ID	Record Date and Time	In-water Activity	Pile Diameter
1063	11/24/2020 3:15:59 PM	Vibratory hammer, no bubble curtain	24
Comments			Water Depth
Ross informed us we'd be using the vibratory hammer in under 3 m of water			<3 Meters

Activity Time and Duration

Port Status ID	Activity Start Time	Activity Stop Time	Activity Minutes
1923	11/24/2020 3:22:27 PM	11/24/2020 3:33:01 PM	10.6
1925	11/24/2020 3:36:55 PM	11/24/2020 3:41:14 PM	4.3
Total Duration			14.9

Appendix B – Marine Mammal Sighting Summary

Marine Mammal Group Summary Report

Month of November 2020

Species	Group ID	Initial Sighting Time	Total Individuals
Beluga			
	720	11/3/2020 9:51:42 AM	1
	721	11/3/2020 11:43:28 AM	5
	722	11/3/2020 1:19:50 PM	1
	723	11/3/2020 3:06:07 PM	13
	726	11/4/2020 3:20:11 PM	7
	729	11/5/2020 12:07:26 PM	2
	730	11/5/2020 12:53:33 PM	2
	732	11/6/2020 4:11:43 PM	1
	734	11/8/2020 8:41:59 AM	1
	737	11/12/2020 1:36:16 PM	6
	739	11/13/2020 4:47:43 PM	6
	742	11/15/2020 10:36:55 AM	4
	743	11/15/2020 11:28:58 AM	2
	745	11/15/2020 12:13:05 PM	6
	746	11/15/2020 12:22:20 PM	1
	748	11/16/2020 9:39:22 AM	2
	749	11/16/2020 9:47:09 AM	1
	750	11/16/2020 10:30:31 AM	2
	751	11/16/2020 11:28:36 AM	1
	752	11/16/2020 11:28:59 AM	10
	753	11/16/2020 12:28:52 PM	1
	754	11/16/2020 2:09:14 PM	2
	756	11/17/2020 10:18:51 AM	6
	758	11/18/2020 3:02:31 PM	13
	761	11/21/2020 9:30:12 AM	1
Total Groups for Species:	25	Total Individuals for Species:	97
Harbor Porpoise			
	725	11/4/2020 1:58:43 PM	2
Total Groups for Species:	1	Total Individuals for Species:	2
Total MM Groups For Period:	26	Toal MMs For Period:	99

Appendix C – Week of 11/2 – 11/8 Sighting Forms and Maps

MM Group Report

Group ID 720	Created Date 11/3/2020 9:51:42 AM	Last Update 11/3/2020 3:14:37 PM	Species Common Name Beluga
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Travelling
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Beluga Counts 1	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts 0	Other Adult 0	Other Calf 0	Total Other
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Comments

**NEX: 09:51 One white beluga seen traveling towards station. Last seen: 09:52

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
720	3920	11/3/2020 9:53:20 AM	61.255507	-149.880903	2472.49924

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	<input type="text" value="4"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>					

Comments

**NEX: 1142 FIX ID #3921-3923 four white and one grey surfaced, heading south; staying to the outside edge of the ice. FIX ID #3924 Last seen 1156.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
721	3921	11/3/2020 11:43:39 AM	61.257676	-149.881465	2694.3334
721	3922	11/3/2020 11:44:02 AM	61.257687	-149.881467	2695.48008
721	3923	11/3/2020 11:46:31 AM	61.257708	-149.881472	2697.65217
721	3924	11/3/2020 11:55:18 AM	61.24405	-149.892034	1091.2688

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>							

Comments

**PW F3927 One white beluga observed traveling SW toward inbound line. Last seen 1321.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
722	3926	11/3/2020 1:20:20 PM	61.201303	-149.988446	6193.4542
722	3927	11/3/2020 1:21:01 PM	61.201334	-149.989496	6236.75149

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="11"/>	<input type="text" value="0"/>	<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value=""/>					

Comments

**NEX 1506 Two white spotted coming around Cairn Point; traveling south. FIX ID #3929 count increased; 7 white and 2 gray calves, continuing to travel south. FIX ID #3930 count increased; 11 white and 2 gray milling in front of station. FIX ID #3931, #3932 entire group has turned around; heading north. Last time seen 1530

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
723	3928	11/3/2020 3:06:17 PM	61.258662	-149.881756	2795.84394
723	3929	11/3/2020 3:10:09 PM	61.257835	-149.881746	2707.29669
723	3930	11/3/2020 3:15:21 PM	61.254176	-149.881922	2315.01251
723	3931	11/3/2020 3:20:26 PM	61.257008	-149.881439	2623.39674
723	3932	11/3/2020 3:26:49 PM	61.26155	-149.880557	3122.49821

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="0"/>	<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

PW: 13:55 Fix 3936 two harbor porpoises milling at point Mackenzie. Last seen: 1512

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
725	3936	11/4/2020 1:59:40 PM	61.234303	-149.987393	4957.70221
725	3937	11/4/2020 2:35:09 PM	61.239632	-149.977314	4455.61755
725	3938	11/4/2020 3:10:07 PM	61.236569	-149.983418	4750.75069

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="7"/>	<input type="text" value="0"/>	<input type="text" value=""/>							

