



MEMORANDUM

DATE: June 15, 2020

TO: Jaclyn Daly (NOAA), Bonnie Easley-Appleyard (NOAA) and Anne Logwood (USACE)

FROM: Paul McLarnon and Leslie Curran (PCT Project Management Office)

CC: Kevin Doyle, Shelle Cover, Anna Kohl, Suzann Speckman, Sim Brubaker, and Steve Lee (PCT Project Management Office)

Subject: Monthly Field Report for May 2020, Petroleum and Cement Terminal Construction Project, Port of Alaska.

THIS REPORT CONTAINS PRELIMINARY DATA – INFORMATION MAY CHANGE AFTER A MORE DETAILED QA/QC IS COMPLETED.



SUBMITTAL COVER SHEET

Project PCT 2020 Date Submitted: 6/9/2020
Contractor Pacific Pile & Marine Contract No. C-2019003209
Subcontractor /Supplier / Manufacturer: 61 North
Submittal No.: PCT2020-261E Revision: 00

Submittal Type: Action Informational

Submittal Title: PCT 2020 - Marine Mammal Monitoring Monthly Report – May 2020

Drawing Reference(s):

Specification Reference(s): 01 41 00 / 01.03.A.04

Standards Reference(s):

Submittal Description (inclusive of model number, style number, serial number and intended use:

Marine Mammal Monitoring Monthly Report – May 2020 (report covers the period April 27 - May 31)

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

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

27 April to 31 May 2020

Prepared for

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and

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and

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JUNE 8, 2020

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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 background of the logo is white, which is set against a teal background on the page.

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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
PDA	pile driving analyzer
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. The MMOs monitored every day from 27 April through 31 May 2020 except for 25 May (Memorial Day). The MMO's 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, 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, 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 am and 1:00 pm but may be taken earlier or later if there is an active sighting or planned in-water activity, or both.

2.1 Monitoring Effort

Observation hours are summarized on a project level, a per-station level, and a per-MMO level. The project-level observation hours calculated as the duration between the beginning of pre-clearance and the observation end time 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. The weekly observation hours are presented in Table 1.

Table 1 - Observation Hours

Date	Begin Time	End Time	Project Observation Hours	Station Observation Hours ¹	MMO Observation Hours ²
4/27/2020	6:54	17:00	10.10	40.4	60.2
4/28/2020	6:53	17:00	10.12	40.5	60.3
4/29/2020	6:51	17:00	10.15	40.6	60.6
4/30/2020	6:53	17:00	10.12	40.5	60.3
5/1/2020	6:45	17:00	10.25	41.0	61.3
5/2/2020	6:55	17:00	10.08	40.3	60.1
5/3/2020	6:53	17:00	10.12	40.5	60.3
5/4/2020	6:51	17:00	10.15	40.6	60.6
5/5/2020	7:00	14:01	7.02	28.1	41.1
5/6/2020	7:01	17:15	10.23	40.9	61.1
5/7/2020	6:58	17:15	10.28	41.1	61.5
5/8/2020	7:03	17:15	10.20	40.8	60.9
5/9/2020	7:04	17:15	10.18	40.7	60.8
5/10/2020	7:02	17:00	9.97	39.9	59.3
5/11/2020	7:07	17:15	10.13	40.5	60.4
5/12/2020	7:02	17:15	10.22	40.9	61.0

Date	Begin Time	End Time	Project Observation Hours	Station Observation Hours ¹	MMO Observation Hours ²
5/13/2020	7:02	17:15	10.22	40.9	61.0
5/14/2020	7:04	17:15	10.18	40.7	60.8
5/15/2020	7:04	17:15	10.18	40.7	60.8
5/16/2020	7:01	17:15	10.23	40.9	61.1
5/17/2020	7:04	17:15	10.18	40.7	60.8
5/18/2020	7:04	17:15	10.18	40.7	60.8
5/19/2020	7:02	17:15	10.22	40.9	61.0
5/20/2020	7:02	17:57	10.92	43.7	65.9
5/21/2020	7:00	17:47	10.78	43.1	65.0
5/22/2020	6:59	17:15	10.27	41.1	61.4
5/23/2020	7:01	17:15	10.23	40.9	61.1
5/24/2020	7:02	17:57	10.92	43.7	65.9
5/25/2020	7:03	17:15	10.20	40.8	60.9
5/26/2020	7:02	10:12	3.17	12.7	11.7
5/27/2020	7:01	17:57	10.93	43.7	66.0
5/28/2020	7:04	20:08	13.07	52.3	81.0
5/29/2020	7:04	17:15	10.18	40.7	60.8
5/30/2020	7:05	17:33	10.47	41.9	62.8
5/31/2020	7:03	17:15	10.20	40.8	60.9
Total Hrs Observation:			352.05	1408.20	2099.35

Notes:¹ equals project hours X 4 Stations² equals project hours X 7 MMOs "on watch" minus breaks

2.2 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.). 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). Between 27 April and 31 May 2020 MMOs entered 2,620 records of environmental conditions.

The overall observation conditions were good to excellent for most of the reporting period. The “observation condition” was 7 or greater for 98 percent of the records entered. The average visibility was over 9,000 meters and was greater than or equal to 5,000 meters for 99 percent of the observations. The maximum ice coverage recorded was 30 percent (27 April) and the last day any ice was observed was 10 May. Glare was recorded as less than 10% for 97.5 percent of observations. All observations were conducted during daylight hours. Wind speed, direction, and air temperature are not recorded by the MMOs as these meteorological data are available from the NOAA tide station 9455920 located at the POA, a few hundred meters from the PCT (NOAA 2020b). A summary of the weather conditions 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 Occurrence
Cloudy	29%
Fog	0%
Light Rain	1%
Mist	0%
Partly Cloudy	40%
Partly Sun	6%
Rain	1%
Sun	22%

Table 3. Summary of Beaufort Sea State Observations

Beaufort Sea State	Percent of Observations
0	2%
1	34%
2	53%
3	10%
4	1%
>=5	0%

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.

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.

The tidal stage at the time of each weather/effort observation is automatically populated based on the time stamp of the observation. A summary of tidal stages recorded is presented in Table 5.

Table 5. Summary of Tide Stages Recorded

Tide Stage	Percent of Observations
Low Slack	15%
Low Flood	13%
High Flood	14%
High Slack	16%
High Ebb	20%
Low Ebb	21%

The wind speed and direction for 27 April through 31 May were downloaded on an hourly basis from the NOAA (2020b). These data are summarized and presented in Figure 2.

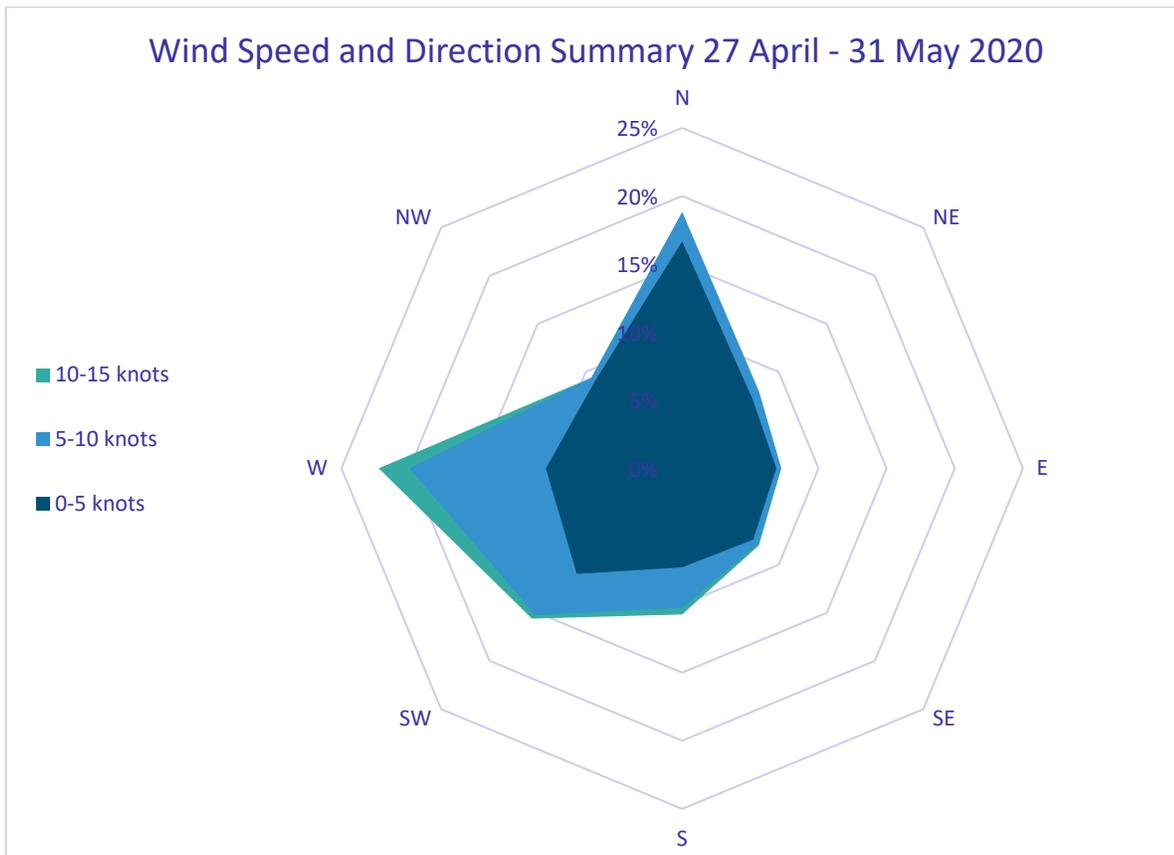


Figure 2. Wind Speed Rose, NOAA Tide Station 9455920, Anchorage Alaska, 27 April thru 31 May 2020

The wind rose presented in Figure 2 shows that wind was typically out of the north or west most of the time (approximately 18 percent and 22 percent of the time, respectively). It also shows that most of the wind speeds were below 10 knots, with only a small fraction greater than 10 knots (green sliver).

3 In-Water Operations

From 27 April to 31 May 2020, 39 in-water pile driving events occurred with a total of 627 minutes of in-water driving. No in-water pile installation occurred until 4 May 2020. Between 4 May and 29 May, all in-water pile driving occurred in water less than 10 feet where the bubble curtain could not be deployed. The PPM-contracted barge “450-7” arrived on 23 May 2020 and set anchors and moved into position at the PCT on 24 May. The anchor setting was conducted for 136 minutes and recorded as “In-water activity, no pile driving.” Table 6, Table 7, and Table 8 present the in-water operations. No in-water pile driving occurred during the week of 27 April through 3 May.

Other nearby vessel activity, dredging, and personal watercraft operations are documented in the notes if interactions with marine mammals occur, but the duration of these adjacent activities is not captured.

Note: The vibratory hammer is not audible at the PCT observation station, located approximately 200 meters from the nearest piles. The PCT MMOs visually monitor activity, listen to radio transmissions, and record the start and stop time of the hammer using visual cues such as the exhaust stack on the power pack or pile movement. Despite their best efforts, the start and stop times recorded by the MMOs may not reflect actual driving times in every instance. If a marine mammal exposure occurs it is checked against official start/stop times.

Table 6. In-Water Activity Summary 4 May thru 17 May 2020

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
5/4/2020	Vibratory hammer, no bubble curtain	24	5/4/2020 15:01	5/4/2020 15:12	11.3	12.3	1456 vibin' starts on a 24", no bub in the wet (millimeters of water on incoming tide); 1513 pile completed; 1521 preparing another 24" pile; Switching to template guide pile (a green one), starting a new port activity for new pile.
			5/4/2020 15:44	5/4/2020 15:45	1.1		
5/4/2020	Vibratory hammer, no bubble curtain	24	5/4/2020 15:46	5/4/2020 15:49	3.3	25.4	1544 24" template guide pile (green) vibe begins; 1549 vibing completed; Preparing to drive another green pile, in same row/bent; 1615 vibe begins; 1631 vibe ends; 1635 vibing on a 24" temporary pile; 1641 Belugas heading into the zone, Drew calls shutdown (PAID31); (ATL Post-process: deleted PA30PS26 [was practice/drill until actual PD started])
			5/4/2020 16:15	5/4/2020 16:31	15.9		
			5/4/2020 16:35	5/4/2020 16:41	6.3		
5/5/2020	Vibratory hammer, no bubble curtain	24	5/5/2020 8:16	5/5/2020 8:22	5.6	9.4	Beginning waterwork: 0815 Vibing (pile ~TmpMN2) begins on temporary 24" , no bub; 0822 Vibing ends; 0825 vibing starts on a green 24" guide pile, removal to reset; 0829 Vibe hammer off, pile out of the water;
			5/5/2020 8:25	5/5/2020 8:29	3.8		
5/5/2020	Vibratory hammer, no bubble curtain	24	5/5/2020 8:54	5/5/2020 9:01	6.7	21.5	0854 Vibe hammer on, 24" temp pile (~TmpKL1), no bub; 0901 Hammer off; 0902 Hammer on, same pile; 0903 Hammer off, pile done; Preparing for TmpKL4; Hammer on @0906. TmpKL1 done @09:13. Begin TmpKL3 @09:23 stop TmpKL3 @9:32.
			5/5/2020 9:02	5/5/2020 9:03	0.5		
			5/5/2020 9:06	5/5/2020 9:10	4.5		
			5/5/2020 9:11	5/5/2020 9:13	1.6		
			5/5/2020 9:23	5/5/2020 9:32	8.3		
5/12/2020	Vibratory hammer, no	48	5/12/2020 9:52	5/12/2020 10:29	36.4	36.4	0948 Received a text message from Chris "fully in water now". They had started vibing dry before the

Table 6. In-Water Activity Summary 4 May thru 17 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
	bubble curtain						tide came up and surrounded the pile. Stopped vibrate and disconnected.
5/13/2020	Impact hammer, no bubble curtain	36	5/13/2020 14:38	5/13/2020 14:45	6.9	6.9	1422 Lifting impact hammer onto pile. 1436 hammer on top of 36" pile (7D36). 1438 Start driving. 1445 Stopped activity. This was a PDA pile.
5/16/2020	Vibratory hammer, no bubble curtain	36	5/16/2020 14:19	5/16/2020 14:29	9.9	18.1	1419 Vibing 36" into bent 7 in the wet, the new pin pile. 1429 stopped vibing.
			5/16/2020 14:31	5/16/2020 14:39	8.2		
5/17/2020	Vibratory hammer, no bubble curtain	36	5/17/2020 12:46	5/17/2020 12:49	2.4	2.5	1246 tide has come up, pile is surrounded by water, informed all stations that they have started to vibrate in the wet. PortStatusID 79, the 3 second vibrate was entered accidentally.
			5/17/2020 13:22	5/17/2020 13:22	0.1		
5/17/2020	Vibratory hammer, no bubble curtain	24	5/17/2020 14:45	5/17/2020 15:03	18.0	18.0	1445 Starting to vibrate in a 24" pile, 7C24, in the wet.
5/17/2020	Vibratory hammer, no bubble curtain	24	5/17/2020 15:08	5/17/2020 15:26	17.7	17.7	Pile was already partially in when activity was started.
5/17/2020	Vibratory hammer, no bubble curtain	24	5/17/2020 16:00	5/17/2020 16:18	18.4	19.1	Started to vibrate a 24" pile, 7E24, in the wet. They sunk it too low and turned the vibrate on briefly to raise the pile back up. 1621 hammer off the pile.
			5/17/2020 16:18	5/17/2020 16:19	0.7		
Total In-water Pile Driving Minutes:						187.4	
Other In-water Activity Minutes:						0	

Table 7. In-Water Activity Summary Week of 18 May thru 24 May 2020

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
5/18/2020	Vibratory hammer, no bubble curtain	24	5/18/2020 13:40	5/18/2020 13:57	16.7	17.2	1340 started vibing 6B24 in the wet.
			5/18/2020 13:57	5/18/2020 13:57	0.4		
5/18/2020	Vibratory hammer, no bubble curtain	24	5/18/2020 14:43	5/18/2020 15:16	32.7	33.3	Starting to vib in pile 6E24 in the wet. Vibing stopped at 1516, restarted for under a minute; stopped again. 1517 vibing pile up and down to finish at the right height.
			5/18/2020 15:17	5/18/2020 15:17	0.2		
			5/18/2020 15:17	5/18/2020 15:18	0.4		
5/18/2020	Vibratory hammer, no bubble curtain	36	5/18/2020 15:46	5/18/2020 15:48	2	2	Started to vib a 36" that was already partially driven in then decided to save it for tomorrow. 1551 removed hammer from pile.
5/20/2020	Vibratory hammer, no bubble curtain	48	5/20/2020 10:09	5/20/2020 10:09	0.2	2.4	0923 - Discussed with Chris (conferred with engineers) that water work will proceed with seal in zone, they are prepared for possible take; 1012 - HS re-sighted near PW, G80F375; 1023 - seal update to Chris via phone; 1009- pile is on pinpile, picking
			5/20/2020 10:47	5/20/2020 10:49	2.2		
5/20/2020	Vibratory hammer, no bubble curtain	48	5/20/2020 16:44	5/20/2020 17:04	19.4	37.1	1635 - vibratory hammer attached to the pile, crane is moving pile to template for placement; 1644 - "driving in the water" (per, Chris); 1650 - Vibing on K-T1 begins (determined visually by appare
			5/20/2020 17:05	5/20/2020 17:22	17.7		
5/21/2020	Impact hammer, no	48	5/21/2020 9:09	5/21/2020 9:37	27.5	30.5	0909 - Impact hammer attached to K-T1 pile; 0910 - first soft strike; 0911 - full strikes begin; 0937 -

Table 7. In-Water Activity Summary Week of 18 May thru 24 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
	bubble curtain		5/21/2020 9:38	5/21/2020 9:41	3.1		strikes cease; 0938 - strikes restart; 0941 - strikes cease, K-T1 is complete; 0943 - hammer disconnected from K-T1, waiting to hear which pile is next
5/21/2020	Impact hammer, no bubble curtain	36	5/21/2020 16:07	5/21/2020 16:26	18.7	18.8	1607 - impact strikes begin on 6D36; 1607 - Harbor Seal (G87F387) sighted near NEX, greater than 2km from the current level B zone for work, Messaged Chris update on sighting and location, no immediate mitigation necessary
			5/21/2020 16:28	5/21/2020 16:28	0.1		
5/21/2020	Impact hammer, no bubble curtain	36	5/21/2020 16:34	5/21/2020 17:15	41	41	1631 - preparing to attach impact hammer to 6A36. 1632 hammer attached to pile and lowered. 1634 start impacting. Harbor seal (G87F87) north of outbound line, by point cairn, last seen at 1610. 1640 - harbor seal not seen in 30 minutes. 1716 stop impacting
5/22/2020	Vibratory hammer, no bubble curtain	24	5/22/2020 16:14	5/22/2020 16:21	7	12	24" Template pile being vibbed in the wet, appears closest to the I-T1 permanent pile in our guide.
			5/22/2020 16:23	5/22/2020 16:25	1		
			5/22/2020 16:27	5/22/2020 16:30	4		
5/24/2020	In-water activity, no pile driving	n/a	5/24/2020 7:27	5/24/2020 9:42	136	136	0724 -Beluga group (G101) inside the Inbound line (near point Woronzoff, over 6000 m from work site) sighted during pre-clearance; 0730 - Barge 450-7 (barge) pulls up in-front of station and appears to be setting an anchor; 0734 - called Chris to update
Total In-water Pile Driving Minutes:						194.3	
Other In-water Activity Minutes:						136	

Table 8. In-Water Activity Summary Week of 25 May thru 31 May 2020

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
5/26/2020	Impact hammer, no bubble curtain	48	5/26/2020 7:52	5/26/2020 8:18	26.5	26.5	0752 - Impact strikes start on 48" L-T1 no bub; 0818 - strikes cease, L-T1 complete; 0820 - hammer detached from pile;
5/26/2020	Impact hammer, no bubble curtain	48	5/26/2020 8:35	5/26/2020 9:04	28.6	28.6	0834 - impact hammer attached to L-T2; 0835 - impact strikes begin; 0844 - G107 seal sighting ends, 15 minutes past; 0904 - impact strikes end; 0905 - impact hammer removed from L-T2.
5/26/2020	Impact hammer, no bubble curtain	48	5/26/2020 9:13	5/26/2020 9:15	1.7	1.7	0912 - impact hammer attached to L-T3; 0913 - impact strikes begin; 0914 - impact strikes pause; 0932 - impact hammer is still attached, fire department shows up due to barge injury pausing work; 0934 - HDR Steve and other HDR worker tell us there is an injury and we are at an all-stop on work; 0954 - impact hammer removed from L-T3.
5/28/2020	Impact hammer, no bubble curtain	48	5/28/2020 9:07	5/28/2020 9:28	20.8	20.8	Started impacting, not doing a soft start due to the conduction of a Pile Driving Analyzer (PDA) test on a permanent pile.
5/28/2020	Impact hammer, no bubble curtain	36	5/28/2020 16:19	5/28/2020 16:26	7.1	7.1	Driving 36" pile for PDA test in the water.
5/28/2020	Vibratory hammer, no bubble curtain	24	5/28/2020 19:33	5/28/2020 19:38	5.3	5.3	Vibin in water, hammer on @19:33. Hammer off at @19:38.