Comments

NEX: Belugas travelling SW across inlet from Cairn Point, milled in the middle of inlet. Last seen at 1623.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
726	3939	11/4/2020 3:22:40 PM	61.265962	-149.881828	3567.74761
726	3940	11/4/2020 3:39:05 PM	61.264697	-149.883918	3409.30406
726	3941	11/4/2020 3:39:16 PM	61.262126	-149.889053	3089.41071
726	3942	11/4/2020 3:52:00 PM	61.261969	-149.887766	3079.5457
726	3943	11/4/2020 3:57:57 PM	61.261595	-149.881885	3092.31404
726	3944	11/4/2020 4:11:28 PM	61.262445	-149.881551	3188.37518

Group ID	Created Date	Last Update	Species Common Name						
729	11/5/2020 12:07:26 PM	11/5/2020 2:26:27 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Travelling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
1	0	1	0	0	0	0	0	0	

Comments

Single whale sighted at 1207 in the middle of the inlet travelling SE towards the construction site. 1226 FIX ID #3950 spotted north of the platform heading southwest. 1231 FIX ID #3951, 3952 heading north and closer to shore. 1241 count increased to 2. Fix 3957 whales traveling north towards outbound. Fix 3960 Whales outside of outbound line continuing to travel north away from zone. Last seen: 13:20

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
729	3947	11/5/2020 12:07:40 PM	61.237915	-149.917295	1268.81273
729	3948	11/5/2020 12:16:42 PM	61.23546	-149.910656	861.48083
729	3949	11/5/2020 12:23:35 PM	61.242447	-149.900621	943.08082
729	3950	11/5/2020 12:26:18 PM	61.243386	-149.896538	997.29405
729	3951	11/5/2020 12:31:08 PM	61.243939	-149.896087	1056.46695
729	3952	11/5/2020 12:34:13 PM	61.244021	-149.894808	1062.92331
729	3953	11/5/2020 12:40:31 PM	61.241908	-149.89658	834.30526
729	3954	11/5/2020 12:44:18 PM	61.243003	-149.893304	952.6316
729	3955	11/5/2020 12:54:33 PM	61.245023	-149.899508	1202.26706
729	3957	11/5/2020 1:02:37 PM	61.255212	-149.883093	2388.18429
729	3958	11/5/2020 1:11:08 PM	61.257064	-149.882228	2598.9385
729	3960	11/5/2020 1:19:27 PM	61.265345	-149.881285	3506.30682

Group ID **730** Created Date 11/5/2020 12:53:33 PM Last Update 11/5/2020 2:31:45 PM Species Common Name Beluga

Spread 1 Formation Linear Combined Group False Pace Moderate Primary Behavior Travelling Secondary Behavior Milling

Beluga Counts	White 1	Gray 1	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 0	Other Calf 0	Total Other
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Comments

13:01 Belugas spotted in middle of inlet traveling northwest. Last seen: 13:53 by PW.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
730	3956	11/5/2020 1:00:47 PM	61.241564	-149.930084	2051.10347
730	3959	11/5/2020 1:18:06 PM	61.251289	-149.910084	2043.74279
730	3961	11/5/2020 1:25:19 PM	61.250948	-149.906381	1936.42584
730	3962	11/5/2020 1:29:19 PM	61.249595	-149.908265	1832.33554
730	3963	11/5/2020 1:37:05 PM	61.248656	-149.904297	1659.57229
730	3964	11/5/2020 1:58:18 PM	61.248938	-149.907476	1748.62103

Group ID 732	Created Date 11/6/2020 4:11:43 PM	Last Update 11/6/2020 4:31:28 PM	Species Common Name Beluga
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior None
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Beluga Counts 1	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts 0	Other Adult 0	Other Calf 0	Total Other
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Comments

16:11 One white beluga seen surfacing inside outbound line traveling south towards station. Last seen: 16:13

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
732	3973	11/6/2020 4:12:15 PM	61.256528	-149.882464	2538.13711

Group ID 734	Created Date 11/8/2020 8:41:59 AM	Last Update 11/8/2020 1:56:45 PM	Species Common Name Beluga
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Travelling
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Beluga Counts 1	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts 0	Other Adult 0	Other Calf 0	Total Other
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Comments

NEX One beluga seen travelling North East. Last seen 0842.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
734	3976	11/8/2020 8:42:32 AM	61.270666	-149.879605	4103.57127

**2020 POA PCT
Marine Mammal Sightings
Overview
11/02/20 - 11/08/20**

- ▲ PSO Station
- Marine Mammal Groups**
- ◆ Group 720 Beluga
- ◆ Group 721 Beluga
- ◆ Group 722 Beluga
- ◆ Group 723 Beluga
- ★ Group 725 Harbor Porpoise
- ◆ Group 726 Beluga
- ◆ Group 729 Beluga
- ◆ Group 730 Beluga
- ◆ Group 732 Beluga
- ◆ Group 734 Beluga



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Beluga Sightings
11/02/20 - 11/08/20
Figure 1**