Table 7. In-Water Activity Summary Week of 25 May thru 31 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
5/29/2020	In-water activity, no pile driving	n/a	5/29/2020 13:35	5/29/2020 17:12	217.5	217.5	Actual StartTime for PortStatusID 168 is 1335 - Crane Barge begins using a bubble curtain piling (no hammer involved) to test bottom depth near work site, aka pile dipping; 1515 - SL (G124) sighted just over 30 m from pile dipping activity; 1516 - PCT radioed Bo (barge crane operator) about near presence of SL; 1525 - SL sighted further Northeast away from work, traveling sedately, SL last sighted at 1527; 1538 - Barge crane still pile dipping for bottom depths; 1610 - messaged Brian and Chris, all stations clear; 1616 - vibrate hammer attached to land crane, (in the dry) 1655 pile dipping still in progress; Pile moved to bent 5 (ATL post-processed: chg start time for PSID 168 to 1335; deleted comments on start/stop times of "in the dry" vibratory pile driving to reduce confusion)
5/29/2020	Vibratory hammer, no bubble curtain		5/29/2020 17:18	5/29/2020 17:19	1.5	66.1	1712 - Vibe hammer attached to 36" preparing to drive in bent 5; PortStatusID 169, 170, 171 not accurate, hammer was not actively vibing. This was determined because the crane had not placed the pile in its final location in bent 5; 1727 - pile dipping activity completed, barge crane removes dipping pile from water; 1733 - pile 5D repositioning to final location; 1737 - actual vibing starts; 1757 - vibrate off; 1757 - vibrate on; 1809 - vibing the pile out to reposition; 1811 - vibing pile in; 1837 - vibrate off, 5D complete; 1838 hammer detached from
			5/29/2020 17:21	5/29/2020 17:26	4.5		
			5/29/2020 17:37	5/29/2020 17:57	19.5		
			5/29/2020 17:57	5/29/2020 18:37	40.6		

Table 7. In-Water Activity Summary Week of 25 May thru 31 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
							hammer; 1839 - Chris messaged work is now in the dry;
5/30/2020	Vibratory hammer with bubble curtain	24	5/30/2020 10:13	5/30/2020 10:14	1.0	13.5	BARGE CRANE WORK: 0855 - 24" template pile and bubble can in-water at barge, vibe hammer not attached; 0902 - Neil called and said SIM had mentioned the Barge is working on the platform. No pile ID for a template pile; 0905 - Barge crane preparing to attach vibe hammer to template pile; 0915 - starting activity, hammer attached to pile; 0945 Brian messages that they are working with pile 24" A-B offshore 1 south; in 'pile-ID' field above listed as 'A1' because this is the closest future permanent pile; 0947 - actively moving bubble can and pile into correct position with tiny adjustments up, down, north, south; 1002 bubble can on seafloor; 1009 -bubble curtain started; 1011 - crane operator radioed to check MMO status, Cara gives the all clear; 1013 - vibing begins; 1054 - hammer removed; 1056 - air compressor off. (ATL post-processed: edited PSID 180 to match first start/stop; added PSIDs 256 through 263 w/ start/stop times in notes.) (Notes edited in report to minimize)
			5/30/2020 10:20	5/30/2020 10:22	2.0		
			5/30/2020 10:25	5/30/2020 10:25	0.5		
			5/30/2020 10:26	5/30/2020 10:26	0.5		
			5/30/2020 10:27	5/30/2020 10:29	2.0		
			5/30/2020 10:33	5/30/2020 10:39	6.0		
			5/30/2020 10:41	5/30/2020 10:41	0.5		
			5/30/2020 10:42	5/30/2020 10:42	0.5		
			5/30/2020 10:44	5/30/2020 10:44	0.5		
5/30/2020	In-water activity, no pile driving	n/a	5/30/2020 11:25	5/30/2020 11:54	28.6	28.6	11:26 - barge compressors off, barge continues removal of bubble can from 24" pile (A-B 1 offshore South). Pile ID listed as A-1, this is the location closest to the current work; 1131 - bubble can compressor back on in attempts to remove bubble can; 1132 - bubble can compressor off; 1138 - bubble can compressor

Table 7. In-Water Activity Summary Week of 25 May thru 31 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
							on; 1138 - bubble can is free from ground and being lifted by barge crane; 1139 - bubble can compressors off; 1144 - whip removed, crane no longer attached to bubble can; 1153 - bubble can still on 24" pile, Barge crane ceases attempts to remove it, for now. Changing activity to "cleared, no in-water work" for interim between attempts;
5/30/2020	In-water activity, no pile driving	n/a	5/30/2020 12:50	5/30/2020 13:12	22.2	22.2	1249 - 24" pile in water being positioned; 1252 - attached to barge pile staging area, no driving. 1310 - vib hammer attached to 24' pile in barge staging area. Changing activity because unsure what work plans are.
5/30/2020	Vibratory hammer, no bubble curtain	24	5/30/2020 13:55	5/30/2020 13:56	1.1	11.7	1310 - vibe hammer attached to 24" template pile A-B 2 South; 1311 - 24" template pile in barge staging area with vibe hammer attached; 1319 - picking up 24" template pile; 1322 - Cara radios Beau there is a Stellar sea lion close to outbound line and he confirms he heard communication; 1331 - 24" template pile staged on top of AB 1 offshore south, successfully frees bubble can and begin lifting both; template pile positioned near A2?; 1350 - Bo radios for clear from observers (last sight was over 1200 m from level b zone and over 15 minutes ago), clear given; 1354 - Bubble Can compressors on; 1417 - vibe off and compressor off; 1420 - bubble can disconnected from crane whip; 1422 - hammer disconnected from pile A-B 2 South; NOTE:
			5/30/2020 14:00	5/30/2020 14:01	1.5		
			5/30/2020 14:04	5/30/2020 14:07	2.9		
			5/30/2020 14:11	5/30/2020 14:17	6.2		

Table 7. In-Water Activity Summary Week of 25 May thru 31 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
							disregard PortStatusID 185 (ATL post-processed: deleted PSID 185)
5/30/2020	Vibratory hammer with bubble curtain	24	5/30/2020 16:45	5/30/2020 16:47	2.2	7.6	1528 - Vibe hammer attached to the template pile; 1533 - template pile A-B 3 South set on top of A-B 2 South pile to transfer the bubble can up to the new pile; 1550 - positioning template pile A-B 3 South; 1618 - Still positioning, tide complicating, rain complicating surveyor's tools; 1644 - bubble can compressors started; 1645 - A-B3 South vibing begins; 1648 - vibing stops; 1648 - compressors on; 1648 - vibing begins; 1649 - vibing stops, compressor does not; 1652 - vibing starts; 1653 - vibing stops; 1656 - vibing starts; 1659 - vibing stops; 1700 - pile complete.
			5/30/2020 16:48	5/30/2020 16:49	0.8		
			5/30/2020 16:52	5/30/2020 16:53	0.8		
			5/30/2020 16:56	5/30/2020 16:59	3.7		
5/31/2020	Vibratory hammer with bubble curtain	24	5/31/2020 8:25	5/31/2020 8:26	1.6	10.7	A-B4 South Offshore; selected closest permanent pile in the template. 0826 stopped vibing to do some welding on the brace for the bubble can. 0824 Brian indicates bubble curtain is on even though no water is coming out of the top of the bubble can. 0839 done pile driving. 0841 hammer is off of pile.
			5/31/2020 8:32	5/31/2020 8:41	9.1		
5/31/2020	Vibratory hammer with bubble curtain	24	5/31/2020 10:29	5/31/2020 10:29	0.7	5.3	Barge preparing to drive another template 24" pile, which looks to be north of the last one, assuming A-B5 and associating with the closest permanent pile A-5. 1033 picking up bubble can to adjust. Vibing stopped 1059; welding on bracket that holds the bubble curtain. 1109 Hammer is off on the barge.
			5/31/2020 10:51	5/31/2020 10:52	0.8		
			5/31/2020 10:56	5/31/2020 10:57	0.7		
			5/31/2020 10:58	5/31/2020 10:59	0.7		

Table 7. In-Water Activity Summary Week of 25 May thru 31 May 2020 (continued)

Date	Activity	Pile Diameter	Start	Stop	Minutes	Total Minutes	Lead MMO Comments
			5/31/2020 11:04	5/31/2020 11:06	2.4		
5/31/2020	Vibratory hammer, no bubble curtain	48	5/31/2020 11:23	5/31/2020 11:26	3.5	3.5	1122 Chris notified via text that pile is now in the wet. 1123 Vibing up pile to realign. 1127 Hammer is off the pile.
5/31/2020	Vibratory hammer, no bubble curtain	48	5/31/2020 12:41	5/31/2020 12:45	4.4	32.0	1223 hammer on 48" pile in pin pile.
			5/31/2020 12:45	5/31/2020 13:13	27.6		
5/31/2020	Vibratory hammer with bubble curtain	24	5/31/2020 13:51	5/31/2020 13:55	4.6	4.6	Barge is setting up a 24" pile for A-B6; closest to A-6.
Total In-water Pile Driving Minutes:						245.0	
Other In-water Activity Minutes:						268.2	

3.1 Other Non-PCT Activity

The MMOs documented other vessel activity not related to the PCT in lower Knik Arm. Other activities recorded include: tug (69 times), barge (107 times), barge blocking view (18 times), dredge (50 times), boat (128 times), recreational boat/jet ski/zodiac/skiff/private boat (19 times), survey boat 13 times. On 29 May, MMOs at the north expansion location also documented a small private watercraft (“Bell Boy”) throwing items (garbage or potentially food) at a Stellar sea lion. The sea lion followed the vessel for 3 to 5 minutes while bellowing occasionally. Later the same sea lion was seen near the PCT barge (450-7), and near the small float north of the PCT approaching small boats and “growling.” The behaviors indicated the sea lion was habituated to anthropogenic activity. Refer to the sighting form for Group ID 124 in Appendix F for additional details.

4 Pile Driving Shutdowns, Delays, and Other Mitigation Measures

One pile driving shutdown was implemented during the reporting period. On the afternoon of 4 May 2020, a 24-inch temporary pile was installed in shallow water with a vibratory hammer. The Level B zone at the time was 2,247 meters. Pile installation was occurring on and off between approximately 3:00 pm and 4:41 pm. At approximately 4:39 pm, a group of 4 gray belugas (Group ID 44) were sighted at approximately 2,500-meters north of the pile installation. At 4:41 pm, the 61N MMOs radioed to the PPM crew and they shutdown the vibratory hammer within seconds. At 4:42 pm, another fix of the beluga group placed them at approximately 2,350 meters from the pile location. At 4:46 pm another fix placed them at approximately 2,100 meters north of the pile location, right in front of the NEX observation platform. Pile driving remained shut down from 4:41 pm until the end of the day (5 pm) when the operators laid down the equipment for the evening. The MMOs remained on watch until 5:15 pm that day (more than 30 minutes after pile driving ceased at 4:41 pm).

Other than the shutdown on 4 May, no other shutdowns or delays were caused by marine mammal presence and no delays were caused from lack of visibility of the Level A or Level B harassment zones.

4.1 Other Mitigation Measures

In addition to monitoring the lower Knik Arm between the in-bound and out-bound demarcation lines and the Level A and Level B harassment zones, and the delay and shutdown requirements, the IHA contains several other mitigation requirements.

The IHA required the POA to conduct briefings for construction supervisors and crews, the monitoring team, and POA staff prior to the start of pile driving activity, and when new personnel joined the work. The POA conducted the first briefing for PPM’s shoreside crew on 24 April 2020 and for the offshore, barge-based crew shortly after they arrived, on 22 May 2020. Staff from the HDR permitting and compliance team and the 61N project manager presented the IHA mitigation measures,

communication protocol, and overview of marine mammal species to the PPM project manager, superintendents, crane operators, and pile driving foreman.

The MMOs received “in-class” training on through a web-based presentation on 21 April 2020 and two in-field training days during the week of 19 April to 25 April 2020 prior to the first day of operations on 27 April 2020. Nearly all of the MMOs hired for the project have prior marine mammal observation experience, and approximately half have prior experience in upper Cook Inlet. All of the resumes of prospective MMOs were submitted to the POA for NMFS review prior to the first day of operations.

In accordance with the IHA, the MMOs have monitored for at least 30 minutes post-completion of every in-water pile installation or removal. Generally, the post-completion period is within the normally scheduled day. On a few days when pile driving went late into the day, or beyond the normal schedule, the MMOs stayed 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. For some “proofing” events, the piles have a specialized Pile Driving Analyzer (PDA) attached to the piles during restrikes. The PDA measures parameters that determine whether the pile will support the weight specified by the design standards. During the restrikes, a soft start of the impact hammer cannot be conducted.

The PPM operators have installed and operated the bubble curtain for all in-water installation of piles where water depths exceed 10 feet. Prior to 30 May 2020, all of the piles were installed “in the dry” or in water less than 10 feet in depth.

5 Marine Mammal Observations

All marine mammal sightings are documented in the cloud-hosted database. Each marine mammal group has a parent record where group-level attributes are recorded, such as species, age/color class, primary and secondary behavior, distribution, formation, and pace.

Once a group is identified, one or several group position “fixes” are measured and calculated. In addition to the optics described in Section 2, each MMO station is equipped with tools to measure the location of marine mammals on the water. Initially, a surveyor’s theodolite (Topcon DT-205) was used at only the NE and SC stations for accurate fixes near the northern and southern boundaries of the Level B zones and larger Level A zones. The PCT and PW stations were equipped with a transit for horizontal angles and a clinometer for vertical angles. A transit is a surveyor’s tool to measure horizontal angles within approximately one degree. The clinometers were mounted on tripods for stability, but the elevation of the PW and PCT stations did not allow for accurate readings on the northwestern shore of Knik Arm. For long-distance fixes, the MMO’s would check the measured position of the fix in Google Earth and adjust the vertical angle as needed so the calculated position would be the approximate distance from the shore as observed. The MMOs reported high confidence

in the bearing to the animal, but early distances were not as accurate as expected. Two additional Topcon DT-205 theodolites were purchased and installed at PW (13 May) and at PCT (15 May). All stations now measure marine mammal locations with digital theodolites.

The observation platforms were built upon shipping containers. The plywood floors were extremely flexible and even slight movement would cause large variation in the vertical angle measurements. Reinforced platforms were built on all four observations stations to minimize movement of the theodolite during measurements.

The latitude and longitude of each marine mammal fix is determined by calculating the bearing and distance to the animal. The bearing is determined by measuring a horizontal angle from a known reference point. During station setup, reference locations were surveyed to sub-2 cm accuracy. Each morning, the theodolite is directed towards the reference and “zeroed” on the reference point. The true bearing from the theodolite location to the reference is known, and the addition of the reference angle and the measured angle gives the true bearing to the animal.

The distance to the animal is determined by calculating the “height of eye” above the water and measuring the vertical angle below the plane perpendicular to the plane of gravity to the animal. The platform elevations were surveyed to within 5 cm (or less) during station setup.¹ The predicted tide heights for the local tide station (NOAA Tide Station 9455920) are available in 1-minute intervals and these values were pre-loaded in the database for 1 April 2020 through 30 November 2020. At the time of each fix, the current “height of eye” is calculated based on the predicted tide height and the theodolite elevation. The theodolites are precisely leveled in four directions (0°, 90°, 180°, and 270°) during setup. The theodolites are also equipped with a tilt correction that achieve 5 arcseconds of accuracy.

After the latitude and longitude of each fix is calculated, the distance to the current pile (or a generalized PCT location) and the distance to the active Level B zone (if any) are calculated. These distances aid the MMO field lead in making delay and shutdown determinations.

5.1 Marine Mammal Sighting Summary

Ninety-six groups of marine mammals were sighted totaling 253 individual animals from 27 April to 31 May 2020. There were 46 groups of belugas comprised of 201 individuals, one gray whale, four groups of harbor porpoises comprised of five individuals, 40 harbor seal groups comprised of 41

¹ The initial elevations were not corrected to the local tidal benchmarks for the Anchorage Tide Station 9455920. Early test fixes revealed that the elevation was approximately 1.5 meters too high. Initially this was thought to be due to “double counting” the MMO eye elevation (approximately 1.5 meters). After the first couple days of observation, 1.5 meters was subtracted from all platform elevations to correct this problem. On 6 May, the benchmarks were surveyed and determined a correction of -1.757 meters from the GNSS/RTK GPS receiver elevations was required. An additional 0.257 meters was subtracted on 6 May.

individuals, one unidentified pinniped, and four Steller sea lion groups comprised of four individuals. The number of groups and individuals are presented by species in Appendix A. Additional sighting details including group composition, locations, sighting times, behaviors, sighting notes, and location maps are provided in Appendices B through F.

5.2 Marine Mammal Exposures

During the month of 27 April to 31 May 2020 one harbor seal was sighted within the Level B zone for unattenuated vibratory hammering of a 48-inch pile (Group ID 80). The pile was being driven in shallow water where the bubble curtain could not be deployed. The vibratory hammer was used to manage constructability issues. The harbor seal was near Point Woronzof from approximately 9 am to 11 am on 20 May. In-water vibratory hammering on the 48-inch pile occurred briefly from 10:47 am to 10:49 am. The harbor seal was sighted at approximately 5,000 meters from the PCT at 10:44 am. It was resighted at 10:51 am (sighting notes only). No fix was captured at 10:51 am, but it was likely within the 5,967-meter zone during unattenuated vibratory hammering of a 48-inch pile between 10:47 and 10:49. This exposure was not reported as a take on 20 May, but upon reviewing the timing and location of the sighting it was determined to be a take and reported as such in the 18 May to 24 May weekly report.

On 21 and 22 May, harbor seals were sighted during in-water vibratory hammering, but they were outside of the Level B zones.

On 28 May, a 36-inch pile was driven in water with an impact hammer without a bubble curtain from 4:19 pm to 4:26 pm. At 4:32 pm a group of nine belugas (seven white, two gray; Group ID 117) were sighted near Cairn Point, approximately 3,300 meters north of the PCT, traveling south towards it. While not considered a take, the sighting is notable because they were traveling towards PCT in temporal proximity with the pile driving activity.

Similarly, prior to the shutdown described in Section 3.1, the four gray belugas in Group ID 44 traveled south towards the PCT while vibratory hammering was being conducted. After pile driving was shutdown (prior to entry of the Level B zone), the group continued south slowly while milling and then slowly worked back to the north. The belugas were on a trajectory towards the PCT during and after pile driving and did not exhibit any avoidance behavior. The monthly and cumulative takes for all marine mammal species are presented in Table 9.