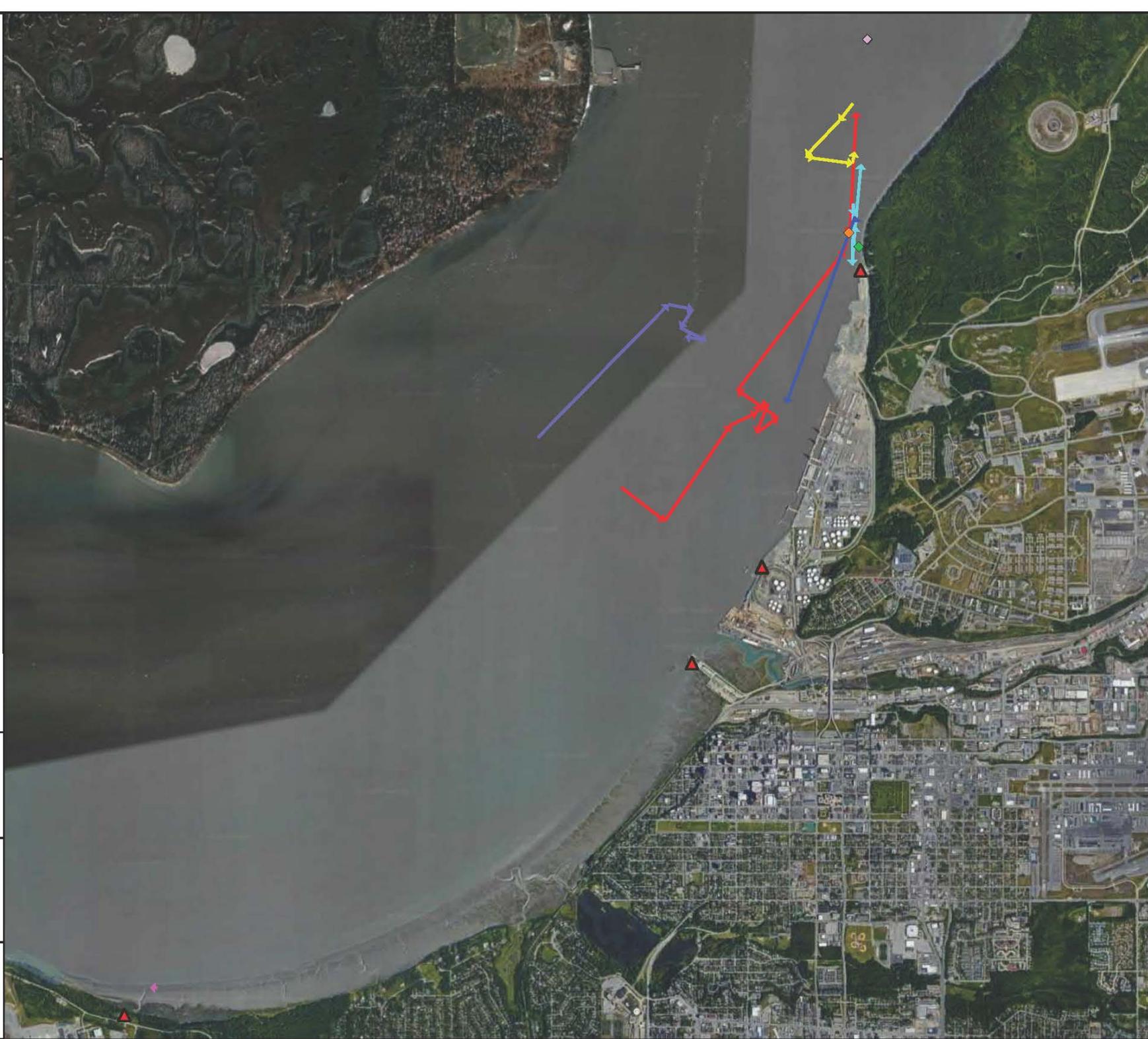
-  PSO Station
- Beluga Track Lines**
-  Group 720 Beluga
-  Group 721 Beluga
-  Group 722 Beluga
-  Group 723 Beluga
-  Group 726 Beluga
-  Group 729 Beluga
-  Group 730 Beluga
-  Group 732 Beluga
-  Group 734 Beluga



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



Appendix D – Week of 11/9 – 11/15 Sighting Forms and Maps

MM Group Report

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	<input type="text" value="4"/>	<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>		<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text"/>

Comments

***SC: 13:34 one white beluga travelling south; 1352 one gray beluga added to count; 1415 one more white beluga added to count; PCT** 1145 FIX ID #4001 two white and one gray moving north quickly. 1426 FIX ID #4002 group has slowed down and is milling in front of station; slowly moving north. 1428 Chris radioed that group was in front of crane. 1453 FIX ID# 4003 one white spotted in front of station. Last time seen: **NEX: Fix 4004 Belugas seen approaching station 15:15 Added to beluga count 4 white 2 gray. Fix 4007 Belugas outside zone and outbound line. 15:20

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
737	3991	11/12/2020 1:36:39 PM	61.226157	-149.907424	1146.64359
737	3992	11/12/2020 1:41:00 PM	61.225251	-149.912373	1393.35346
737	3993	11/12/2020 1:48:06 PM	61.22625	-149.91443	1395.32202
737	3994	11/12/2020 1:55:00 PM	61.225431	-149.915335	1491.90555
737	3995	11/12/2020 2:04:56 PM	61.224364	-149.915739	1589.30216
737	3996	11/12/2020 2:15:23 PM	61.225781	-149.915354	1466.80734
737	3997	11/12/2020 2:22:13 PM	61.226673	-149.907788	1113.20964
737	3998	11/12/2020 2:28:32 PM	61.225414	-149.908188	1237.43677
737	3999	11/12/2020 2:36:25 PM	61.226073	-149.909135	1210.45048
737	4000	11/12/2020 2:42:48 PM	61.228679	-149.902809	775.22324
737	4001	11/12/2020 2:44:56 PM	61.230668	-149.899096	482.57842
737	4002	11/12/2020 2:46:01 PM	61.233098	-149.897097	198.61556