Table 9. Monthly and Cumulative Level B and Level A Takes

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

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 (June 5). *Tides and Currents, Meteorological Obs., NOAA/NOS/CO-OPS, Winds at 9455920, Anchorage, AK*. Accessed 5 June 2020 at: <https://tidesandcurrents.noaa.gov/met.html?id=9455920>

Appendix A – Marine Mammal Sighting Summary

Monthly Marine Mammal Group Summary

Month of 27 April - 31 May 2020

Species	Group ID	Initial Sighting Time	Total Individuals
Beluga			
	2	4/27/2020 7:36:52 AM	1
	3	4/27/2020 9:41:59 AM	3
	4	4/27/2020 11:16:01 AM	3
	8	4/28/2020 12:02:31 PM	2
	10	4/29/2020 7:10:20 AM	5
	11	4/29/2020 9:44:32 AM	8
	12	4/29/2020 10:51:07 AM	5
	13	4/29/2020 11:32:15 AM	2
	14	4/29/2020 11:49:15 AM	1
	16	4/29/2020 2:30:25 PM	1
	19	4/30/2020 1:19:23 PM	2
	22	5/1/2020 9:11:12 AM	15
	23	5/1/2020 9:34:46 AM	7
	26	5/2/2020 9:40:12 AM	2
	27	5/2/2020 11:38:15 AM	2
	28	5/2/2020 11:50:26 AM	7
	29	5/2/2020 12:45:34 PM	4
	30	5/2/2020 3:22:21 PM	4
	32	5/3/2020 7:09:48 AM	1
	34	5/3/2020 7:54:06 AM	1
	35	5/3/2020 8:19:08 AM	4
	36	5/3/2020 2:08:06 PM	5
	37	5/3/2020 2:53:19 PM	2
	38	5/3/2020 3:30:39 PM	1
	39	5/3/2020 4:00:46 PM	8
	40	5/3/2020 4:50:45 PM	3
	42	5/4/2020 6:58:22 AM	5
	43	5/4/2020 1:12:06 PM	5
	44	5/4/2020 4:39:30 PM	4
	46	5/5/2020 7:24:38 AM	1
	47	5/5/2020 7:34:39 AM	4
	48	5/6/2020 6:58:52 AM	5
	49	5/6/2020 7:10:57 AM	2
	51	5/6/2020 7:21:56 AM	10
	52	5/6/2020 3:08:06 PM	1
	54	5/7/2020 7:47:19 AM	12
	55	5/7/2020 7:55:27 AM	4

Species	Group ID	Initial Sighting Time	Total Individuals
	56	5/7/2020 9:21:51 AM	1
	57	5/7/2020 2:38:43 PM	4
	90	5/22/2020 8:34:00 AM	1
	92	5/23/2020 7:07:36 AM	6
	101	5/24/2020 7:25:09 AM	13
	105	5/24/2020 3:08:26 PM	8
	110	5/27/2020 12:18:32 PM	1
	113	5/28/2020 8:02:44 AM	6
	117	5/28/2020 4:32:01 PM	9
Total Groups for Species:	46	Total Individuals for Species:	201

Gray Whale			
	102	5/24/2020 8:30:13 AM	1
Total Groups for Species:	1	Total Individuals for Species:	1

Harbor Porpoise			
	71	5/17/2020 7:23:01 AM	2
	72	5/17/2020 11:50:04 AM	1
	86	5/21/2020 3:51:17 PM	1
	104	5/24/2020 9:08:46 AM	1
Total Groups for Species:	4	Total Individuals for Species:	5

Harbor Seal			
	61	5/10/2020 10:03:24 AM	1
	63	5/10/2020 10:26:49 AM	1
	73	5/17/2020 4:46:14 PM	1
	75	5/18/2020 7:18:53 AM	1
	80	5/20/2020 8:58:15 AM	0
	81	5/20/2020 2:54:02 PM	2
	82	5/20/2020 5:30:33 PM	1
	83	5/21/2020 7:16:52 AM	1
	85	5/21/2020 10:25:00 AM	1
	87	5/21/2020 4:07:56 PM	1
	89	5/22/2020 8:08:41 AM	1
	91	5/22/2020 11:46:38 AM	2
	95	5/23/2020 9:08:05 AM	1
	96	5/23/2020 10:16:13 AM	1
	97	5/23/2020 10:52:35 AM	1
	98	5/23/2020 11:38:34 AM	1
	99	5/23/2020 3:08:41 PM	1
	103	5/24/2020 8:32:24 AM	1
	107	5/26/2020 7:12:57 AM	1

Species	Group ID	Initial Sighting Time	Total Individuals
	109	5/27/2020 8:39:12 AM	1
	111	5/27/2020 1:29:12 PM	1
	114	5/28/2020 10:24:48 AM	1
	115	5/28/2020 11:07:51 AM	1
	116	5/28/2020 3:05:36 PM	1
	119	5/29/2020 7:24:02 AM	1
	121	5/29/2020 10:42:43 AM	1
	122	5/29/2020 12:11:06 PM	1
	123	5/29/2020 12:50:52 PM	1
	126	5/30/2020 10:45:56 AM	1
	130	5/31/2020 11:43:36 AM	1
	131	5/31/2020 3:31:40 PM	1
	133	6/1/2020 7:13:36 AM	1
	134	6/1/2020 8:07:38 AM	1
	135	6/1/2020 1:26:52 PM	1
	136	6/1/2020 3:38:00 PM	1
	140	6/3/2020 1:42:53 PM	1
	142	6/4/2020 8:20:02 AM	1
	143	6/4/2020 3:12:40 PM	1
	145	6/5/2020 2:56:09 PM	1
	147	6/6/2020 8:13:54 AM	1
Total Groups for Species:	40	Total Individuals for Species:	41

Pinniped Unid.

	31	5/3/2020 6:57:18 AM	1
Total Groups for Species:	1	Total Individuals for Species:	1

Steller Sea Lion

	120	5/29/2020 9:59:12 AM	1
	124	5/29/2020 1:11:40 PM	1
	127	5/30/2020 1:21:43 PM	1
	128	5/30/2020 2:46:46 PM	1
Total Groups for Species:	4	Total Individuals for Species:	4

Total MM Groups For Period:	96	Toal MMs For Period:	253
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Appendix B – Week of 4/27 – 5/3 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="0"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>						

Comments

PW: 1 single animal, seen 0744 milling in general area- due to sun direction/mild glare, whale appeared to be gray (although it may have been white) fix ID 2 PW: seen 0751 1 gray milling fix ID3 PW: seen 0801 milling in area 1 gray fix ID 4 PW: moving down shore away from site @0809 1 gray ID fix 5 PW: 0832 have not seen activity for 30 min+ PW: 0838 fix ID 6- 1 gray seen 500m off point, milling, PW: 08:45 last sight. PCT: VOID Fix ID 7 (ATL post-processed: Fix 7 deleted)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
2	1	4/27/2020 7:39:18 AM	61.203789	-149.989101	6093.39547
2	2	4/27/2020 7:43:52 AM	61.202546	-149.989738	6199.70821
2	3	4/27/2020 7:51:21 AM	61.203698	-149.988897	6090.02598
2	4	4/27/2020 8:01:01 AM	61.202597	-149.990132	6213.77754
2	5	4/27/2020 8:08:22 AM	61.202508	-149.989859	6207.43607
2	6	4/27/2020 8:37:32 AM	61.203659	-149.989514	6119.8

Group ID	Created Date	Last Update	Species Common Name						
3	4/27/2020 9:41:59 AM	4/27/2020 10:45:39 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
	1	2	0	0	0		0	0	

Comments

PW: 09:40, fix 9- 1 white heading west, surfaced twice and dove. 09:45-last sight of white. PW: Fix 8-BAD. PW:10:05 fix 10-1 gray (added above)milling, fluke, and head away from site. 10:10 last sight of gray. PW: 10:19, fix 11, 1 light gray (added above) surfaced twice, dove, surfaced heading West. PW: 10:24,fix12- 1 white, likely same white from before, traveling west.10:33 last sight. PW: 10:34, fix 13 - 1 white, 1 gray traveling within 20m of eachother, heading West near far shore. PW: 10:42, fix14 - 1 white (from before, gray not seen) traveling west. 10:45-last sight (ATL post-processed: deleted fix 8 on 6/5/20)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
3	9	4/27/2020 9:52:06 AM	61.213023	-149.990287	5641.50611
3	10	4/27/2020 10:05:29 AM	61.216056	-149.984555	5224.0281
3	11	4/27/2020 10:19:15 AM	61.214658	-149.99325	5713.05976
3	12	4/27/2020 10:25:23 AM	61.217065	-149.99514	5710.33047
3	13	4/27/2020 10:40:44 AM	61.230922	-150.029216	7205.21058
3	14	4/27/2020 10:44:05 AM	61.236177	-150.063822	9046.3907

Group ID	Created Date	Last Update	Species Common Name						
4	4/27/2020 11:16:01 AM	4/27/2020 12:33:33 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
	1	1	1	0	0		0	0	

Comments

Animals traveled past NEX toward PCT. FID#16 was first eyes on animals, 11:28:12AM. First good fix is FID#24. FID#24 Animals are milling, 11:50:00AM. FID#25 Group moving to SW, one additional animal sighted, 12:01:42PM. FID#26 Milling, 12:03:45PM. FID#27 Animals spotted again, milling Last sighted 12:17:53.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
4	16	4/27/2020 11:27:27 AM	61.252422	-149.882405	2101.51963
4	21	4/27/2020 11:35:31 AM	61.252733	-149.882948	2125.63009
4	22	4/27/2020 11:47:52 AM	61.251368	-149.882954	1981.11372
4	23	4/27/2020 11:49:12 AM	61.251322	-149.882784	1979.16749
4	24	4/27/2020 11:49:51 AM	61.252353	-149.883227	2080.88546
4	25	4/27/2020 12:01:32 PM	61.252331	-149.883135	2080.00342
4	26	4/27/2020 12:03:37 PM	61.252057	-149.882634	2059.16766
4	27	4/27/2020 12:17:46 PM	61.251969	-149.882545	2051.38204

Group ID	Created Date	Last Update	Species Common Name						
8	4/28/2020 12:02:31 PM	4/28/2020 12:51:34 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
7	No Formation	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	1	1	0	0	0	0	0	0	

Comments

Moving to port. First Fix ID 32 12:02 PM, one adult beluga travelling south. Fix ID 33 at 12:04 PM, travelling towards work site. Fix ID 34, 12:05 PM travelling towards work site. Fix 35, 12:11 PM second beluga. Fix 36, 12:14 PM milling. Fix 37, 12:16PM, milling. Fix 38, both whales milling together. Fix 41, whales traveling south of position. Whales last seen at 12:35pm.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
8	32	4/28/2020 12:02:46 PM	61.25495	-149.881607	2382.16371
8	33	4/28/2020 12:03:58 PM	61.252745	-149.88382	2113.62629
8	34	4/28/2020 12:05:32 PM	61.251859	-149.884095	2014.96671
8	35	4/28/2020 12:11:48 PM	61.252159	-149.882628	2070.03581
8	36	4/28/2020 12:13:37 PM	61.252128	-149.883526	2052.30279
8	37	4/28/2020 12:16:36 PM	61.251035	-149.884026	1928.34959
8	38	4/28/2020 12:22:38 PM	61.251545	-149.882992	1999.14438
8	40	4/28/2020 12:28:39 PM	61.249005	-149.884698	1702.54214
8	41	4/28/2020 12:31:11 PM	61.247382	-149.886108	1507.73311
8	42	4/28/2020 12:35:07 PM	61.246534	-149.886556	1410.69567

Group ID	Created Date	Last Update	Species Common Name						
10	4/29/2020 7:10:20 AM	4/29/2020 1:50:30 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
5	Parallel	True	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	4	1	0	0	0		0	0	

Comments

PW: 0755 fix45- 2 white traveling East towards site, surfaced 3 times; 0818 fix46- 1 mottled gray/white surfaced twice, heading towards the far shore angled East, likely one from early; 0836 fix47- 2 whites (same as before), traveling up Knik arm along far shore; 0843 fix49- 2 whites traveling up arm at far shore; 0846 fix50- 2 white, 1 gray, different group from before(added above), moving up the arm along the far shore; 0850 fix51- same group as fix50, traveling up arm near far shore; 0856 fix53- 1 white traveling up inlet; 0900 Fix58- 5 belugas total-both groups combined, milling in front of far shore. 0911 LAST SIGHT. NEX: Belugas sighted at the end of Point Mackenzie. Fix 58 bad vertical angle (appeared to be close to our shore in Google Earth). Fix 63 bad vertical angle. Belugas slightly farther north 9:18 AM, Fix 72 still slightly off on vertical. Belugas back towards point. Fix 73 milling just past point. (ATL Post-Processed: Deleted Fix 54 (on land), many other fixes in vicinity; changed group 10 to "combined" with 11; fix sequence from 53 through 72 does not indicate direction of travel, rather, a widely dispersed "group"; left in fix 58, 63, and 72 despite indications in notes that vertical angle not giving accurate location (distance from obs station affected, but not bearing to animal from obs station)).

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
10	45	4/29/2020 8:02:30 AM	61.208059	-149.999926	6348.45681
10	46	4/29/2020 8:25:14 AM	61.228504	-150.019917	6730.05263
10	47	4/29/2020 8:37:32 AM	61.238288	-149.97265	4190.73463
10	48	4/29/2020 8:42:49 AM	61.238628	-149.97697	4424.37008
10	49	4/29/2020 8:45:17 AM	61.244184	-149.967746	4053.26848
10	50	4/29/2020 8:47:36 AM	61.238632	-149.978447	4502.96407
10	51	4/29/2020 8:51:12 AM	61.241258	-149.969428	4067.42252
10	53	4/29/2020 8:57:44 AM	61.238245	-149.977131	4428.70932
10	57	4/29/2020 9:11:04 AM	61.250595	-149.897923	1801.75896
10	58	4/29/2020 9:07:50 AM	61.242298	-149.960213	3610.54745
10	59	4/29/2020 9:09:17 AM	61.248066	-149.918923	1991.72675
10	60	4/29/2020 9:22:08 AM	61.264423	-149.922919	3656.03558
10	63	4/29/2020 9:18:06 AM	61.250635	-149.897707	1805.11178
10	66	4/29/2020 9:38:12 AM	61.248057	-149.923409	2154.79167

Group ID	Created Date	Last Update	Species Common Name
10	4/29/2020 7:10:20 AM	4/29/2020 1:50:30 PM	Beluga

Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior
5	Parallel	True	Moderate	Travelling	Milling

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
4	1	0	0	0	0	0	0		

Comments

PW: 0755 fix45- 2 white traveling East towards site, surfaced 3 times; 0818 fix46- 1 mottled gray/white surfaced twice, heading towards the far shore angled East, likely one from early; 0836 fix47- 2 whites (same as before), traveling up Knik arm along far shore; 0843 fix49- 2 whites traveling up arm at far shore; 0846 fix50- 2 white, 1 gray, different group from before(added above), moving up the arm along the far shore; 0850 fix51- same group as fix50, traveling up arm near far shore; 0856 fix53- 1 white traveling up inlet; 0900 Fix58- 5 belugas total-both groups combined, milling in front of far shore. 0911 LAST SIGHT. NEX: Belugas sighted at the end of Point Mackenzie. Fix 58 bad vertical angle (appeared to be close to our shore in Google Earth). Fix 63 bad vertical angle. Belugas slightly farther north 9:18 AM, Fix 72 still slightly off on vertical. Belugas back towards point. Fix 73 milling just past point. (ATL Post-Processed: Deleted Fix 54 (on land), many other fixes in vicinity; changed group 10 to "combined" with 11; fix sequence from 53 through 72 does not indicate direction of travel, rather, a widely dispersed "group"; left in fix 58, 63, and 72 despite indications in notes that vertical angle not giving accurate location (distance from obs station affected, but not bearing to animal from obs station)).

10	67	4/29/2020 9:40:49 AM	61.236829	-149.974875	4296.2154
10	72	4/29/2020 9:53:39 AM	61.244286	-149.943983	2853.32162

Group ID	Created Date	Last Update	Species Common Name						
11	4/29/2020 9:44:32 AM	4/29/2020 4:26:17 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	True	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	5	3	0	0	0	0	0	0	

Comments

PW: 0941 Fix68, same group as Fix 67- 5 white, 3 gray, Milling at the far shore, heading slightly west; 1007 Fix75-probably combined group from parent group 10 & 11; 1038 Group is travelling west & exiting inbound line, last sight for PW. SC: Eyes on group, traveling southwest out of Zones, fix 69 bad fix; PW: In Summary, Group 10 (5 whales), fixed by PW, SC, and NEX) traveled East up the arm, and then turned and head back West, where they joined Group 11(8 whales) for a total of 13 whales. Group 11 was fixed by PW, comms with SC determined 11 and 10 were combined. (ATL post-processed: deleted fix 69 per notes)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
11	68	4/29/2020 9:45:04 AM	61.239054	-149.975286	4340.12119
11	70	4/29/2020 9:50:00 AM	61.238061	-149.978666	4508.57201
11	73	4/29/2020 9:52:48 AM	61.234287	-149.984811	4819.64094
11	75	4/29/2020 10:08:35 AM	61.237186	-149.991516	5186.79029

Group ID	Created Date	Last Update	Species Common Name						
12	4/29/2020 10:51:07 AM	4/29/2020 4:55:15 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
3	Linear	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	2	3	0	0	0		0	0	

Comments

SC: initially saw 2 white then joined up with 3 gray as they travel SE. Fix 76 direction of travel is due W. Fix before 76 was not recorded but was the initial sighting at 61.237978° -149.960763° last time seen 11:11 moving W towards Mackenzie. Saw again at 11:18 and 11:29 well beyond INBOUND delineation. At 11:33 whales changed direction back to the E . Then changed again back to the W at 11:44. At 12:04 they were observed once more this time milling and appeared to have joined a larger group. PW: Fix78- Ghost fix; 11:22 fix79- 2 whites moving west 20 lengths apart. Same group as fix76;

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
12	76	4/29/2020 11:00:26 AM	61.236774	-149.982427	4699.00388
12	79	4/29/2020 11:28:37 AM	61.235937	-149.983562	4755.54048

Group ID	Created Date	Last Update	Species Common Name						
13	4/29/2020 11:32:15 AM	4/29/2020 12:24:08 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
4	Linear	False	Moderate	Travelling	Milling				
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

NEX: Fix 80 two belugas travelling slowly south 11:33 AM. Fix 81 they past our station moving to project site 11:36AM. Calf is following adult linearly. Fix 82 bad reading, they are moving towards project site 11:39 AM. Fix 83 bad reading, whales are hugging the shore, inland from a small boat. Milling 11:41 AM. Last seen heading towards PCT at 11:43 AM. (ATL - post processed: deleted Fix 82 and 83 [on land] theodolite malfunction)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
13	80	4/29/2020 11:33:48 AM	61.260882	-149.881416	3020.88597
13	81	4/29/2020 11:36:50 AM	61.253685	-149.881445	2250.87281

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: 1147 fix84- one white surfaced twice seen traveling west; 1208 fix86- beluga heading west of inbound line; 1208 LAST SIGHT, end sighting, continue scanning;
 Note: Comms with SC, determined this Group part of MM Group ID 12.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
14	84	4/29/2020 11:50:50 AM	61.237741	-150.008371	6090.0706
14	86	4/29/2020 12:09:25 PM	61.242264	-150.052698	8493.16033

Group ID	Created Date	Last Update	Species Common Name						
16	4/29/2020 2:30:25 PM	4/29/2020 2:57:07 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
1	0	0	0	0	0	0	0	0	

Comments

PW: 1427 fix92- 1 white surfaced heading East along far shore, near pt.Mk; 1438 fix93- 1 white continues heading East; 1451 fix94 - 1 white surfaced at the pt.Mk; 1451 LAST SIGHT

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
16	92	4/29/2020 2:32:17 PM	61.239676	-150.007613	6066.20118
16	93	4/29/2020 2:42:37 PM	61.238325	-149.999955	5645.45078
16	94	4/29/2020 2:54:35 PM	61.231956	-149.988232	5010.42951

Group ID	Created Date	Last Update	Species Common Name						
19	4/30/2020 1:19:23 PM	4/30/2020 1:49:14 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
1	1	0	0	0	0	0	0		

Comments

NEX: Two belugas heading south. Fix 106 they were north of port mackenzie Fix 107 looks like halfway between mackenzie and north expansion. 1:27 PM belugas milling near port mackenzie. Last sighted 1:35 PM, travelling south.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
19	106	4/30/2020 1:19:36 PM	61.260714	-149.88782	2940.78544
19	107	4/30/2020 1:22:56 PM	61.25643	-149.88554	2490.20301
19	108	4/30/2020 1:30:24 PM	61.256315	-149.889426	2445.2013

Group ID	Created Date	Last Update	Species Common Name						
22	5/1/2020 9:11:12 AM	5/1/2020 9:46:49 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
10	5	0	0	0	0	0	0	0	

Comments

4 whales traveling south. Fix ID 115. At least 12 whales sighted. 9:15am . Two or so straglers moving behind the bigger group, moving southwest @9:24am. Fix ID 116, whales seem to be milling, still against north shore @9:31am. Fix ID 116, Milling in same location@ 9:46am.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
22	115	5/1/2020 9:14:29 AM	61.231794	-149.983488	4758.24743
22	116	5/1/2020 9:28:52 AM	61.231735	-149.9853	4855.37092

Group ID	Created Date	Last Update	Species Common Name						
23	5/1/2020 9:34:46 AM	5/1/2020 2:51:59 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
	5	2	0	0	0		0	0	

Comments

PCT first saw group at 0925 or so, 3 white, traveling south west along far shore towards Point Mac. SC: saw moving SW. changed directions, headed back into inlet, began milling. PCT originally saw group near bluff under cabins. We saw them near the point. 5 white, 2 gray. They changed directions and were heading back into the inlet. Changed direction again and milling off the point. Group of 15-18 whales (ID#22) is believed to have moved on and have not been spotted since 0929. ID#23 Milling off the point since 0946. Spotted by PW and SC. PW overwrote Fix 118, SC's original sighting. SC passed group off to PW at 10:08am. PW: Fix 118, two gray, two white milling at 10:10am. Moved south of Pt. Mackenzie, traveling @ 10:26am. Have not seen for 30 minutes @ 10:47am. Fix 118 time stamp correct but position needs to be corrected to 61.242190 -150.007984.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
23	117	5/1/2020 9:36:26 AM	61.24464	-149.971537	4262.10355
23	118	5/1/2020 12:43:16 PM	61.244948	-149.973406	4367.51558

Group ID	Created Date	Last Update	Species Common Name						
26	5/2/2020 9:40:12 AM	5/2/2020 11:06:12 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
	1	1	0	0	0		0	0	

Comments

NEX-fix 125 - whales sighted traveling, fix 126 milling by port Mackenzie, PCT: Fix 129 one white traveling south along far shore; Fix 130 continuing traveling south SC: time fix: Took fix at 1021 from sighted whale at 1014 after NEX requested (NEX computers were down) 1 white 1 gray traveling south Terra sighted first (fix ID 127) Olivia sighted 2nd (Fix ID 128) both Fix IDs based on best estimate SC: fix ID 131: bad record (ATL - Post processed: deleted fix 131, on land, theodolite malfunction)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
26	125	5/2/2020 9:46:13 AM	61.269343	-149.898399	3881.77093
26	126	5/2/2020 10:14:54 AM	61.264626	-149.912383	3483.47741
26	127	5/2/2020 10:19:59 AM	61.254082	-149.916407	2470.84788
26	128	5/2/2020 10:25:47 AM	61.254681	-149.917032	2545.2972
26	129	5/2/2020 10:37:06 AM	61.257573	-149.932845	3280.30528
26	130	5/2/2020 10:48:53 AM	61.256903	-149.936051	3333.48701

Group ID	Created Date	Last Update	Species Common Name						
27	5/2/2020 11:38:15 AM	5/2/2020 12:00:40 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
	1	1	0	0	0	0	0	0	

Comments

NEX: 1 white, 1 gray. Milled in front of wet barge berth then proceeded to the north. Last observed 1200.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
27	134	5/2/2020 11:39:18 AM	61.252569	-149.881883	2125.85903
27	135	5/2/2020 11:40:37 AM	61.252141	-149.882086	2077.34502
27	136	5/2/2020 11:43:18 AM	61.253175	-149.881932	2188.90325
27	137	5/2/2020 11:44:51 AM	61.253989	-149.882878	2260.39571
27	138	5/2/2020 11:48:08 AM	61.253987	-149.882856	2260.51091
27	139	5/2/2020 11:55:20 AM	61.269835	-149.890757	3936.94343

Group ID	Created Date	Last Update	Species Common Name						
28	5/2/2020 11:50:26 AM	5/2/2020 4:20:27 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
4	3	0	0	0	0	0	0	0	

Comments

PW: Small group heading toward port. NEX-- Fix 143 milling, 4 white, 3 gray, Fix 144-traveling south, fix 145 slowly moving south, fix 146 moving south moving closer to the middle of the channel. Fix 149 whales headed south. Counts are minimums. Fix 150 whales are stemming tide but not making much advance over ground. Fix 151 whales still stemming tide, falling astern. Fix 152 whales closer to shore. PW Fix ID 155 was given to PW from NE @2:50pm. Group is moving west along north shore, we will continue to monitor. Fix ID 155, Belugas sighted in same location, looked as if survey boat came within 100meters @ 15:10pm. Group is spreading out, may split into two groups @ 15:19pm. Group did not split, was last sighted at 15:45 traveling west. Not all postions noted for this sighting due to Access crash. (post process: moved fix 152 and 155 to from Group ID 29 to Group ID 28)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
28	140	5/2/2020 11:56:57 AM	61.240626	-149.967356	3945.851
28	141	5/2/2020 12:07:37 PM	61.241051	-149.966756	3922.78424
28	142	5/2/2020 12:12:42 PM	61.246966	-149.950898	3311.45728
28	143	5/2/2020 12:28:26 PM	61.255165	-149.934237	3125.1823
28	144	5/2/2020 12:35:14 PM	61.253481	-149.931884	2902.52299
28	145	5/2/2020 12:46:08 PM	61.252381	-149.926183	2608.35771
28	146	5/2/2020 12:52:31 PM	61.25007	-149.929432	2542.02181
28	149	5/2/2020 1:56:17 PM	61.25549	-149.933233	3116.11077
28	150	5/2/2020 2:06:58 PM	61.254418	-149.922533	2671.55806
28	151	5/2/2020 2:22:06 PM	61.255932	-149.929181	3016.00059
28	152	5/2/2020 2:34:20 PM	61.255285	-149.933314	3101.94634
28	153	5/2/2020 2:37:19 PM	61.255235	-149.931523	3034.81754
28	155	5/2/2020 2:59:02 PM	61.23828	-149.968843	3988.18498

Group ID	Created Date	Last Update	Species Common Name						
29	5/2/2020 12:45:34 PM	5/2/2020 4:13:04 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
3	Linear	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
3	1	0	0	0	0	0	0	0	

Comments

PW: last sighting at fix 148 at 1304. Still in same area milling @13:20. Sighted again in same spot at 1340. Not sighted again as of 1400. Fix 152 bad fix, should be group 28. PW: Fix ID 155 bad, should be 28. (post process: moved fix 152 and 155 to Group ID 28)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
29	147	5/2/2020 12:58:52 PM	61.238678	-150.010217	6195.52572
29	148	5/2/2020 1:42:37 PM	61.231278	-149.984828	4833.65844

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="0"/>	<input type="text" value=""/>							

Comments

PW: Animals spotted traveling West. Left area. Last seen 15:48. This group was only seen once.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
30	156	5/2/2020 3:38:27 PM	61.232889	-150.013563	6359.61413

Group ID	Created Date	Last Update	Species Common Name						
31	5/3/2020 6:57:18 AM	5/3/2020 7:40:50 AM	Pinniped Unid.						
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
0	0	0	0	0	0	1	0		

Comments

SC: 6:59:57. Brown marine mammal, possible sea lion. Perhaps two. Only seen briefly. Looked to be heading up-inlet before it dove. (jms) 30 minutes passed without sighting animal again.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
31	157	5/3/2020 6:59:57 AM	61.221993	-149.92283	2016.16122

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="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>						

Comments

NEX: 709, one grey headed north. Fix ID 160 was taken at later time to indicate where we originally saw this beluga. Last seen at 0710 headed north.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
32	160	5/3/2020 7:28:22 AM	61.253903	-149.881143	2299.4618

Group ID	Created Date	Last Update	Species Common Name
34	5/3/2020 7:54:06 AM	5/3/2020 9:32:36 AM	Beluga

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

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

Comments

NEX: 7:49 one gray milling at fix 161. Last seen 0809 headed north west. Even though this sighting occurred more than 30 minutes after group 32 because it has a similar composition of one gray beluga and in the same general location, group 32 and 34 could have been in the same group record based on new guidance.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
34	161	5/3/2020 7:54:31 AM	61.253759	-149.882415	2262.84666

Group ID	Created Date	Last Update	Species Common Name						
35	5/3/2020 8:19:08 AM	5/3/2020 2:40:48 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	True	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	3	1	0	0	0	0	0	0	

Comments

SC: Initially spotted 1 white with fujinons traveling N up the Inlet. Big Eyes saw it at 1347 and saw an additional gray. TOTAL 1 white 1 gray. 1348 2 more whites spotted TOTAL 3 whites 1 gray. 1352 lead crossed over point mac. 1358 second fix #168. 1400 pass off to SC. SC took fix 167 at 1417, delay in entering based on computer issues (ATL: Post-processed deleted bad Fix 162 - appears group record 35 was started as a test/check shot record at ~10:30, changed to beluga sighting at 13:45, but original test/check shot left is as fix 162. Not associated in time or space with fix 165 and 167 of Group 35.) ***NOTE*** Groups 35, 36, 37 all were present between 1345 and 1518 and have overlapping fixes (or fixes entered under wrong group). Fixes 167, 170, 171, 173 are near each other, 169, 176, 179, and 180 are together, and 165, 168, 172, 174, 175, 178 are together. Should be viewed as one large dispersed group, or three subgroups.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
35	165	5/3/2020 1:45:35 PM	61.226233	-150.022655	6874.33784
35	167	5/3/2020 2:22:28 PM	61.244536	-149.961599	3724.66733

Group ID	Created Date	Last Update	Species Common Name						
36	5/3/2020 2:08:06 PM	5/3/2020 4:38:12 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	True	Moderate	Travelling	None				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	4	1	0	0	0		0	0	

Comments

NEX: FIX ID 170 BAD; Beluga closer to the shore than calculated. 1431 FIX ID 171 one white, two grey milling in that general area as seen from the big eyes. 1440 FIX ID 173 one white, one grey traveling south. 1452 FIX ID 176 two greys moving around the point. Last seen 1456. SC FIX180 Last seen 3:18 by us.
 PW: 1402 Initially spotted 2 whites traveling N 1402 (talked to PCT and decided to record as new group). 1410 2 more whites spotted further south out of the inlet and separated by ~1000m kept together because they were on same trajectory and travel behavior as the first two in this group. 1411 2 lead whites at point Mac. 1417 1 passed pt. Mac. 1 still to cross. 2 trailing over 1000m behind. 1418 SC took over sighting of the lead 2 whites while PW maintained visuals of the trailing two whites. 1428 2 whites being monitored by PW switched directions toward S. 1430 may potentially have 1 more white (determined it was not) 1435 Took Fix 172 to mark point of directional change. 1438 Fix 174 2 whites changed direction again. NEX saw fixes and asked if they indeed were part of group 36. It was then decided to make a new parent group. (MM Group ID 37) 1505 PW sighted 2 whites and 1 gray past point Mac. SC has not seen Original group of whales that were passed to them since. PW and SC discussed over phone these are most likely the same whales. Calling it last time seen 1505. Comments continued next page...

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
36	168	5/3/2020 2:09:56 PM	61.223133	-150.014028	6474.94689
36	169	5/3/2020 2:22:20 PM	61.231773	-149.97614	4336.32379
36	170	5/3/2020 2:24:26 PM	61.250615	-149.916502	2135.38459
36	171	5/3/2020 2:30:50 PM	61.250309	-149.940023	2979.84666
36	172	5/3/2020 2:39:17 PM	61.238252	-150.032175	7335.46638
36	173	5/3/2020 2:40:52 PM	61.248668	-149.936516	2720.92922
36	174	5/3/2020 2:41:12 PM	61.236345	-150.030277	7224.77524
36	176	5/3/2020 2:56:01 PM	61.238779	-149.982583	4696.73484
36	179	5/3/2020 3:06:02 PM	61.240378	-149.974962	4315.57083
36	180	5/3/2020 3:18:01 PM	61.236887	-149.973083	4172.57172

Group ID	Created Date	Last Update	Species Common Name
36	5/3/2020 2:08:06 PM	5/3/2020 4:38:12 PM	Beluga

Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior
1	Linear	True	Moderate	Travelling	None

Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
4	1	0	0	0	0	0	0		

Comments

Comments continued.... ***NOTE***Groups 35, 36, 37 all were present between 1345 and 1518 and have overlapping fixes (or fixes entered under wrong group). Fixes 167, 170, 171, 173 are near each other, 169, 176, 179, and 180 are together, and 165, 168, 172, 174, 175, 178 are together. Should be viewed as one large dispersed group, or three subgroups. (ATL Note: did not delete fix 170 since it was just short of far shore, but bearing was probably correct).

Group ID	Created Date	Last Update	Species Common Name						
37	5/3/2020 2:53:19 PM	5/3/2020 3:54:16 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
>10	Linear	True	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

PW: 1438 Made new parent group for the 2 white trailing belugas from MM Group 36. Initially, these were in the MM Group 36 but after discussion with PCT was advised to make a new group. 1435 Fix 175 shows first directional change point. Whales were traveling N but changed to S. Fix 177 was a bad fix. 1438 Fix 178 shows second directional change. Whales were traveling S but changed to N. Times recorded in the program for fixes are incorrect in this sighting because everything occurred while it was still a part of MM Group 36. Last time seen was 1438. Area was monitored for 30 minutes but they were never seen again. (ATL post-processed: deleted fix 177) ***NOTE***Groups 35, 36, 37 all were present between 1345 and 1518 and have overlapping fixes (or fixes entered under wrong group). Fixes 167, 170, 171, 173 are near each other, 169, 176, 179, and 180 are together, and 165, 168, 172, 174, 175, 178 are together. Should be viewed as one large dispersed group, or three subgroups.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
37	175	5/3/2020 2:54:08 PM	61.237704	-150.03163	7303.07909
37	178	5/3/2020 2:58:54 PM	61.235767	-150.029702	7192.41694

Group ID	Created Date	Last Update	Species Common Name						
38	5/3/2020 3:30:39 PM	5/3/2020 9:18:14 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Other	Travelling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	1	0	0	0	0	0	0	

Comments

NEX: 1529 FIX ID 181 One grey surface active. FIX ID 182 Heading south. Last seen 1552. NEX: 1628 Fix ID 185 one gray seen at surface twice; distance is closer than before- believed to be same beluga NEX: 1643 FIX ID 185 (rewritten accidentally from previous) one gray headed south slowly, passed survey boat, seen at surface multiple times, changed direction couple of times, last seen at 1643. (ATL - Post processed: Calc'd Dist MM to Pile after hours)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
38	181	5/3/2020 3:39:35 PM	61.258814	-149.928924	3267.49753
38	182	5/3/2020 3:48:26 PM	61.252053	-149.95125	3601.23403
38	185	5/3/2020 4:42:06 PM	61.246218	-149.945844	3031.59086

Group ID	Created Date	Last Update	Species Common Name						
39	5/3/2020 4:00:46 PM	5/3/2020 9:17:18 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
>10	Linear	False	Vigorous	Travelling	None				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
8	0	0	0	0	0	0	0		

Comments

PW: 1557 Observed 4 whites traveling S vigorously. 1604 Fix 183 observed at power plant. Fix 184 indicates travel continuing S. 1614 4 additional beluga sighted in group. No directional change for duration of sighting. Last sighted at 1630. (ATL - Post processed: Calc'd Dist MM to Pile after hours)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
39	183	5/3/2020 4:10:38 PM	61.239623	-150.028279	7166.44751
39	184	5/3/2020 4:20:06 PM	61.244156	-150.04634	8179.86652

Group ID	Created Date	Last Update	Species Common Name						
40	5/3/2020 4:50:45 PM	5/3/2020 9:16:04 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
0	3	0	0	0	0	0	0	0	

Comments

NEX: 1650 FIX ID 186 three grays, heading south directly off NEX station
 1654 FIX ID 187 three grays, south of NEX moving south close to shore NEX: 1700 belugas still present, ending watch (ATL - Post processed: calc'd Dist MM to Pile after hours)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
40	186	5/3/2020 4:51:41 PM	61.254046	-149.882243	2276.1619
40	187	5/3/2020 4:54:20 PM	61.252635	-149.881509	2139.30125

**2020 POA PCT
Marine Mammal Sightings
Overview
4/27/20 - 5/03/20**

Marine Mammal Sightings

▲ PSO Station

Marine Mammal Groups

- Group 2 Beluga
- Group 3 Beluga
- Group 4 Beluga
- Group 8 Beluga
- Group 10/11 Combined Beluga
- Group 12 Beluga
- Group 13 Beluga
- Group 14 Beluga
- Group 16 Beluga
- Group 19 Beluga
- Group 22 Beluga
- Group 23 Beluga
- Group 26 Beluga
- Group 27 Beluga
- Group 28 Beluga
- Group 29 Beluga
- Group 30 Beluga
- Group 31 Pinniped Unid
- Group 32/34 Combined Beluga
- Group 35/36/37 Combined Beluga
- Group 38 Beluga
- Group 39 Beluga
- Group 40 Beluga

0 1 2 km



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
04/27/20 - 05/03/20
Figure 1**

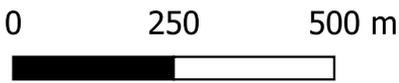
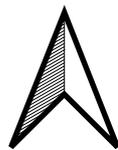


Marine Mammal Tracks

North Expansion PSO Station

Marine Mammal Groups

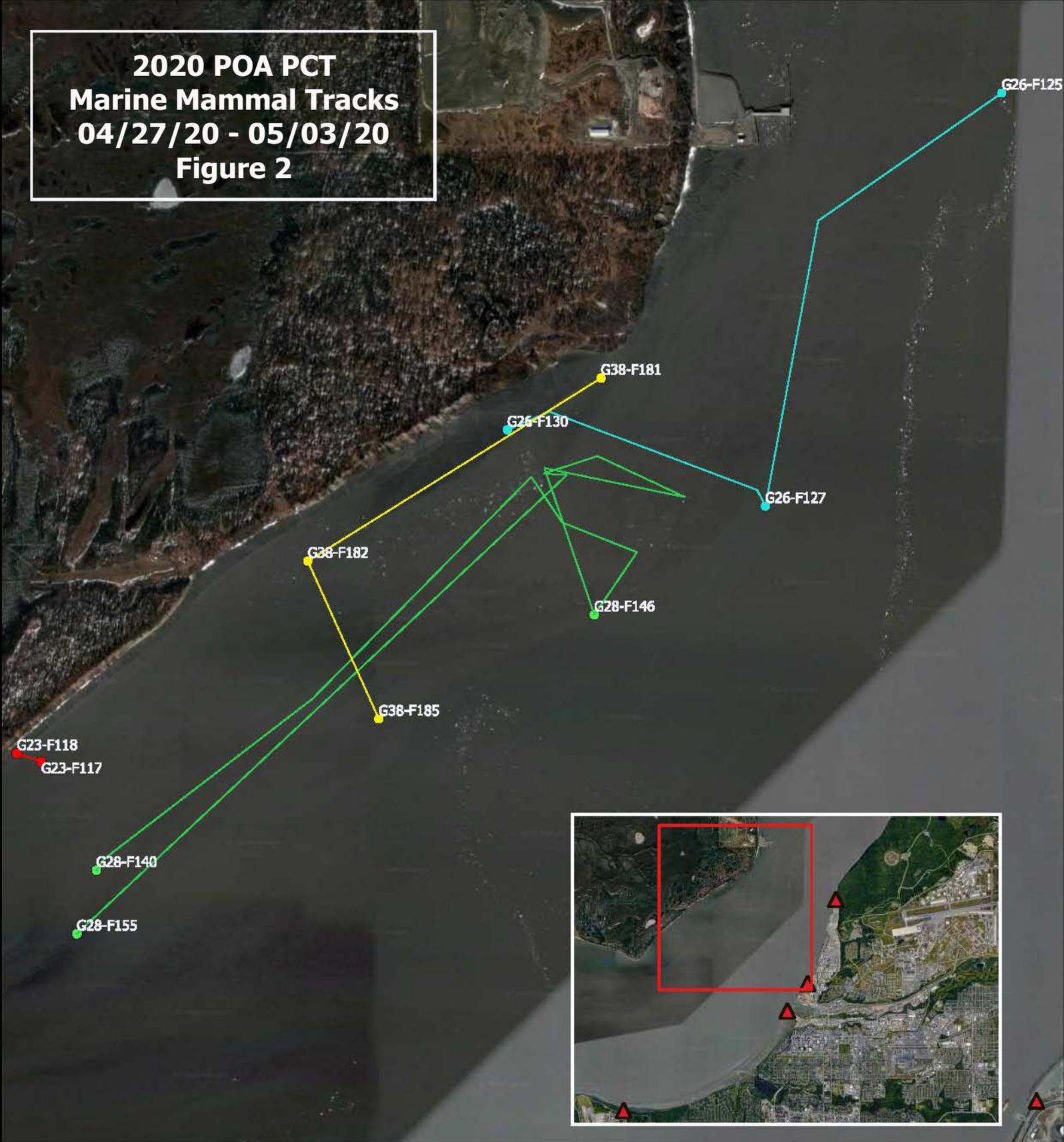
- Group 4 Beluga
- Group 8 Beluga
- Group 13 Beluga
- Group 19 Beluga
- Group 27 Beluga
- Group 32/34 Combined Beluga
- Group 40 Beluga