Group ID 737	Created Date 11/12/2020 1:36:16 PM	Last Update 11/12/2020 3:21:19 PM	Species Common Name Beluga
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Milling
--------------------	----------------------------	--------------------------------	-------------------------	---------------------------------------	--------------------------------------

Beluga Counts	White 4	Gray 2	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 0	Other Calf 0	Total Other
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Comments

***SC: 13:34 one white beluga travelling south; 1352 one gray beluga added to count; 1415 one more white beluga added to count; PCT** 1145 FIX ID #4001 two white and one gray moving north quickly. 1426 FIX ID #4002 group has slowed down and is milling in front of station; slowly moving north. 1428 Chris radioed that group was in front of crane. 1453 FIX ID# 4003 one white spotted in front of station. Last time seen: **NEX: Fix 4004 Belugas seen approaching station 15:15 Added to beluga count 4 white 2 gray. Fix 4007 Belugas outside zone and outbound line. 15:20

737	4003	11/12/2020 2:53:36 PM	61.232998	-149.896758	196.39066
737	4004	11/12/2020 3:14:19 PM	61.252908	-149.882039	2158.93228
737	4005	11/12/2020 3:16:06 PM	61.254256	-149.881745	2306.33065
737	4006	11/12/2020 3:17:45 PM	61.256352	-149.880692	2545.44387

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="5"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

NEX: 16:47 Fix 4017-4018 Belugas surfaced just north of NEX station inside the boundary line traveling south. Belugas were milling just south of NEX station. Last seen 16:51

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
739	4017	11/13/2020 4:47:57 PM	61.254634	-149.880766	2362.38699
739	4018	11/13/2020 4:49:44 PM	61.253408	-149.881175	2226.31401

Group ID	Created Date	Last Update	Species Common Name						
742	11/15/2020 10:36:55 AM	11/15/2020 1:58:37 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	None				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	2	1	1	0	0		0	0	

Comments

NEX: 10:36 Fix 4028-4031 Two white and one gray beluga coming around Cairn point heading south along near shore. Large container ship coming in to dock. Fix 4032 Beluga group changed direction and turned back heading North past NEX station. **PW: FIX 4036 belugas proceeding north, still inside the zone. FIX 4037 belugas outside of zone, still travelling north. Last seen: 11:19

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
742	4028	11/15/2020 10:38:11 AM	61.257866	-149.881493	2695.18743
742	4029	11/15/2020 10:40:58 AM	61.255885	-149.883001	2461.72602
742	4030	11/15/2020 10:43:06 AM	61.253436	-149.882151	2212.9096
742	4031	11/15/2020 10:46:46 AM	61.250594	-149.883203	1895.37306
742	4032	11/15/2020 10:55:33 AM	61.254217	-149.882296	2293.52132
742	4033	11/15/2020 11:00:38 AM	61.256969	-149.881284	2602.16879
742	4034	11/15/2020 11:03:13 AM	61.262206	-149.880348	3177.36305
742	4036	11/15/2020 11:17:14 AM	61.278786	-149.868637	5118.80845
742	4037	11/15/2020 11:20:23 AM	61.284338	-149.861008	5827.62291

Group ID**Created Date****Last Update****Species Common Name****Spread****Formation****Combined Group****Pace****Primary Behavior****Secondary Behavior**

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="2"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>		<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value=""/>	

Comments

NEX: 10:36 Fix 4028-4031 Two white and one gray beluga coming around Cairn point heading south along near shore. Large container ship coming in to dock. Fix 4032 Beluga group changed direction and turned back heading North past NEX station. **PW: FIX 4036 belugas proceeding north, still inside the zone. FIX 4037 belugas outside of zone, still travelling north. Last seen: 11:19

Group ID	Created Date	Last Update	Species Common Name						
743	11/15/2020 11:28:58 AM	11/15/2020 12:01:42 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	2	0	0	0	0		0	0	

Comments

NEX: 11:30 Two white belugas surfaced just West of NEX station, south of the Boundary Line and inside the Level B zone. 11:43 Belugas milling in general area, inside of outbound line. Fix 4044 Belugas starting to travel north, outside of outbound line. Last seen: 12:00

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
743	4039	11/15/2020 11:29:54 AM	61.256726	-149.894356	2474.74234
743	4040	11/15/2020 11:40:43 AM	61.259496	-149.897532	2786.65318
743	4041	11/15/2020 11:43:02 AM	61.2577	-149.896487	2584.71523
743	4042	11/15/2020 11:52:41 AM	61.260338	-149.89591	2876.79663
743	4043	11/15/2020 11:55:44 AM	61.262257	-149.890578	3097.06119
743	4044	11/15/2020 11:59:20 AM	61.263541	-149.880042	3325.33076

Group ID	Created Date	Last Update	Species Common Name						
745	11/15/2020 12:13:05 PM	11/15/2020 1:55:51 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
>10	No Formation	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	6	0	0	0	0		0	0	