61 | N
61 North Environmental

Map Imagery Source:
Google Earth, 2020

**2020 POA PCT
Marine Mammal Tracks
04/27/20 - 05/03/20
Figure 2**

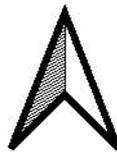


Marine Mammal Tracks

▲ PCT PSO Station

Marine Mammal Groups

- Group 23 Beluga
- Group 26 Beluga
- Group 28 Beluga
- Group 38 Beluga



0 250 500 m



61 | N

61 North Environmental

Map Imagery Source:
Google Earth, 2020

**2020 POA PCT
Marine Mammal Tracks
04/27/20 - 05/03/20
Figure 3**

Marine Mammal Tracks

 PSO Station

Marine Mammal Groups

-  Group 12 Beluga
-  Group 14 Beluga
-  Group 16 Beluga
-  Group 22 Beluga
-  Group 29 Beluga
-  Group 30 Beluga
-  Group 39 Beluga

0 250 500 m



61 | N

61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
04/27/20 - 05/03/20
Figure 4**

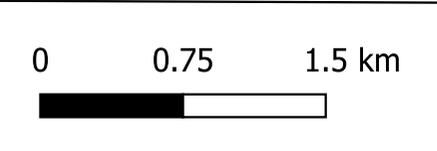
Marine Mammal Tracks

-  PSO Station

Marine Mammal Groups

-  Group 2 Beluga
-  Group 3 Beluga
-  Group 10/11 Combined Beluga
-  Group 31 Pinniped Unid
-  Group 35/36/37 Combined Beluga

Tracks are not displayed for Combined Beluga Group 35/36/37 due to the number of cross-over lines for the sighting



*Map Imagery Source:
Google Earth, 2020*



Appendix C – Week of 5/4 – 5/10 Sighting Forms and Maps

MM Group Report

Group ID 42	Created Date 5/4/2020 6:58:22 AM	Last Update 5/4/2020 11:02:50 AM	Species Common Name Beluga
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Spread 1	Formation Linear	Combined Group False	Pace Sedate	Primary Behavior Travelling	Secondary Behavior Milling
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Beluga Counts 2	White 3	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: 0650 FIX ID 189 two grey beluga milling around observation location during setup 0706 FIX ID 190 updated to three grey belugas in linear formation milling towards the south. 0717 FIX ID 191 radio hand off to PCT; PCT: picked up sight from NEX; Fix192 3 greys traveling slowly south along the port, near Gladys M tug, vessel traffic (survey boat, tug, barge, etc) in the area; 0733 fix 194 3 greys now milling generally northward off the port; 0734 radio hand-off to NEX; NEX: 0735 FIX ID 195 3 greys have traveled back in front of observation site. 0755 FIX ID 196 group milling in front of first dock face. 0806 FIX 197 additional two white close to the grey group, FIX 198 is further north at 8:10 but the whites in general are milling around the same area as the greys were. 0817 FIX 199 all beluga (white and grey) seen milling in this general area. 0835 Fix 200 still seeing them milling the whole time since last fix. 0853 FIX 201 still seeing them. 0905 last sighting

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
42	189	5/4/2020 7:01:05 AM	61.253341	-149.882093	2203.79584
42	190	5/4/2020 7:08:10 AM	61.251187	-149.883454	1953.66874
42	191	5/4/2020 7:17:30 AM	61.24693	-149.886615	1451.68315
42	192	5/4/2020 7:26:05 AM	61.240346	-149.89243	665.51161
42	194	5/4/2020 7:32:34 AM	61.24123	-149.889963	793.9132
42	195	5/4/2020 7:39:13 AM	61.252985	-149.882085	2166.29425
42	196	5/4/2020 7:56:11 AM	61.251725	-149.882966	2018.58365
42	197	5/4/2020 8:08:52 AM	61.252458	-149.883034	2095.08208
42	198	5/4/2020 8:11:53 AM	61.253467	-149.882636	2208.49481
42	199	5/4/2020 8:17:32 AM	61.25156	-149.882461	2009.77483
42	200	5/4/2020 8:34:55 AM	61.252064	-149.883392	2047.5991
42	201	5/4/2020 8:52:47 AM	61.25207	-149.88425	2035.1934

Group ID	Created Date	Last Update	Species Common Name						
43	5/4/2020 1:12:06 PM	5/4/2020 3:19:14 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	3	0	0	0		0	0	

Comments

NEX: 1312 FixID 203 two white, three gray directly off NEX headed south NEX: 1314 FixID 204 two white, three gray directly off NEX headed south NEX: 1320 FixID 205 two white, three gray south of NEX in front of dock, milling NEX: last seen at 1327- two white, three gray- milling 1336 FIX ID 206 single grey milling 1355 FIX ID 207 single beluga traveling south; last seen 1355

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
43	203	5/4/2020 1:12:37 PM	61.255069	-149.882716	2378.18274
43	204	5/4/2020 1:14:49 PM	61.253446	-149.88286	2202.79779
43	205	5/4/2020 1:20:40 PM	61.250276	-149.883676	1853.79644
43	206	5/4/2020 1:35:19 PM	61.25157	-149.885441	1964.85404
43	207	5/4/2020 2:09:10 PM	61.245229	-149.88862	1240.22037

Group ID	Created Date	Last Update	Species Common Name						
44	5/4/2020 4:39:30 PM	5/4/2020 5:13:31 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	No Formation	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	4	0	0	0	0	0	0	

Comments

NEX: 1639 FIX ID 208 4 gray off NEX headed south towards zone; called PCT (shutdown was called)
 NEX: 1642 FIX ID 209 4 gray off NEX headed south towards zone
 NEX: 1646 FIX ID 210 4 gray immediately off dock, headed south
 NEX: 1653 FIX ID 211 4 gray off dock within shutdown zone south of NEX, headed south NEX: 1657 seen again- milling near dock south of NEX within shutdown zone
 NEX: 1659 seen again- milling near dock south of NEX within shutdown zone NEX: 1702 seen again- milling near dock south of NEX within shutdown zone (same location) NEX: 1711 FIX ID 212 - 4 gray milling near dock south of NEX within shutdown zone (same location) NEX: 1711 still seeing same group- milling in circles between 1st and second concrete docks south of NEX; ending watch

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
44	208	5/4/2020 4:39:44 PM	61.256353	-149.881091	2539.36628
44	209	5/4/2020 4:42:12 PM	61.254667	-149.881339	2356.41628
44	210	5/4/2020 4:46:01 PM	61.252547	-149.88173	2126.19397
44	211	5/4/2020 4:53:06 PM	61.251051	-149.883038	1946.29109
44	212	5/4/2020 5:11:37 PM	61.252738	-149.881563	2149.16806

Group ID 46	Created Date 5/5/2020 7:24:38 AM	Last Update 5/5/2020 2:05:51 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	White 0	Gray 1	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 0	Other Calf 0	Total Other
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Comments

PW: 0720 one grey beluga spotted south of Red Shack landmark heading out of the inlet away from PCT. Last seen 0720

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
46	213	5/5/2020 8:16:30 AM	61.241405	-150.089184	10428.30079

Group ID	Created Date	Last Update	Species Common Name						
47	5/5/2020 7:34:39 AM	5/5/2020 2:05:04 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Parallel	False	Moderate	Travelling	None				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	4	0	0	0	0	0	0	0	

Comments

PW: 1 grey beluga spotted south of Blue Door travelling out of the Inlet away from PCT at 0722 (Fix 216). A second grey was spotted travelling along at 0730 in between Blue Door and Red Shack. At 0733 two more beluga were seen with this group making it a total of 4 grey beluga well outside the inbound lane (Fix 218). Last seen 0738 travelling south out of Inlet past Red Shack. Trees are obstructing view any farther south (Fix 219)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
47	216	5/5/2020 8:11:39 AM	61.238401	-150.055942	8633.83881
47	218	5/5/2020 8:01:38 AM	61.244363	-150.079481	9941.55023
47	219	5/5/2020 8:04:29 AM	61.232235	-150.101168	11044.79662

Group ID	Created Date	Last Update	Species Common Name			
48	5/6/2020 6:58:52 AM	5/6/2020 4:47:45 PM	Beluga			
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior	
>10	No Formation	False	Moderate	Milling	Travelling	
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts
1	3	1	0	0	0	0
						Other Adult
						0
						Other Calf
						0
						Total Other

Comments

NEX: 0655 two gray belugas immediately off NEX, traveling south along shore- still setting up theodolite NEX: 0713 three gray belugas (same group) milling by first section of dock south of NEX NEX: 0756 took FixID 232 from approximately an hour ago- just set up theodolite, but have been seeing same group for the past hour milling in same area NEX: 0801 two gray one white beluga milling off first part of dock south of NEX- FIX ID accidentally put under wrong record. NEX: 3 gray one white Milled and slowly moved to the south through fix 237 at 0915 then generally northward back towards NEX from fix 237 to fix 238 @ 0939. NEX: 1015 FIX ID 239 one white three gray milling near dock immediately south of NEX. NEX: FIX ID 240 one white with a calf and three gray milling near dock immediately south of NEX. NEX: FIX ID 241 one white, three gray travelling north past NEX. NEX: FIX ID 242 one white, three gray still travelling north of NEX towards outbound line. Last seen @ 1119. Calf was hard to see and observed intermitantly with the white adult oer the course of the observation of this group.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
48	232	5/6/2020 8:15:22 AM	61.252106	-149.881878	2077.30343
48	235	5/6/2020 8:41:28 AM	61.252201	-149.883825	2055.49558
48	236	5/6/2020 8:53:27 AM	61.251195	-149.883837	1948.32457
48	237	5/6/2020 9:15:11 AM	61.250439	-149.887008	1822.82685
48	238	5/6/2020 9:39:20 AM	61.252823	-149.881682	2156.03938
48	239	5/6/2020 10:15:06 AM	61.251304	-149.883411	1966.74775
48	240	5/6/2020 10:46:39 AM	61.252359	-149.883277	2080.73791
48	241	5/6/2020 11:09:27 AM	61.254901	-149.881626	2376.66069
48	242	5/6/2020 11:18:04 AM	61.258992	-149.881079	2821.76055

Group ID	Created Date	Last Update	Species Common Name						
49	5/6/2020 7:10:57 AM	5/6/2020 5:05:10 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
8	Linear	False	Sedate	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

SC: One white swimming by bluff. Spotted at SC at 706, traveling south. 720, spotted traveling south by lil village. One more white observed travelling slowly with other white at lil village at 726. At 729, both whales surfacing more frequently as they travel more into the middle of the arm. Fix 229 at 742. At 747, docked tug boats blocking sight of both whales. At 812, passed to PW. PW: @0809 we saw 2 white beluga near the buoy (fix 231). We took over group 49 from SC at this point. We saw the 2 whites again @0813 and took (fix 234). Whales are continuing to travel away from SC and towards PW. Last seen @0813

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
49	224	5/6/2020 7:35:10 AM	61.228248	-149.943984	2725.41022
49	229	5/6/2020 7:44:46 AM	61.224216	-149.930888	2245.98156
49	231	5/6/2020 7:52:41 AM	61.215302	-149.948775	3591.95707
49	234	5/6/2020 8:13:07 AM	61.213558	-149.953663	3917.47463

Group ID	Created Date	Last Update	Species Common Name						
51	5/6/2020 7:21:56 AM	5/6/2020 4:54:17 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
1	9	0	0	0	0	0	0	0	

Comments

PW: @0717 two grey beluga spotted in between the power station and the between bluffs (fix 226). @0725 a thrid beluga was spotted in the group. @0728 1 white beluga and a total of 9 gray were seen. @0735 group seen travelling south past White Dingy (fix 227). Last seen @0752

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
51	226	5/6/2020 7:22:08 AM	61.236853	-150.025883	7020.65932
51	227	5/6/2020 7:39:54 AM	61.24042	-150.071938	9500.85533

Group ID	Created Date	Last Update	Species Common Name
52	5/6/2020 3:08:06 PM	5/6/2020 3:28:15 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
0	1	0	0	0	0	0	0	0	

Comments

PW: @1500 one grey beluga was spotted (fix 244) headed southwest out of the inlet. Last seen @1500

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
52	244	5/6/2020 3:09:14 PM	61.210343	-149.991319	5822.69077

Group ID	Created Date	Last Update	Species Common Name						
54	5/7/2020 7:47:19 AM	5/7/2020 8:41:19 AM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
>10	Linear	False	Moderate	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	4	8	0	0	0	0	0	0	

Comments

PW: @0745 4 white and 2 grey beluga were spotted between the old dock and between bluffs heading SW out of the inlet (fix 247). PW: @0755 we saw the belugas continually travelling SW out of the inlet inbetween the power station and between bluffs (fix 249). We got a more accurate count of 4 white and 5 gray. PW: @0808 4 white and 8 gray were spotted travelling SW out of the inlet between blue door and white dingy (fix 251). PW: @0817 4 white and 8 gray were spotted travelling SW out of the inlet between white dingy and red shack (fix 252) PW: @0826 travelling our of the inlet past red shack (fix 254). This is our farthest point we can see with the big eyes. PW: last seen @0826

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
54	247	5/7/2020 7:49:43 AM	61.235393	-150.007461	6031.58461
54	249	5/7/2020 7:58:53 AM	61.241758	-150.028333	7191.97409
54	251	5/7/2020 8:10:08 AM	61.241727	-150.039481	7784.16164
54	252	5/7/2020 8:19:03 AM	61.24437	-150.060431	8930.10525
54	254	5/7/2020 8:39:17 AM	61.245719	-150.082077	10096.85854

Group ID	Created Date	Last Update	Species Common Name						
55	5/7/2020 7:55:27 AM	5/7/2020 9:17:55 AM	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
	0	3	1	0	0		0	0	

Comments

NEX: 0755 Fix ID 248 three grays north of NEX headed south along shore
 NEX: 0813 Fix ID 250 three gray south of NEX headed south along shore along dock
 NEX: 0826 FIX ID 253 three grays milling close to dock south of NEX NEX: 0832 4th beluga spotted- calf added to group NEX: 0849 FIX ID 255 three gray, one calf milling close to dock south of NEX NEX: group 55 last seen at 0846
 NEX: 0916 group 55 has not been sighted for a half hour- contacted PCT

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
55	248	5/7/2020 7:57:21 AM	61.252571	-149.881957	2124.79972
55	250	5/7/2020 8:13:01 AM	61.246757	-149.88623	1439.66568
55	253	5/7/2020 8:26:06 AM	61.252177	-149.881639	2088.98333
55	255	5/7/2020 8:49:30 AM	61.2509	-149.883151	1928.46173

Group ID	Created Date	Last Update	Species Common Name						
56	5/7/2020 9:21:51 AM	5/7/2020 4:50:40 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Vigorous	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	1	0	0	0	0		0	0	

Comments

SC: 0922 Fix ID 258 [61.230966 -149.915718] One white first seen traveling SW. Fix ID 259-bad fix. 0930 Fix ID 260 [61.224884 -149.917504] One white moving SW.
 Last seen 0932. (ATL post-processed: fix 259 is a "ghost" record with no measurement or lat/long data and was deleted).

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
56	258	5/7/2020 9:23:27 AM	61.230966	-149.915718	1189.93711
56	260	5/7/2020 9:31:29 AM	61.224884	-149.917504	1618.99258

Group ID	Created Date	Last Update	Species Common Name						
57	5/7/2020 2:38:43 PM	5/7/2020 4:52:27 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
>10	No Formation	False	Moderate	Travelling	Feeding Suspected				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	0	3	1	0	0		0	0	

Comments

SC: 1438 FIX 261 [61.225395 -149.909803] 1 gray surface active traveling N 1440 FIX 262 [61.227978 -149.907927] Saw additional gray. Total 2 gray. 1448 Pass off to PCT.

PCT: 1445 spot whales traveling north, close to nearshore.

1448 Fix 263 - noted a third whale for a total of 3 gray whales in the group. All 3 whales look <8 feet in length. Traveling slowly north, nearshore. Diving with visible fluke observed multiple times.

1454 Fix 264 - still traveling slowly north, diving observed.

1504 Fix 265 - traveling slowly north, nearshore, no more diving seen. Passed off to Nex at 1506.

NEX: 1507 Fix ID 266 three grays off The Corner headed north

NEX: 1517 Fix ID 267 three grays south of Wet Barge Berth headed north along shore

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
57	261	5/7/2020 2:39:43 PM	61.225395	-149.909803	1291.4111
57	262	5/7/2020 2:43:36 PM	61.227978	-149.907927	1009.90379
57	263	5/7/2020 2:48:45 PM	61.232091	-149.898209	323.46942
57	264	5/7/2020 2:54:41 PM	61.233292	-149.895799	142.45241
57	265	5/7/2020 3:28:15 PM	61.239483	-149.889876	614.89175
57	266	5/7/2020 3:07:39 PM	61.244178	-149.888594	1128.3051
57	267	5/7/2020 3:17:22 PM	61.250281	-149.883497	1857.38168
57	268	5/7/2020 3:22:11 PM	61.252886	-149.884175	2123.59761
57	269	5/7/2020 3:31:01 PM	61.25287	-149.88252	2146.99704
57	270	5/7/2020 3:43:22 PM	61.251519	-149.882741	2000.64099
57	271	5/7/2020 3:54:34 PM	61.25258	-149.882367	2118.83539
57	272	5/7/2020 4:13:38 PM	61.254266	-149.883682	2278.50011

Group ID 61	Created Date 5/10/2020 10:03:24 AM	Last Update 5/10/2020 10:18:00 AM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Sedate	Primary Behavior Other	Secondary Behavior Sink
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

1000 FIX 284 Seal looking around and then sank, very brief sighting. 1000 Last time seen.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
61	284	5/10/2020 10:04:43 AM	61.232142	-149.896805	281.06104

Group ID 63	Created Date 5/10/2020 10:26:49 AM	Last Update 5/10/2020 12:05:45 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Sink
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

SC: 1 harbor seal seen twice, travelling south, last sighted 1034

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
63	285	5/10/2020 10:27:45 AM	61.2254	-149.91453	1462.68445

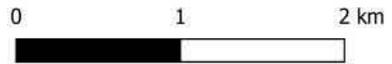
**2020 POA PCT
Marine Mammal Sightings
Overview
5/04/20 - 5/10/20**

Marine Mammal Sightings

▲ PSO Station

Marine Mammal Groups

- Group 42 Beluga
- Group 43 Beluga
- Group 44 Beluga
- Group 46 Beluga
- Group 47 Beluga
- Group 48 Beluga
- Group 49 Beluga
- Group 51 Beluga
- Group 52 Beluga
- Group 54 Beluga
- Group 55 Beluga
- Group 56 Beluga
- Group 57 Beluga
- Group 61 Harbor Seal
- Group 63 Harbor Seal



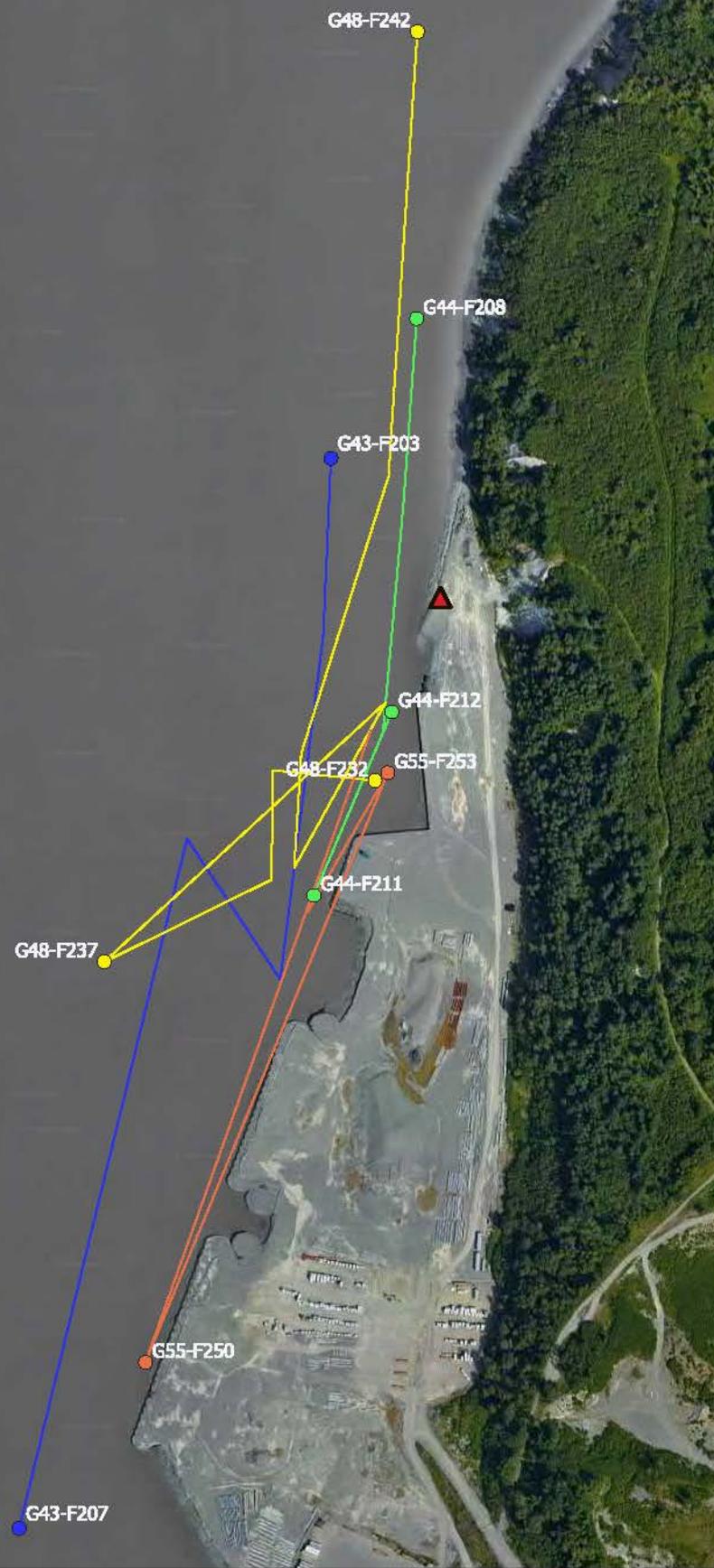
61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
05/04/20 - 05/10/20
Figure 1**

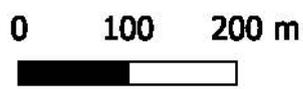


Marine Mammal Tracks

North Expansion PSO Station

Marine Mammal Groups

- Group 43 Beluga
- Group 44 Beluga
- Group 48 Beluga
- Group 55 Beluga



61 | N
61 North Environmental

Map Imagery Source:
Google Earth, 2020

**2020 POA PCT
Marine Mammal Tracks
05/04/20 - 05/10/20
Figure 2**



Marine Mammal Tracks

▲ PSO Station

Marine Mammal Groups

- Group 42 Beluga
- Group 49 Beluga
- Group 52 Beluga



61 | N

61 North Environmental

Map Imagery Source:
Google Earth, 2020

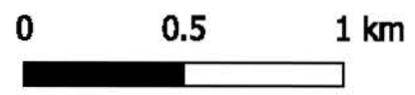
**2020 POA PCT
Marine Mammal Tracks
05/04/20 - 05/10/20
Figure 3**

Marine Mammal Tracks

▲ PSO Station

Marine Mammal Groups

- Group 46 Beluga
- Group 47 Beluga
- Group 51 Beluga
- Group 54 Beluga



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



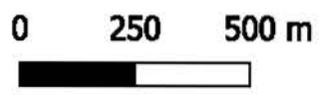
**2020 POA PCT
Marine Mammal Tracks
05/04/20 - 05/10/20
Figure 4**

Marine Mammal Tracks

▲ PSO Station

Marine Mammal Groups

- Group 56 Beluga
- Group 57 Beluga
- Group 61 Harbor Seal
- Group 63 Harbor Seal



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



Appendix D – Week of 5/11 – 5/17 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="0"/>	<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

PW: 0736 Fix 321. 2 HP traveling E from Point Mac. Visible dorsal fin. Surface active. 0747 Fix 323 traveling SE. 0807 Fix 0326 Still observing. They have separated and are more than 10 body lengths apart but still traveling same direction and speed. 0836 Fix 327 still milling out in the inlet. Travelling east/west . 2-7 body lengths apart. 0910 Fix 328 still milling. Last seen 0914 (ATL: post-process, calc'd distance MM to Pile & MM to Obs for FixID 328)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
71	321	5/17/2020 7:23:11 AM	61.226508	-149.985922	4958.89176
71	323	5/17/2020 7:43:24 AM	61.218749	-149.984409	5106.79587
71	326	5/17/2020 8:08:38 AM	61.221035	-149.979509	4775.84767
71	327	5/17/2020 8:40:19 AM	61.218138	-149.985883	5204.26755
71	328	5/17/2020 9:15:26 AM	61.218037	-149.983962	5112.08289

Group ID	Created Date	Last Update	Species Common Name						
72	5/17/2020 11:50:04 AM	5/17/2020 12:38:38 PM	Harbor Porpoise						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Unknown				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

SC 11:50 Fix 329 One harbor porpoise seen making its way north. Visible dorsal fin. Traveling. 11:53 Fix 330 Still traveling North. 12:00 Fix 331 Continued North. Last seen 1210.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
72	329	5/17/2020 11:50:29 AM	61.227834	-149.919686	1526.31002
72	330	5/17/2020 11:53:59 AM	61.22938	-149.910185	1002.76399
72	331	5/17/2020 12:00:25 PM	61.230266	-149.903753	672.38247

Group ID	Created Date	Last Update	Species Common Name						
73	5/17/2020 4:46:14 PM	5/17/2020 5:05:21 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Other	Sink				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PW: 1648 Fix 333 One HS observed looking (see primary behavior-other) and sinking. Not moving but staying in the same area. 1650 Began traveling very fast as approached by a tug boat and barge. 1657 Fix 335 Indicating HS was sighted after the barge passed. Last seen 1703.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
73	333	5/17/2020 4:47:17 PM	61.216802	-150.001339	6032.85021
73	334	5/17/2020 4:52:20 PM	61.21897	-149.995811	5676.24687
73	335	5/17/2020 4:56:49 PM	61.220375	-149.988802	5271.67823

**2020 POA PCT
Marine Mammal Sightings
Overview
5/11/20 - 5/17/20**

Marine Mammal Sightings

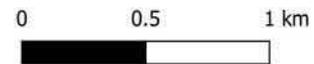
 PSO Station

Marine Mammal Groups

 Group 71 Harbor Porpoise

 Group 72 Harbor Porpoise

 Group 73 Harbor Seal



61 | N

61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
05/11/20 - 05/17/20
Figure 1**

Marine Mammal Tracks

- ▲ PSO Station

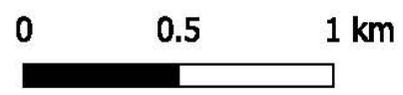
Marine Mammal Groups

- Group 71 Harbor Porpoise
- Group 72 Harbor Porpoise
- Group 73 Harbor Seal



G71-F321
G71-F326
G71-F328
G73-F333
G73-F334
G73-F335

G72-F329
G72-F330
G72-F331



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



Appendix E – Week of 5/18 – 5/24 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="0"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

PW: 0718 Fix 340 HS observed resting then diving. 0725 Fix 341 Observed a second time. Took fix to indicate travel direction in current line. 0743 Observed HS further up the Inlet looking and sinking. 0759 Fix 343 Observed resting then diving then resurfaced at 0803 in the same area. 0910 Fix 346 Surfaced with a fish in mouth. Dove and lingered on the surface. Slow travel, moving toward the East before diving again. 0938 Fix 347 Surfaced and lingered for a bit before diving again. 0942- 1002 Staying in the same area, surfacing about every 4 min, assumed to be foraging. 1008 Fix 348 Surfaced and rested for about 30 seconds before diving again, tail wave. 1010 Fix 349 Visible in the Theodolite scope. Behavior seems to be foraging and diving with no travel. 1039 Fix 350 Surfaced and dove, surfaced and dove, surfaced and fin slapped. Took fix to indicate still observing mammal after 30min from last fix. 1053 Fix 351 Still surfacing regularly but took this fix to check how much HS had moved in 4 min. 1115 fix 352 is the 30 min update. 1141 fix 353 is a 30 minute update. No change in behavior or location. 1205 fix 354 is another 30 minute update. No change. 1214 fix 355 HS moved east closer to the old dock. 1258 Fix 356 HS seen surfacing for about 15 second intervals and submerging its head again instead of diving behavior. ...Comments continued next page...

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
75	340	5/18/2020 7:19:46 AM	61.24214	-150.053548	8536.99842
75	341	5/18/2020 7:23:45 AM	61.235021	-150.028237	7141.96044
75	343	5/18/2020 8:00:30 AM	61.214328	-149.999568	6039.86909
75	345	5/18/2020 8:38:38 AM	61.211954	-150.00125	6224.92932
75	346	5/18/2020 9:11:26 AM	61.21307	-150.003851	6304.71745
75	347	5/18/2020 9:39:53 AM	61.212476	-150.003635	6319.28414
75	348	5/18/2020 10:09:02 AM	61.212914	-150.003975	6317.423
75	349	5/18/2020 10:11:48 AM	61.21234	-150.003064	6297.01846
75	350	5/18/2020 10:39:20 AM	61.211619	-150.003316	6341.12758
75	351	5/18/2020 10:53:31 AM	61.213563	-150.002592	6221.69928
75	352	5/18/2020 11:16:09 AM	61.213025	-150.004345	6331.08444
75	353	5/18/2020 11:42:27 AM	61.210403	-150.001199	6293.79208

Group ID 75	Created Date 5/18/2020 7:18:53 AM	Last Update 5/18/2020 5:01:47 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Resting	Secondary Behavior Diving
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

... Comments continued from previous page...1306 Radioed PCT and determined to take fixed as the HS changes behavior or moves from current area, continuing to update "Last Seen" though. 1349 Fix 357 Took fix because it appeared HS had significantly moved since last fix. Last seen at 1348. PCT: None of the seal fixes were inside the Level B zone during pile driving.

75	354	5/18/2020 12:07:36 PM	61.218656	-150.002482	6027.33879
75	355	5/18/2020 12:15:12 PM	61.214795	-149.999562	6020.50804
75	356	5/18/2020 12:57:13 PM	61.212758	-149.995465	5905.73806
75	357	5/18/2020 1:50:05 PM	61.211014	-149.992956	5867.04441

Group ID	Created Date	Last Update	Species Common Name						
80	5/20/2020 8:58:15 AM	5/20/2020 4:24:19 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Looking	Sink				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	0	0	0	0	0		0	0	

Comments

PW: @0857 (fix 373) one harbor seal was spotted. Looking and sinking behavior. @0810 (fix 374) HS seen travelling. @1012 (Fix 375). HS popped up in same current line further E. Looked, sinked, and popped up again 3.5 min later in similar spot . High probability it is the same HS so kept in this MM Group. @1044 (Fix 376) Took fix to indicate HS traveled closer to shore. Fix 377 is a bad fix. Last seen 1051 (not seen for 30 mins @1121).

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
80	373	5/20/2020 8:59:05 AM	61.217685	-149.989407	5398.55191
80	374	5/20/2020 9:12:07 AM	61.214204	-149.992421	5691.95181
80	375	5/20/2020 10:13:24 AM	61.214028	-149.958134	4083.24992
80	376	5/20/2020 10:44:45 AM	61.205133	-149.965337	4990.50549

Group ID	Created Date	Last Update	Species Common Name						
81	5/20/2020 2:54:02 PM	5/20/2020 4:21:54 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Looking	Sink				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	1		

Comments

PW:@1453 (fix 378) 2 harbor seals were spotted. 1 was initially seen looking and sinking, a second HS which appeared to be smaller was spotted when both HS resurfaced. Looked and sank. Last seen 1457

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
81	378	5/20/2020 2:55:10 PM	61.217316	-149.999651	5928.90334

Group ID 82	Created Date 5/20/2020 5:30:33 PM	Last Update 5/20/2020 5:53:23 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Looking	Secondary Behavior Diving
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

PW: 1730 Fix ID 379; Last sight at 1730

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
82	379	5/20/2020 5:31:49 PM	61.221905	-149.939209	2759.84939

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="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

PW: 0713 Fix 380; HS observed looking and sinking. 0737 Fix 382; Took fix to indicate we are still seeing HS. Exhibited same behavior; look and sink. 0815 Reported to PCT haven't seen for 1/2 hour.
Last seen 0741

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
83	380	5/21/2020 7:17:21 AM	61.210096	-150.000029	6251.90326
83	382	5/21/2020 7:39:13 AM	61.208102	-149.996137	6167.12921

Group ID 85	Created Date 5/21/2020 10:25:00 AM	Last Update 5/21/2020 11:09:33 AM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Vigorous	Primary Behavior Travelling	Secondary Behavior Sink
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

PW: 1024 Location 61.228436° -150.001167° (Fix 385 was overwritten); Observed HS swiftly traveling to the W. 1029 Fix 385 (oops overwrote the first fix); Took fix to indicate the travel direction and speed of HS. 1101 Reported to PCT haven't seen for 1/2 hour. Last seen 1029

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
85	385	5/21/2020 10:29:59 AM	61.224159	-150.026802	7158.20251

Group ID 86	Created Date 5/21/2020 3:51:17 PM	Last Update 5/21/2020 5:50:21 PM	Species Common Name Harbor Porpoise
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Unknown
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

NEX: 15:51 Fix #386 Single adult harbor porpoise travelling south towards jobsite at a moderate pace(Fix #386). Initially sighted at 15:51. Last seen at 15:55.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
86	386	5/21/2020 3:52:32 PM	61.253987	-149.881682	2278.85793

Group ID 87	Created Date 5/21/2020 4:07:56 PM	Last Update 5/21/2020 5:50:56 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Sedate	Primary Behavior Milling	Secondary Behavior Diving
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

NEX: 16:07 Fix #387 Single adult harbor seal milling and periodically diving north of NEX (Fix #387). Initially sighted at 16:07. Last seen at 16:10.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
87	387	5/21/2020 4:08:14 PM	61.258947	-149.881155	2815.8836

Group ID	Created Date	Last Update	Species Common Name						
89	5/22/2020 8:08:41 AM	5/22/2020 10:40:30 AM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Looking				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

First Sighting @ 0808. Traveling south. Took 5 fixes, 392-396(last one at 0831) to show movement down arm. 0822: still seeing seal, getting far from our vantage point, tried to transfer to PCT @ 0831: Fix 396. Last seen by NEX@08:31.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
89	392	5/22/2020 8:09:05 AM	61.254849	-149.882319	2360.50008
89	393	5/22/2020 8:11:04 AM	61.254005	-149.883008	2260.17442
89	394	5/22/2020 8:13:41 AM	61.252827	-149.883295	2130.2378
89	395	5/22/2020 8:27:07 AM	61.240594	-149.899817	735.29524
89	396	5/22/2020 8:30:50 AM	61.233718	-149.898633	226.66078

Group ID	Created Date	Last Update	Species Common Name						
90	5/22/2020 8:34:00 AM	5/22/2020 9:40:55 AM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Travelling	Diving				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
1	0	0	0	0	0	0	0	0	

Comments

PW: 0836 Fix 397 1 white beluga traveling south slowly. 0840 Fix 398 continuing to travel south, 1 dive observed with fluke visible. 0852 Fix 399 Beluga continuing to travel south and a little west. Last seen 0844.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
90	397	5/22/2020 8:36:40 AM	61.223615	-149.993482	5419.74052
90	398	5/22/2020 8:40:19 AM	61.22392	-149.998917	5696.42796
90	399	5/22/2020 8:55:04 AM	61.221192	-150.001611	5906.01601

Group ID	Created Date	Last Update	Species Common Name						
91	5/22/2020 11:46:38 AM	5/22/2020 5:12:33 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Milling	Other				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	2	0		

Comments

PW: 1146 Fix 400, 1 Harbor Seal sinking and surfacing often. 1153 Fix 401 Harbor Seal surfaced south of last fix and floated briefly towards middle of channel where outgoing current appeared strongest before sinking again. 1213 Fix 402 Surfaced and milled, moving south/west towards inbound line. 1300 Second harbor seal spotted, both seen lunging (bodies did not clear water surface) out of the water and splashing within about 100m of each other. Last seen 1337. 1429 1 harbor seal spotted, believed to be one of previous seals due to proximity, so kept in same mammal group 91. 1445 Fix 403 1 harbor seal moving northeast. 1451 Fix 404 harbor seal milling between inbound line and little dock; surfacing and sinking. Last Seen 1533. Out of sight for 40 minutes. 1615 harbor seal (believed to be same one due to proximity) spotted. 1622 Fix 405 seal surfaced and sank. 1641 seal surfaced and sank in similar spot as fix 405, milling in same area, no new fix taken. 1702 Fix 407 seal surfaced and sank in front of Point Mackenzie, milling, drifting southwest. Last seen 1702. Ending observations at 1715.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
91	400	5/22/2020 11:47:00 AM	61.212841	-150.000575	6152.66515
91	401	5/22/2020 11:53:39 AM	61.212407	-150.002287	6255.84636
91	402	5/22/2020 12:13:54 PM	61.214681	-150.008811	6488.29571
91	403	5/22/2020 2:45:52 PM	61.219821	-150.006243	6184.65833
91	404	5/22/2020 2:53:04 PM	61.216986	-149.999891	5952.94622
91	405	5/22/2020 4:21:16 PM	61.222546	-149.986359	5078.75096
91	407	5/22/2020 5:06:20 PM	61.219397	-149.987318	5229.76025

Group ID	Created Date	Last Update	Species Common Name						
92	5/23/2020 7:07:36 AM	5/23/2020 12:46:21 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
	5	1	0	0	0		0	0	

Comments

PW: 0707, 4 white belugas spotted within inbound line, milling close to far shore, about in line with 'between bluffs' 0712 F409 belugas continue to mill. 0719 Fix 412, 5 white belugas observed, one calf observed. 0732 F413 belugas still milling, drifting southwest, around inbound line. 0745 F414 whales traveling slowly west along shoreline, past the inbound line. 0756 last sighted, traveling west.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
92	409	5/23/2020 7:10:33 AM	61.237005	-150.010755	6213.12791
92	412	5/23/2020 7:19:35 AM	61.24013	-150.021196	6793.95111
92	413	5/23/2020 7:31:59 AM	61.243712	-150.0385	7757.90634
92	414	5/23/2020 7:44:59 AM	61.247038	-150.069893	9471.14874

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="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

PW: 0905 Fix 418 one harbor seal surfaced and turned its head around before sinking again. Last seen 0905