Comments

**NEX Two white belugas seen surfacing inside of outbound line. 12:46 Count now has increased to 4 white belugas. Fix 4049 Count increased to 6 belugas, continuing to mill in general area. Last seen: 1447

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
745	4045	11/15/2020 12:13:30 PM	61.25852	-149.888351	2695.35422
745	4047	11/15/2020 12:30:31 PM	61.258247	-149.891625	2648.73751
745	4048	11/15/2020 12:46:17 PM	61.256533	-149.899119	2464.67796
745	4049	11/15/2020 12:58:10 PM	61.260851	-149.890173	2942.93328
745	4052	11/15/2020 1:29:20 PM	61.265476	-149.898175	3452.03562
745	4053	11/15/2020 1:40:23 PM	61.259564	-149.894862	2790.05658
745	4054	11/15/2020 2:12:04 PM	61.26331	-149.889323	3219.06051
745	4055	11/15/2020 2:29:49 PM	61.26768	-149.888717	3705.62523
745	4056	11/15/2020 2:44:56 PM	61.276117	-149.885131	4657.45475

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	Other MM Counts	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text"/>
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Comments

Nex: One white beluga seen in front of station traveling south. Changed direction and is headed north towards Cairn pt. Last seen: 13:19

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
746	4046	11/15/2020 12:22:27 PM	61.25339	-149.882095	2208.94856
746	4050	11/15/2020 1:21:43 PM	61.262695	-149.881202	3219.60192

2020 POA PCT
Marine Mammal Sightings
Overview - Beluga
11/09/20 - 11/15/20

▲ PSO Station

Marine Mammal Groups

- ◆ Group 737 Beluga
- ◆ Group 739 Beluga
- ◆ Group 742 Beluga
- ◆ Group 743 Beluga
- ◆ Group 745 Beluga
- ◆ Group 746 Beluga