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
95	418	5/23/2020 9:08:14 AM	61.211681	-149.988436	5617.58504

Group ID	Created Date	Last Update	Species Common Name						
96	5/23/2020 10:16:13 AM	5/23/2020 4:28:18 PM	Harbor Seal						
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
0	0	0	0	0	0	1	0		

Comments

NEX 1015: Seal cruising down south with the out going tide. PCT: 1032 Seal just crossed the station; moving with the current. SC: 1036 first sight of harbor seal, SC takes over sighting from PCT, thought we took a fix, but..nope; 1138 F421 resighted Harbor seal at mouth of Ship Creek,swimming out of ship creek; This is likely the same seal as Group 98, notes continue in G98 comments.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
96	419	5/23/2020 10:16:22 AM	61.254199	-149.887829	2224.25019
96	420	5/23/2020 10:31:46 AM	61.231462	-149.899438	418.76781
96	421	5/23/2020 11:39:44 AM	61.226913	-149.904442	987.40697

Group ID	Created Date	Last Update	Species Common Name						
97	5/23/2020 10:52:35 AM	5/23/2020 12:35:59 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Milling	Diving				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

NEX: Fix 422-424: Adult HS milling and periodically diving near Cairn Pt. for ~1hr before moving northward. Fix 425: Mainly milling, heading more North but still hovering over the outbound line. Still able to see every 10 minutes before diving back down. Last sighted @ 1235.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
97	422	5/23/2020 10:54:02 AM	61.256005	-149.882108	2487.09959
97	423	5/23/2020 10:59:25 AM	61.256072	-149.88188	2497.57997
97	424	5/23/2020 11:18:37 AM	61.255113	-149.882539	2385.44925
97	427	5/23/2020 12:16:15 PM	61.258653	-149.880989	2786.64044

Group ID	Created Date	Last Update	Species Common Name						
98	5/23/2020 11:38:34 AM	5/23/2020 12:46:24 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Milling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

SC: same as Group ID 96, G96F421 is first sight for Group 98; 1143 F425 seal milling around the mouth of Ship Creek; 1201 F426 seal surfaced again, same area; 1221 HS still milling at mouth of Ship Creek ; Last sighted 1221

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
98	425	5/23/2020 11:43:36 AM	61.227277	-149.903546	927.94005
98	426	5/23/2020 12:02:44 PM	61.227196	-149.904492	962.31179

Group ID	Created Date	Last Update	Species Common Name						
99	5/23/2020 3:08:41 PM	5/23/2020 4:52:55 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Milling	Looking				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PW: 1508 harbor seal spotted. 1510 seal diving. 1518 fix 429 seal surfacing and sinking; 6 dives observed; milling in same area. 1533: last seen. 1638 resighted seal, believed to be same one due to proximity. 1640 fix 430 looking and sinking. Last seen 1648. Ending watch at 1715.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
99	429	5/23/2020 3:17:24 PM	61.216463	-150.003144	6136.43086
99	430	5/23/2020 4:39:42 PM	61.210121	-149.996281	6070.55302

Group ID	Created Date	Last Update	Species Common Name						
101	5/24/2020 7:25:09 AM	5/24/2020 5:07:23 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	No Formation	False	Sedate	Milling	Diving				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	8	5	0	0	0		0	0	

Comments

PW: 0726 FIX 432 One white, one gray surfacing just off shore on observation shack side of inlet. PCT notified immediately and kept abreast during sighting. 0730 FIX 435 More animals sighted in group. Now 6 white, 3 gray. Moving toward South/West direction. Still within the inbound line. 0736 lost behind trees, continuing to monitor. 0738 FIX 436 Appear to be milling. 0743 FIX 437 Confirmed milling. More animals sighted in group, now 8 white, five gray. All together. Many flukes seen. Seen surfacing 0750. Animals remain close together. 0755 FIX 439 , 0759 FIX 441, 0805 FIX 442 Animals moving closer to far shore, still milling. 0812 FIX 443 Continuing to dive and mill in a similar area. 0524 FIX 445 and 0829 FIX 446 Animals seem to be moving toward in-bound line. Last seen 0830. PCT notified.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
101	432	5/24/2020 7:26:06 AM	61.200832	-149.995021	6540.61498
101	435	5/24/2020 7:30:56 AM	61.206425	-150.000838	6477.22683
101	436	5/24/2020 7:38:01 AM	61.212771	-150.006476	6447.3653
101	437	5/24/2020 7:43:27 AM	61.214293	-150.007826	6453.62161
101	439	5/24/2020 7:55:26 AM	61.216031	-150.006753	6334.64314
101	441	5/24/2020 7:59:49 AM	61.218031	-150.007301	6294.20985
101	442	5/24/2020 8:05:22 AM	61.220501	-150.00831	6272.22136
101	443	5/24/2020 8:12:29 AM	61.220817	-150.014592	6590.11686
101	444	5/24/2020 8:15:08 AM	61.218156	-150.013097	6587.67462
101	445	5/24/2020 8:24:09 AM	61.214953	-150.008449	6459.85259
101	446	5/24/2020 8:29:44 AM	61.209168	-150.011543	6854.04862

Group ID	Created Date	Last Update	Species Common Name						
102	5/24/2020 8:30:13 AM	5/24/2020 5:11:40 PM	Gray Whale						
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
	0	0	0	0	0		1	0	

Comments

NEX: 0831 FIX 447 saw dissipation of bushy blow; gray mottled back. Very distinctive "knuckles" were noted; NEX: 0846 FIX 449 another blow. NEX: 0856 FIX 450 surface, heading north past outbound line. NEX: 0857 FIX 451 Surfaced, traveling south inside the outbound line. NEX: 0900 FIX 452 surfaced right in front of observation Nex station; continuing south. Last seen 0900 by Nex station. SC station: 0926 Fix 454 gray whale surfaced in front of SC station traveling south 50 meters off shore. White to light gray spots on back. SC: 0930 Fix 455 and 0932 Fix 456 gray whale traveling toward PW station. Whale blow approx. 15 feet high for fix 455. SC: 0941 Fix 457 gray whale spotted traveling south. PW: 1002 FIX 458. Animal briefly and partially surfaced, sticking only the tip of rostrum out of water. Rostrum was mottled. No body surfaced. No blow. Traveling out of the arm. Last seen 1003. PCT notified.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
102	447	5/24/2020 8:31:31 AM	61.263047	-149.907811	3253.656
102	449	5/24/2020 8:46:19 AM	61.264162	-149.911078	3415.3263
102	450	5/24/2020 8:56:04 AM	61.263262	-149.882167	3270.09955
102	451	5/24/2020 8:57:49 AM	61.254923	-149.88407	2344.00175
102	452	5/24/2020 9:00:47 AM	61.253169	-149.883083	2169.89376
102	454	5/24/2020 9:26:27 AM	61.225783	-149.907977	1193.14683
102	455	5/24/2020 9:30:02 AM	61.222088	-149.915205	1756.3451
102	456	5/24/2020 9:32:15 AM	61.222045	-149.91533	1764.33226
102	457	5/24/2020 9:41:29 AM	61.21952	-149.917625	2058.86563
102	458	5/24/2020 10:02:38 AM	61.203644	-149.989998	6159.10736

Group ID 103	Created Date 5/24/2020 8:32:24 AM	Last Update 5/24/2020 5:09:34 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Sedate	Primary Behavior Looking	Secondary Behavior Sink
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

PW: 0832 FIX 448 HS in front of station. First and last seen 0832. PCT notified immediately of sighting and after last seen.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
103	448	5/24/2020 8:32:46 AM	61.205015	-149.999865	6509.06637

Group ID	Created Date	Last Update	Species Common Name
104	5/24/2020 9:08:46 AM	5/24/2020 5:10:36 PM	Harbor Porpoise

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
0	0	0	0	0	0	1	0		

Comments

PW: 0912 FIX 453. Travelling out of the arm. Seen just once. Last seen 0912. 1041 FIX 459. Bad Fix. PCT notified at time of sightings and then again after last seen.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
104	453	5/24/2020 9:12:09 AM	61.2035	-149.98949	6128.64516

Group ID	Created Date	Last Update	Species Common Name						
105	5/24/2020 3:08:26 PM	5/24/2020 5:03:22 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	No Formation	False	Vigorous	Travelling	None				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
	5	3	0	0	0		0	0	

Comments

NEX: 1508 Fix ID 464. 5 white and 3 gray belugas travelling south along shore immediately north of station. NEX: 1513 Fix ID 465. 5 white and 3 gray belugas directly in front of NEX station and continuing to travel south of station. NEX: 1515 Fix ID 466. 5 white and 3 gray belugas south of NEX approaching Wet Barge Birth heading south of station. NEX: 1520 Fix ID 468 group turned around and travelling north along shore. NEX: 1523 Fix ID 469 group directly north of NEX along shore, headed north. NEX: 1527 Fix ID 470 group continues to travel north along shore. Last seen at 1531 travelling in a North East direction. The group travelled at a moderate pace for most of the sighting until they passed the outbound line and then their pace increased to vigorous. No secondary behavior, only identified travelling.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
105	464	5/24/2020 3:08:45 PM	61.256116	-149.881915	2531.94323
105	465	5/24/2020 3:13:14 PM	61.252929	-149.882382	2183.75107
105	466	5/24/2020 3:15:32 PM	61.251371	-149.882893	2009.98525
105	468	5/24/2020 3:20:42 PM	61.252964	-149.882473	2186.14069
105	469	5/24/2020 3:23:53 PM	61.258247	-149.882906	2750.21301
105	470	5/24/2020 3:27:03 PM	61.260945	-149.88188	3054.84918

**2020 POA PCT
Marine Mammal Sightings
5/18/20 - 5/24/20**

Marine Mammal Sightings

 PSO Station

Marine Mammal Groups

-  Group 75 Harbor Seal
-  Group 80 Harbor Seal
-  Group 81 Harbor Seal
-  Group 82 Harbor Seal
-  Group 83 Harbor Seal
-  Group 85 Harbor Seal
-  Group 86 Harbor Porpoise
-  Group 87 Harbor Seal
-  Group 89 Harbor Seal
-  Group 90 Beluga
-  Group 91 Harbor Seal
-  Group 92 Beluga
-  Group 95 Harbor Seal
-  Group 96 Harbor Seal
-  Group 97 Harbor Seal
-  Group 98 Harbor Seal
-  Group 99 Harbor Seal
-  Group 101 Beluga
-  Group 102 Gray Whale
-  Group 103 Harbor Seal
-  Group 104 Harbor Porpoise
-  Group 105 Beluga

0 1 2 km



61 | N

61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
05/18/20 - 05/24/20
Figure 1**

Marine Mammal Tracks

 Point Woronzof PSO Station

Marine Mammal Groups

-  Group 80 Harbor Seal
-  Group 81 Harbor Seal
-  Group 82 Harbor Seal
-  Group 83 Harbor Seal
-  Group 85 Harbor Seal
-  Group 90 Beluga
-  Group 91 Harbor Seal
-  Group 95 Harbor Seal
-  Group 99 Harbor Seal
-  Group 101 Beluga
-  Group 103 Harbor Seal
-  Group 104 Harbor Porpoise

0 0.5 1 km

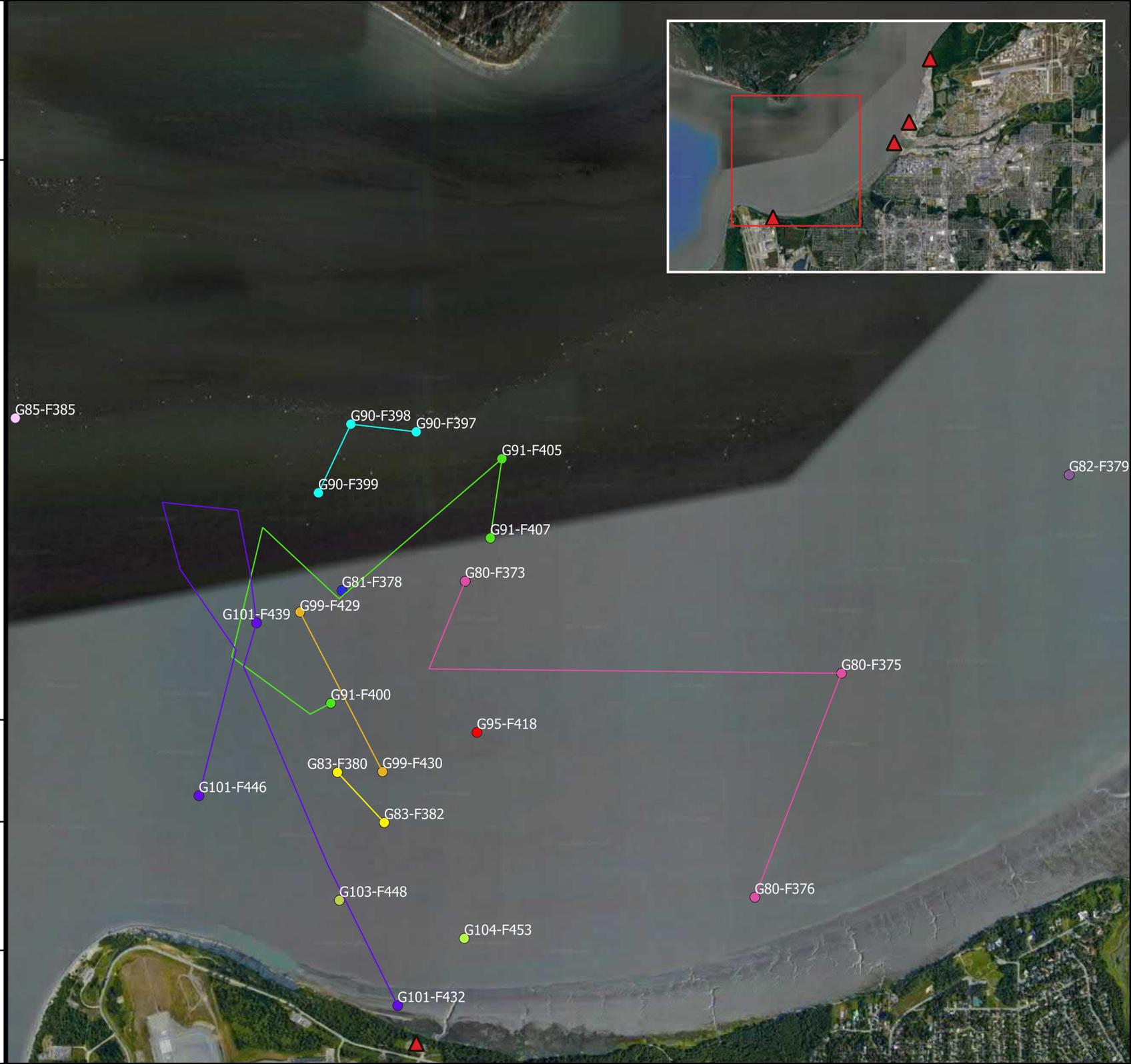


61 | N

61 North Environmental



*Map Imagery Source:
Google Earth, 2020*



**2020 POA PCT
Marine Mammal Tracks
05/18/20 - 05/24/20
Figure 2**

Marine Mammal Tracks

 PSO Station

Marine Mammal Groups

 Group 75 Harbor Seal

 Group 92 Beluga

 Group 102 Gray Whale

0 1 2 km



61 | N

61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
05/18/20 - 05/24/20
Figure 3**



Marine Mammal Tracks

▲ North Expansion PSO Station

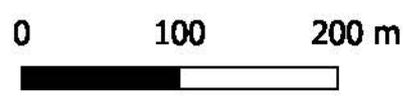
Marine Mammal Groups

- Group 86 Harbor Porpoise
- Group 87 Harbor Seal
- Group 97 Harbor Seal
- Group 105 Beluga



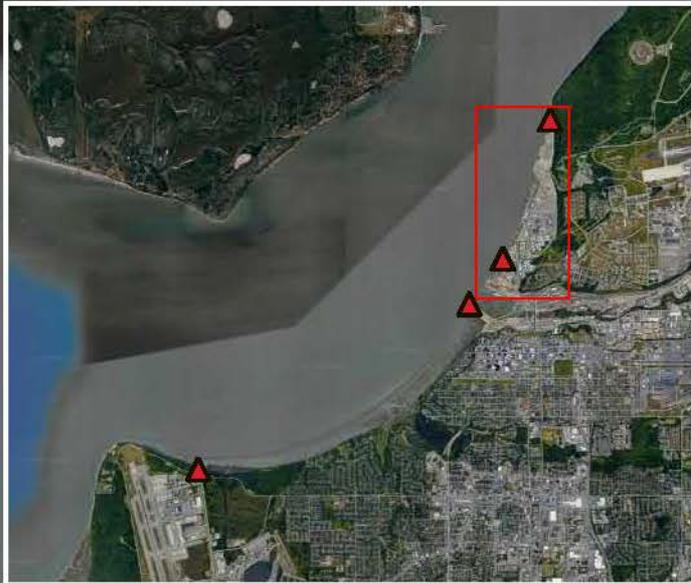
61 | N

61 North Environmental



Map Imagery Source:
Google Earth, 2020

**2020 POA PCT
Marine Mammal Tracks
05/18/20 - 05/24/20
Figure 4**

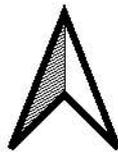


Marine Mammal Tracks

PSO Station

Marine Mammal Groups

- Group 89 Harbor Seal
- Group 96 Harbor Seal
- Group 98 Harbor Seal



61 | N

61 North Environmental

Map Imagery Source:
Google Earth, 2020

Appendix F – Week of 5/25 – 5/31 Sighting Forms and Maps

MM Group Report

Group ID 107	Created Date 5/26/2020 7:12:57 AM	Last Update 5/26/2020 10:15:15 AM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Sedate	Primary Behavior Looking	Secondary Behavior Sink
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Beluga Counts 0	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts 1	Other Adult 0	Other Calf 0	Total Other
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Comments

Group 107 was accidently created this morning. PW took over Group 107 for their harbor seal sighting. PW: 0725 FIX 474, 1 adult harbor seal popping up to look at beach on Pt. Mac and then sinking down again. 0730 FIX 476. 0808 FIX 477. 0858 FIX 479. 0938 FIX 480. Last seen 0941.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
107	474	5/26/2020 7:31:36 AM	61.231143	-149.999051	5640.60098
107	476	5/26/2020 7:35:11 AM	61.22871	-149.988201	5086.06463
107	477	5/26/2020 8:15:45 AM	61.231847	-150.004812	5944.39633
107	479	5/26/2020 8:58:39 AM	61.234484	-150.01017	6225.79119
107	480	5/26/2020 9:38:15 AM	61.22114	-149.987507	5216.02386

Group ID	Created Date	Last Update	Species Common Name						
109	5/27/2020 8:39:12 AM	5/27/2020 4:24:46 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Milling	Diving				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PW: 0843 FIX 487 HS seen in arm in front of station, radioed PCT. 0900 FIX 488 Seal still in area, swimming around 0908 FIX 489 Same area and surfacing still. 0926 FIX 490 HS surfaced further west of last fix. 1010 FIX 493 HS surfaced and milling. 1216 FIX 494 Seal spotted again, this time traveling towards the inbound line quickly. Believe it to be same seal from earlier fixes based on location. 1219 FIX 497 Seal out of inbound line. 1222 FIX 498 Seal moving more out of arm, farther from station. Last time seen 1224.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
109	487	5/27/2020 8:43:01 AM	61.218755	-149.98594	5215.93251
109	488	5/27/2020 9:00:24 AM	61.215948	-149.992469	5650.8622
109	489	5/27/2020 9:08:11 AM	61.216817	-149.992971	5642.39033
109	490	5/27/2020 9:26:23 AM	61.217401	-149.998492	5900.29894
109	493	5/27/2020 10:10:26 AM	61.220459	-149.991193	5426.46787
109	494	5/27/2020 12:16:15 PM	61.231768	-150.020595	6788.11755
109	497	5/27/2020 12:19:25 PM	61.234045	-150.058401	8804.78181
109	498	5/27/2020 12:22:46 PM	61.234139	-150.063016	9051.55836