0 0.75 1.5 km

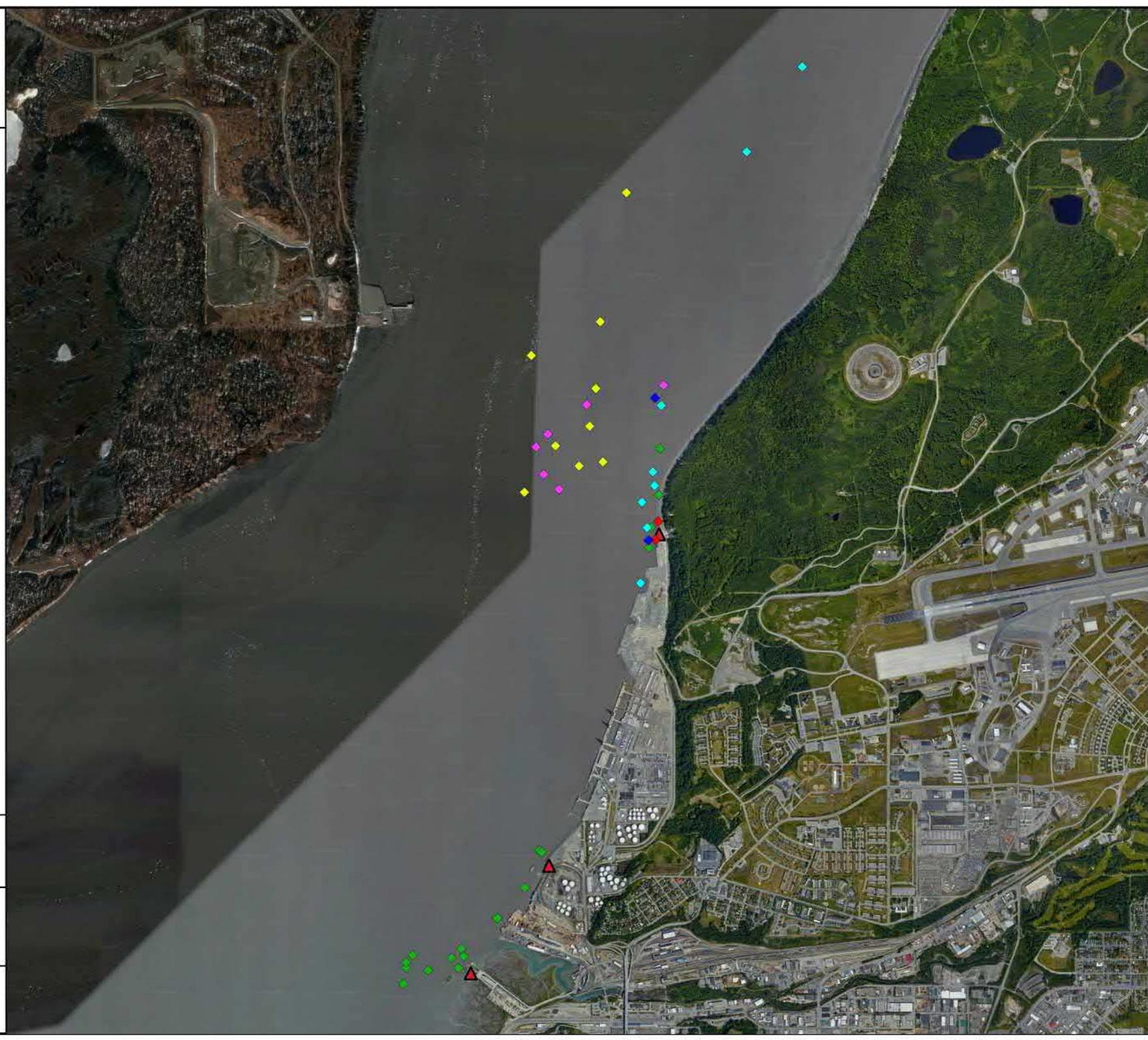


61 | N

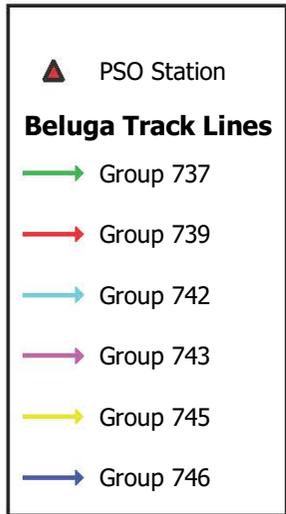
61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Beluga Sightings
11/09/20 - 11/15/20
Figure 1**



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



Appendix E – Week of 11/16 – 11/22 Sighting Forms and Maps

MM Group Report

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value=""/>							

Comments

NEX: 2 belugas seen surfacing at wet barge berth inside zone. Last seen: 09:52

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
748	4060	11/16/2020 9:39:36 AM	61.25263	-149.881593	2137.3024
748	4062	11/16/2020 9:52:35 AM	61.251966	-149.882734	2047.89223

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>							

Comments

NEX: 09:47 One beluga seen outside the outbound line. Last seen: 09:48

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
749	4061	11/16/2020 9:47:16 AM	61.257867	-149.879935	2718.26591

Group ID	Created Date	Last Update	Species Common Name						
750	11/16/2020 10:30:31 AM	11/16/2020 11:40:29 AM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
2	0	0	0	0	0	0	0	0	

Comments

NEX: One beluga seen surfacing in front of station in the zone traveling south. 10:37 Count increased to 2 belugas, continuing to travel south. Last seen: 11:17.
 ***SC** 11:26 Took over from NEX. Took one fix of whales. Last seen at 11:26.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
750	4065	11/16/2020 10:30:42 AM	61.256369	-149.884639	2493.48032
750	4066	11/16/2020 10:37:23 AM	61.249209	-149.885662	1708.83095
750	4067	11/16/2020 10:47:17 AM	61.243545	-149.889191	1051.7999
750	4068	11/16/2020 11:02:15 AM	61.244374	-149.888001	1158.55397
750	4069	11/16/2020 11:16:48 AM	61.242743	-149.889668	959.10607
750	4070	11/16/2020 11:26:09 AM	61.243852	-149.892657	1049.71635

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>							

Comments

SC11:29 Fix 4071 One white beluga appeared at mouth of Ship Creek. 11:33 One whale popped up in front of PCT heading North. Last seen 11:37.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
751	4071	11/16/2020 11:29:00 AM	61.227169	-149.904727	971.72009
751	4074	11/16/2020 11:34:31 AM	61.22945	-149.901078	653.00407

Group ID 752	Created Date 11/16/2020 11:28:59 AM	Last Update 11/16/2020 3:55:11 PM	Species Common Name Beluga						
Spread >10	Formation No Formation	Combined Group True	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Milling				
Beluga Counts	White 7	Gray 3	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 0	Other Calf 0	Total Other

Comments

NEX: Belugas seen south of station traveling north. Fix 4075 Beluga count increasing to 10, fix 4076 taken of trailing beluga as they approached outbound and zone line at 1156. Last seen 1205. SC: Fix 4079; Respotted farther north at 12:30. **NEX: 2 belugas split from larger group and started to travel south. 13:17 Belugas continuing to travel south and moving into zone. Combined groups 752 and 753. Last seen: 13:35

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
752	4072	11/16/2020 11:29:08 AM	61.252757	-149.887654	2068.05183
752	4073	11/16/2020 11:30:11 AM	61.253274	-149.886255	2139.06077
752	4075	11/16/2020 11:37:49 AM	61.251281	-149.883416	1964.23312
752	4076	11/16/2020 11:55:45 AM	61.258365	-149.883011	2729.05973
752	4077	11/16/2020 12:00:05 PM	61.262517	-149.885475	3156.76475
752	4079	11/16/2020 12:32:43 PM	61.260622	-149.881301	2994.27251
752	4081	11/16/2020 12:44:48 PM	61.257895	-149.885899	2646.54815
752	4082	11/16/2020 12:54:41 PM	61.259161	-149.883437	2810.28242
752	4083	11/16/2020 1:04:47 PM	61.260163	-149.884783	2905.1837
752	4084	11/16/2020 1:06:12 PM	61.258749	-149.883586	2763.85847
752	4085	11/16/2020 1:15:24 PM	61.257791	-149.882702	2670.91842
752	4086	11/16/2020 1:17:09 PM	61.256472	-149.882071	2537.62398
752	4087	11/16/2020 1:23:54 PM	61.253325	-149.882215	2200.11871
752	4088	11/16/2020 1:35:05 PM	61.249998	-149.884889	1804.66246

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>							

Comments

NEX: 12:27 one white beluga seen traveling north in front of station inside zone. Fix 4080 beluga traveled outside zone. ***Fix ID 4081 belongs in Group 752;*****
 Last seen: 12:35 **Combined groups 752 and 753, notes now in G752** (ATL post-processed: moved fix ID 4081 from group 753 to 752)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
753	4078	11/16/2020 12:29:00 PM	61.255602	-149.884666	2410.00006
753	4080	11/16/2020 12:34:17 PM	61.258313	-149.880772	2753.31457

Group ID	Created Date	Last Update	Species Common Name						
754	11/16/2020 2:09:14 PM	11/16/2020 3:54:39 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
2	0	0	0	0	0	0	0	0	

Comments

NEX F4089 Two Beluga observed traveling NE over the outbound line. Last seen 15:19

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
754	4089	11/16/2020 2:38:01 PM	61.26475	-149.897536	3369.76445
754	4090	11/16/2020 2:38:37 PM	61.264732	-149.897509	3367.70128
754	4091	11/16/2020 2:45:05 PM	61.263439	-149.891515	3225.07299
754	4092	11/16/2020 2:46:25 PM	61.262043	-149.886706	3095.00274
754	4093	11/16/2020 2:52:28 PM	61.263566	-149.891075	3240.47964
754	4094	11/16/2020 3:04:35 PM	61.264511	-149.888332	3356.94722

Group ID	Created Date	Last Update	Species Common Name						
756	11/17/2020 10:18:51 AM	11/17/2020 1:12:13 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Travelling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	3	3	0	0	0		0	0	

Comments

NEX: F4098 One gray Beluga observed traveling south toward port along seawall. F4099 Updated count to three Beluga. ***SC** Took over from NEX at 10:42. Group traveled south down shore, passing tug boat dock. 1052 SC updated count to three whites, three grays; Last seen 11:01 by sc. (ATL post-processed: moved fix ID 4101 to test fix observation record 755. Fix 4101 was from PW, and way out in middle of Inlet, between handoff from NEX to SC as whales were travelling along port shore.)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
756	4098	11/17/2020 10:19:07 AM	61.253908	-149.884199	2232.99581
756	4099	11/17/2020 10:20:37 AM	61.251899	-149.884103	2019.11306
756	4100	11/17/2020 10:23:07 AM	61.250506	-149.884125	1870.6688
756	4102	11/17/2020 10:41:31 AM	61.230199	-149.899975	551.24696
756	4103	11/17/2020 10:43:35 AM	61.229091	-149.901918	710.73057
756	4104	11/17/2020 10:46:50 AM	61.226803	-149.905551	1030.07319
756	4105	11/17/2020 10:49:28 AM	61.22549	-149.908782	1249.50207
756	4106	11/17/2020 10:51:08 AM	61.22374	-149.910317	1455.03771
756	4107	11/17/2020 10:57:44 AM	61.218701	-149.919571	2199.34683
756	4108	11/17/2020 10:58:18 AM	61.21772	-149.92096	2331.11073
756	4109	11/17/2020 11:01:06 AM	61.217053	-149.921903	2420.66536

Group ID	Created Date	Last Update	Species Common Name						
758	11/18/2020 3:02:31 PM	11/18/2020 4:12:28 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	8	4	1	0	0		0	0	

Comments

NEX: 3 white belugas seen surfacing north of the station, traveling southeast. Fix 4126 Belugas continuing to travel southeast towards station, count increased to 9. Fix 4129 Belugas traveling south towards station, past outbound line. Beluga count increased to 13,coloration hard to identify with flat light. Fix 4135 Belugas changed direction, traveling north in front of station. Fix 4137 Belugas outside of outbound line continuing to travel north. Last seen: 16:12

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
758	4124	11/18/2020 3:02:48 PM	61.270111	-149.882271	4017.15282
758	4125	11/18/2020 3:06:26 PM	61.265816	-149.882716	3542.9558
758	4126	11/18/2020 3:07:47 PM	61.264656	-149.880442	3441.07947
758	4127	11/18/2020 3:09:18 PM	61.264189	-149.882482	3367.69363
758	4128	11/18/2020 3:12:52 PM	61.263235	-149.882304	3265.6716
758	4129	11/18/2020 3:24:12 PM	61.256314	-149.882006	2521.63393
758	4130	11/18/2020 3:28:04 PM	61.253898	-149.881725	2268.73876
758	4131	11/18/2020 3:36:10 PM	61.252931	-149.8833	2141.23877
758	4132	11/18/2020 3:41:25 PM	61.252932	-149.883297	2141.39088
758	4133	11/18/2020 3:44:36 PM	61.248372	-149.886524	1606.70155
758	4135	11/18/2020 3:52:36 PM	61.25356	-149.883041	2212.19453
758	4136	11/18/2020 3:59:51 PM	61.253562	-149.883028	2212.60335
758	4137	11/18/2020 4:04:49 PM	61.258907	-149.882317	2796.25985
758	4138	11/18/2020 4:11:56 PM	61.272052	-149.87675	4286.20197

MM Group Report

Group ID
Created Date
Last Update
Species Common Name

Spread
Formation
Combined Group
Pace
Primary Behavior
Secondary Behavior

Beluga Counts	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	Other MM Counts	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text"/>
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Comments

NEX: 09:30 Beluga spotted inside zone. Traveling south. ***SC: Fix 4144 delayed from actual time seen due to theodolite problem at PCT **PCT confirms fix 4144 is accurate to where whale surfaced. Last seen 1016

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
761	4141	11/21/2020 9:30:21 AM	61.254612	-149.884814	2301.04518
761	4142	11/21/2020 9:33:22 AM	61.253813	-149.881649	2260.99512
761	4143	11/21/2020 9:49:29 AM	61.248334	-149.888662	1575.37902
761	4144	11/21/2020 10:19:11 AM	61.233659	-149.895408	96.67974

2020 POA PCT
Marine Mammal Sightings
Overview
11/16/20 - 11/22/20

▲ PSO Station

Marine Mammal Groups

- ◆ Group 748 Beluga
- ◆ Group 749 Beluga
- ◆ Group 750 Beluga
- ◆ Group 751 Beluga
- ◆ Group 752 Beluga
- ◆ Group 753 Beluga
- ◆ Group 754 Beluga
- ◆ Group 756 Beluga
- ◆ Group 758 Beluga
- ◆ Group 761 Beluga

0 0.75 1.5 km



61|N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Beluga Sightings
11/16/20 - 11/22/20
Figure 1**

▲ PSO Station

Beluga Track Lines

→ Group 748

→ Group 749

→ Group 750

→ Group 751

→ Group 752

→ Group 753

→ Group 754

→ Group 756

→ Group 758

→ Group 761

0 0.5 1 km



61 | N

61 North Environmental



Map Imagery Source:
Google Earth, 2020



Appendix F – Data Field Information for Sighting Reports

**Port of Alaska, PCT Construction 2020
Marine Mammal Monitoring
Data Field Information for Sighting Reports**

Marine Mammal Group Sighting - Parent Record Information	
Group ID	The marine mammal group identification number generated by the database upon entry. Note: The marine mammal sighting form is used test the theodolites each morning to ensure they are functioning properly. The database assigns a Group ID number to the test record , therefore some group ID numbers are missing from the sequence of marine mammal group sightings.
Created Date	The date and time the parent record of the marine mammal sighting was first created.
Last Update	The date and time any field within the parent record of the marine mammal sighting was last edited.
Species Common Name	The common name of the marine mammal sighted, selected from the list: Beluga, Harbor Seal, Harbor Porpoise, Steller Sea Lion, Pinniped Unid., Humpback Whale, Gray Whale, Fin Whale, Minke Whale, Dall's Porpoise, Cetacean Unid., Mysticetes Unid., Unknown.
Spread	The spread of the whales is defined as the mean distance between beluga whales in body lengths (e.g., a spread of 2 indicates that the whales are spaced out, on average, 2 body lengths apart). One selection is made from a dropdown for each sighting from 1 - 10, or >10. Additional notes on spread may be located in the Comments field.
Formation	The formation of the group references how the individual marine mammals are distributed within the group. The formation code that best reflects the distribution pattern of the group is entered: Circular (C) – arranged in a circular group while moving in one direction Parallel (P) – alongside each other, spread perpendicular to direction of movement Linear (L) – forming a line, spread along direction of movement Echelon (E) – Arranged diagonally, each marine mammal to the side and behind animal ahead of it; also includes "v" formation No Formation (NF) – Random or un-patterned formation
Combined Group	A field to indicate if the parent record of the sighting is related to another sighting. The default setting is "False" meaning the group did not combine with or split from another group. "True" means the group either combined with or split from another group and the comments of each sighting should be reviewed for behavior.
Pace	Sedate, moderate, or vigorous.
Primary and Secondary Behavior	The primary and secondary behaviors represent the most common and second most common behavior exhibited by the group throughout the sighting. Additional behaviors are presented in the Comments field. Behaviors are selected from a dropdown and include: Unknown, Avoiding Predation, Bubbling, Calving, Diving, Feeding Observed, Feeding Suspected, Mating Suspected, Milling, Other, Resting, Side Scanning, Snorkeling, Socializing, Spyhopping, Startling, Tail Slapping, Tail Waving, Travelling, Vocalizing, Multiple-see comments, Breach, Porpoising, Sink, None, Looking.
Beluga Counts White, Gray, Calf, Neonate, and Unknown	The MMOs best count of the number of each category of belugas present in the group. Often multiple MMOs observe the group and reach consensus on the best count. The addition of animals to the overall counts throughout the sighting are often documented in the Comments field.
Other MM Counts: Adult, Calf, Total	The MMOs best count of the number of adults and calf/pup present in the group if it can be discerned. Often multiple MMOs observe the group and reach consensus on the "best" count. The addition of animals to the overall counts throughout the sighting are often documented in the Comments field.
Comments	MMO comments on behaviors, fix details, counts, sighting progression, which station is has "control" of the parent record and is entering fixes, and other sighting details.
Marine Mammal Position Table	
Group ID	Corresponds to the Group ID of the sighting parent record in the database.
Fix ID	The sequential identification number given to a marine mammal position (or theodolite check shot) measured through entry of a horizontal and vertical angle.
Fix Time	The initial time the fix is entered. Updates can be made to the horizontal or vertical angles of a fix and that time is also captured, but not displayed on the report form.
MM Latitude	The latitude in decimal degrees of the marine mammal group position. In a group that is spread out, generally the animal closest to the PCT is selected for measurement of the position.
MM Longitude	The longitude in decimal degress of the marine mammal group position.
Distance To PCT	The distance of the marine mammal group from either a specific pile if there is a pile driving activity selected in the database, or from a the generalized PCT location 61.23445565°, -149.8946812° if no pile-driving activity is selected in the database.