Group ID	Created Date	Last Update	Species Common Name						
110	5/27/2020 12:18:32 PM	5/27/2020 4:52:51 PM	Beluga						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Vigorous	Travelling	Milling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
1	0	0	0	0	0	0	0		

Comments

NEX: 1218 Fix 496. 1 White traveling rapidly S towards PCT. 1222 Fix 499. Took fix to show direction S and that pace slowed. 1235 Fix 500. Took fix to show further S movement. 1238 Communication with PCT. They have seen beluga and are taking a fix. Fix 495 is a bad fix, disregard. ***PCT: 1239 Fix 501 Saw one white beluga surface. 1249 Fix 503 Brief resight of same beluga, milling, last time seen. (ATL post-processed: deleted fix 495 on 6/2)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
110	496	5/27/2020 12:18:40 PM	61.254369	-149.881448	2351.33607
110	499	5/27/2020 12:22:53 PM	61.252502	-149.882094	2142.64395
110	500	5/27/2020 12:35:31 PM	61.251585	-149.882892	2032.7787
110	501	5/27/2020 12:38:57 PM	61.243661	-149.888171	1108.5149
110	503	5/27/2020 12:49:53 PM	61.244151	-149.888684	1154.31016

Group ID 111	Created Date 5/27/2020 1:29:12 PM	Last Update 5/27/2020 4:47:54 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Looking	Secondary Behavior Sink
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

SC:1329 Fix 504 One harbor seal spotted at the mouth of Ship Creek, popped its head up and sank back into the water
Last Seen at 1329

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
111	504	5/27/2020 1:29:26 PM	61.227249	-149.903752	926.21108

Group ID	Created Date	Last Update	Species Common Name						
113	5/28/2020 8:02:44 AM	6/2/2020 9:28:02 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
6	0	0	0	0	0	0	0	0	

Comments

PW: 0800 FIX 511 NEX radioed PW that there might be some belugas around point mac. PW sighted this group in between point mac and lil village and took a fix. 0808 FIX 512. 6 white belugas were travelling quickly along the shoreline up the inlet. ***PCT: 0809 Fix 513 all beluga traveling NE along the shore. 0814 beluga seen at bluff dip. 0816 Fix 515 traveling slowly further up the shore. 0825 All beluga past the bluffs, some falling behind, starting to string out formation wise. ****NEX: 0800 No fix. Observed 5 blows near point Mac. They moved closer to the point and started to spread out. Appear to be traveling rapidly. Radioed PW and PCT to confirm blows were beluga. PCT confirmed and advised us to hold off on fixes so PW can start with them and then as the whales move up the inlet they will get passed from station to station. 0825 Taking over from PCT. 0832 Fix 514. Took fix on lead beluga. Whales are 5-7 body lengths apart traveling in a linear fashion rapidly N. 0841 Fix 518. Took fix on trailing whale indicating all have crossed the Out-Bound line. Lead whale appears to be significantly larger than the trailing whales. All whales observed are white totalling 6 whales. Still traveling in a linear fashion but have bunched up to 2-3 body lengths apart. 0850 Fix 519. Continued to travel North vigorously and are approx 2000m beyond Out-Bound line. comments continued below...

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
113	511	5/28/2020 8:05:59 AM	61.236562	-149.974048	4302.9131
113	512	5/28/2020 8:07:41 AM	61.238687	-149.969071	4060.38813
113	513	5/28/2020 8:09:27 AM	61.240898	-149.951827	3197.24279
113	515	5/28/2020 8:16:39 AM	61.248358	-149.943999	3121.6165
113	517	5/28/2020 8:34:52 AM	61.26175	-149.912522	3237.18905
113	518	5/28/2020 8:41:34 AM	61.271025	-149.915628	4215
113	519	5/28/2020 8:50:54 AM	61.281619	-149.913488	5389.78552

comments continued.... They continue to linearly follow the larger white in front and hug the shoreline. 0856 still observing them and they have spread out to 5-7 body lengths again. 2 remain close together in the middle of the pod. Last seen 0930. (ATL post-processed: Fix ID 518 Calc'd distance to port on 6/2)

Group ID	Created Date	Last Update	Species Common Name						
114	5/28/2020 10:24:48 AM	5/28/2020 2:30:10 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Milling	Looking				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PW: 1024 FIX 520 HS seen looking around and sinking. Radioed PCT. 1030 FIX 521 Animal surfaces briefly before going underwater. 1034 FIX 522. Animal in same general location. Behavior determined to be milling. Will continue to monitor. 1123 FIX 524. Last seen 1413

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
114	520	5/28/2020 10:24:56 AM	61.217555	-149.987387	5333.60367
114	521	5/28/2020 10:30:26 AM	61.215096	-149.988247	5476.19759
114	522	5/28/2020 10:34:26 AM	61.218358	-149.988102	5339.66775
114	524	5/28/2020 11:22:55 AM	61.215732	-149.984967	5287.0177
114	527	5/28/2020 1:18:16 PM	61.214632	-149.988573	5512.31284

Group ID	Created Date	Last Update	Species Common Name						
115	5/28/2020 11:07:51 AM	5/28/2020 11:56:45 AM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Looking	Sink				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

NEX: 1107 Fix 523; HS popped up, Looked and sank. Last seen 1107. Saw again at 1147. Fix 525; Popped up and traveled on the surface vigorously before diving. 1150 Fix 526; Took fix indicating vigorous speed and direction of travel to the N towards Out-bound line. 1154 Observed by Cairn Point. Last seen 1156 as it disappeared around the corner.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
115	523	5/28/2020 11:08:12 AM	61.251431	-149.882462	2023.1205
115	525	5/28/2020 11:48:46 AM	61.25297	-149.88218	2191.15037
115	526	5/28/2020 11:50:27 AM	61.254552	-149.882134	2360.95925

Group ID 116	Created Date 5/28/2020 3:05:36 PM	Last Update 5/28/2020 3:23:52 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Diving	Secondary Behavior Travelling
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

NEX: 1503 FIX ID 530 Seal body surfaced and dove; heading N. 1503 Last sighted

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
116	530	5/28/2020 3:05:55 PM	61.255145	-149.882002	2426.41127

Group ID	Created Date	Last Update	Species Common Name						
117	5/28/2020 4:32:01 PM	5/28/2020 7:58:54 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
	7	2	0	0	0		0	0	

Comments

NEX: 1632 FIX 532- 2 white, 1 gray initially surfaced at Cairn point travelling around the point and heading south towards NEX. 1635 FIX 533- 6 white, 1 gray now seen. Still travelling south towards NEX. 1637 FIX 534- 6 white, 1 gray travelling south across outbound line. 1642 FIX 535-7 white, 2 gray now counted, travelling quickly approaching NEX station. 1645 FIX 536-7 white, 2 gray, group is no longer linear and have spread out. 1645 FIX 537 Bad Fix. 1652 FIX 539-7 white, 2 gray, travelling past "the corner" towards PCT. Passed off to PCT at 1646.***PCT: 1640 seeing same beluga in the distance. 1645 appear to be spreading out and slowing down. 1647 appear to be milling at the corner. 1654 Fix 540 closest beluga to PCT, all headed south along the shore, taking over from NEX. 1657 Fix 541 have advanced further south. 1606 Fix 542 moving around PPM barge, heading for SC station. 1710 fix 543 pod is collapsing to a linear formation, whales are actively traveling towards ship creek at a moderate pace. No in-water activity currently occurring.***SC: 1714 Fix 544 Picked up the group from PCT, the lead beluga is now approaching the mouth of Ship Creek. 1718 Fix 545 Group still seen moving in a linear formation, moving at a moderate pace. 1721 Fix 546 Belugas now in front of the mouth of SC and the station. 1723 Fix 547 Belugas now in front of the station and passing the tug boat dock, still moving south. ... continued next page...

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
117	532	5/28/2020 4:32:15 PM	61.263426	-149.881568	3328.23852
117	533	5/28/2020 4:35:10 PM	61.260775	-149.883371	3020.72943
117	534	5/28/2020 4:37:01 PM	61.257007	-149.881806	2629.33473
117	535	5/28/2020 4:41:41 PM	61.253902	-149.882453	2286.79202
117	536	5/28/2020 4:46:10 PM	61.24697	-149.88665	1484.67169
117	539	5/28/2020 4:52:44 PM	61.243943	-149.888552	1133.5638
117	540	5/28/2020 4:54:30 PM	61.24291	-149.888026	1030.65934
117	541	5/28/2020 4:57:00 PM	61.238938	-149.891041	561.80447
117	542	5/28/2020 5:06:30 PM	61.234302	-149.898984	281.39005
117	543	5/28/2020 5:10:18 PM	61.233538	-149.901576	422.52441
117	544	5/28/2020 5:14:19 PM	61.230261	-149.904927	731.41358
117	545	5/28/2020 5:18:30 PM	61.227432	-149.910307	1151.33016
117	546	5/28/2020 5:21:03 PM	61.225507	-149.911847	1356.0146
117	547	5/28/2020 5:23:14 PM	61.223676	-149.914071	1584.63817

Group ID	Created Date	Last Update	Species Common Name
117	5/28/2020 4:32:01 PM	5/28/2020 7:58:54 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
7	2	0	0	0		0	0		

Comments

comments continued... Passed off to PW at 1725, 1749 Fix 551 in front of SC, 1800 Fix 552 traveling in front of PCT, 1806 Fix 553 moving north toward NEX and passed off to NEX. ***PW: 1728 FIX 548 Sighting taken from SC. Initial fix for us. 1740 FIX 549 Animals in a group formation off of SC. 1748 FIX 550 Animals traveling toward PCT. Passed back to SC after discussing with PCT. Continue to monitor. ***NEX: 1809 took over from SC. 1813 Fix 554 Belugas travelling north approaching NEX. 1821 Fix 555 Belugas passed NEX and crossed the outbound line. Last seen 1823

117	548	5/28/2020 5:28:36 PM	61.223561	-149.910716	1477.4386
117	549	5/28/2020 5:40:15 PM	61.227285	-149.909015	1110.06985
117	550	5/28/2020 5:48:08 PM	61.231363	-149.899765	439.19287
117	551	5/28/2020 5:49:19 PM	61.224528	-149.916381	1607.95471
117	552	5/28/2020 6:00:51 PM	61.235401	-149.898091	276.39227
117	553	5/28/2020 6:06:59 PM	61.241435	-149.893547	820.38337
117	554	5/28/2020 6:13:09 PM	61.250422	-149.885997	1865.54383
117	555	5/28/2020 6:21:26 PM	61.260615	-149.891384	2954.29719

Group ID	Created Date	Last Update	Species Common Name						
119	5/29/2020 7:24:02 AM	5/29/2020 10:50:54 AM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Milling	Sink				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PW: 0722 FIX 557 Harbor seal sighted middle inlet, to the west of Power Station. PCT notified. Needed to trouble shoot with theodolite and connectivity before we were able to get a good fix. Seen again 0737 and 0747 in same location. Will continue to monitor. 0755 FIX 558 Animal spotted again in same location. It looked around and sank. Last seen 0755. NEX: Fix 566 bad fix. (ATL post-processed: deleted fix 566 6/2)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
119	557	5/29/2020 7:47:45 AM	61.213255	-150.004451	6356.76665
119	558	5/29/2020 7:55:17 AM	61.210769	-150.002462	6365.17891

Group ID	Created Date	Last Update	Species Common Name						
120	5/29/2020 9:59:12 AM	6/2/2020 9:37:22 PM	Steller Sea Lion						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Milling	Travelling				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

NEX: 0959 Fix 560; Saw whole body come out then it dove. 1001 popped up and the went under. 1002 saw with big eyes and confirmed Steller Sea Lion. SSL is moving S towards Out-Bound line. 1013 fix 561; Took fix to indicate closeness to Out-Bound line. Have observed numerous times in this same area appears to be milling now. 1027 Fix 562 to show movement to OB line. 1036 Fix 563; Thought SSL might have crossed OB line so took fix to corroborate. 1051 Fix 568; Took fix to indicate SSL has crossed over the OB line. SSL has stayed in this spot and is milling. 1105 Fix 570; took fix to indicate futher movement S. 1143 Fix ID 572 SSL headed south midway across arm headed towards Western shore. Last seen at 1143. (ATL Post-processed: Added calculated distance to PCT for Fix ID 562)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
120	560	5/29/2020 10:00:55 AM	61.264011	-149.888742	3339.6915
120	561	5/29/2020 10:13:26 AM	61.26277	-149.893256	3191.16669
120	562	5/29/2020 10:40:55 AM	61.263223	-149.89841	3203
120	563	5/29/2020 10:36:33 AM	61.261495	-149.897148	3054.79312
120	568	5/29/2020 10:51:47 AM	61.260823	-149.896654	2978.76234
120	570	5/29/2020 11:05:04 AM	61.258635	-149.89432	2731.74887
120	572	5/29/2020 11:43:44 AM	61.254713	-149.900942	2327.75738

Group ID	Created Date	Last Update	Species Common Name						
121	5/29/2020 10:42:43 AM	5/29/2020 7:35:58 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Milling	Looking				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PW: 1043 FIX 564 Harbor seal looked and sunk. Possibly same seal as GI 119. 1045 FIX 565 Fix accidentally added by NEX when they were trying to get a fix for GI 120. Not related to GI121. 1048 FIX 567 HS looked and sank. 1054 FIX 569 Looked and sank. Milling confirmed. Will continue to monitor. Sighted again at 1244 FIX 578. Since it was the same location, same behavior, we are pretty certain it is the same seal. 1417 FIX 588 harbor seal seen travelling out of inlet passing White Dingy. Last seen 1416.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
121	564	5/29/2020 10:43:12 AM	61.214585	-149.98779	5475.86157
121	567	5/29/2020 10:48:48 AM	61.214336	-149.987884	5491.47968
121	569	5/29/2020 10:54:19 AM	61.214848	-149.98725	5437.78337
121	578	5/29/2020 12:44:27 PM	61.213188	-149.989663	5630.27336
121	588	5/29/2020 2:16:26 PM	61.216095	-150.014474	6758.92655

Group ID	Created Date	Last Update	Species Common Name						
122	5/29/2020 12:11:06 PM	5/29/2020 5:25:57 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Sedate	Travelling	Looking				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

PCT: 1210 FIX 573 1 harbor seal (HS) traveling at surface southwest along the nearshore, looking around , and then dove; 1220 FIX 574 HS surfaced southwest of PCT station, traveled SW at surface before sinking; 1226 PCT hands over to SC; last seen 1227; SC: 1226 fix 575 surfaced west of SC station travelling towards shoreline; update 1233 2 harbor seals spotted handing back off to PCT at 1235.
PCT:1234 PCT takes over fixes from SC; 1234 FIX 576 1 HS sighted traveling Northeast along nearshore; 1240 FIX 577 HS has past PCT heading Northeast up the arm along nearshore. Radioed NEX a heads up; 1249 SC radios the second seal is still at SC; PCT updates G122 to 1 adult HS and asks SC to start a new group (G123) for seal at SC; 1252 HS still milling in same general area as FIX 577; last seen 1253; (ATL post-processed: Fix 577 added distance to PCT 6/2)

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
122	573	5/29/2020 12:11:18 PM	61.232381	-149.898466	313.33813
122	574	5/29/2020 12:20:54 PM	61.228708	-149.901728	731.35798
122	575	5/29/2020 12:26:17 PM	61.229098	-149.902471	721.65075
122	576	5/29/2020 12:34:57 PM	61.231936	-149.899	366.36804
122	577	5/29/2020 12:44:30 PM	61.235458	-149.893946	118

Group ID	Created Date	Last Update	Species Common Name						
123	5/29/2020 12:50:52 PM	5/29/2020 2:14:57 PM	Harbor Seal						
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
0	0	0	0	0	0	1	0		

Comments

SC; 1247 second seal from group 122 split off into ship creek, 1252 fix 579 seal was seen milling in the mouth of ship creek. 1305 Fix 580 resighted same seal, headed out of the mouth of Ship creek. Last seen 1307
 PW: 1413 FIX 587 is a bad fix. We accidentally added this ghost fix to the wrong parent group

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
123	579	5/29/2020 12:51:17 PM	61.226885	-149.90245	922.49726
123	580	5/29/2020 1:05:40 PM	61.227586	-149.903021	873.11925

Group ID	Created Date	Last Update	Species Common Name						
124	5/29/2020 1:11:40 PM	5/29/2020 6:50:39 PM	Steller Sea Lion						
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
	0	0	0	0	0		1	0	

Comments

NEX: 1312 Fix 581 Saw head and body inside the boundary line. Saw interaction with small vessel, Bell Boy I - AK 8939, seemed to be feeding SSL- clearly throwing items towards it and sea lion was bellowing. SSL followed the vessel for 3-5 minutes. NEX: 1328 Fix 582 Travelling south quickly. NEX: 1340 F583, Travelling south rapidly to the little dock. Surfacing, bellowing and repeating.

PCT: takes over for NEX; 1349 FIX 584 SL sighted traveling south west along near shore at surface at a moderate pace, sinking and then surfacing; 1352 FIX 585 SL continues traveling southwest along nearshore towards SC; 1355 PCT hands over fixes to SC;

SC: 1355 fix 586 stellar sea lion traveling toward mouth of ship creek. 1410 still seen milling at the mouth of ship creek. 1427 Fix 589 based on size and distance from the last time seen believed to be same SSL. 1451 Fix 590 Spotted close to shore, traveling NE along the shore. 1456 just off the beach 50m out from our station.

...Comments continued next page....

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
124	581	5/29/2020 1:12:47 PM	61.259071	-149.895009	2780.84352
124	582	5/29/2020 1:44:15 PM	61.251596	-149.886951	1949
124	583	5/29/2020 1:40:59 PM	61.237769	-149.897304	454.63469
124	584	5/29/2020 1:49:37 PM	61.23354	-149.897725	220.20182
124	585	5/29/2020 1:52:47 PM	61.230934	-149.898953	444.52029
124	586	5/29/2020 1:55:11 PM	61.229297	-149.902359	700.9744
124	589	5/29/2020 2:29:26 PM	61.221802	-149.92925	2336.40935
124	590	5/29/2020 2:53:47 PM	61.222181	-149.91248	1656.52733
124	591	5/29/2020 3:16:37 PM	61.235082	-149.894674	124.63998
124	592	5/29/2020 3:18:48 PM	61.234588	-149.894854	17
124	593	5/29/2020 3:25:09 PM	61.237077	-149.893948	336.22358

Group ID

124

Created Date

5/29/2020 1:11:40 PM

Last Update

5/29/2020 6:50:39 PM

Species Common Name

Steller Sea Lion

Spread

1

Formation

Linear

Combined Group

False

Pace

Moderate

Primary Behavior

Travelling

Secondary Behavior

Milling

**Beluga
Counts**

0

0

0

0

0

0

**Other MM
Counts**

1

0

0

0

0

0

0

**Other MM
Counts**

1

0

Comments

comments continued... PCT: PCT takes over fixes from SC; 1515 FIX 591 SL surfaces North of the barge during "pile dipping" over 30 m from pile; 1518 FIX 592 SL approaches within ~15m of PPM work boat before turning and continueing travel northwest; 1518 Chris calls to report SL, reports SL "growling" and approaching boats at the little dock; 1525 FIX 593 SL continues sedately traveling Northeast along nearshore, surfacing and sinking, and looking around; PCT radios NEX that SL is headed their way; last seen 1527 (ATL post-processed: calculated distances to PCT for fix IDs 582 and 592 on 6/2)

Group ID	Created Date	Last Update	Species Common Name						
126	5/30/2020 10:45:56 AM	5/30/2020 4:17:36 PM	Harbor Seal						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Diving				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

***PW: 1052 FIX 598 Single adult HS drifting NE with with the incoming tide.; 1056 FIX 599 Diving and resurfacing, but moving at a sustained moderate pace to the NE.; Last seen 1056.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
126	598	5/30/2020 10:52:24 AM	61.247284	-149.963584	4012.74776
126	599	5/30/2020 10:56:23 AM	61.247814	-149.959331	3825.22568

Group ID	Created Date	Last Update	Species Common Name						
127	5/30/2020 1:21:43 PM	5/30/2020 2:14:42 PM	Steller Sea Lion						
Spread	Formation	Combined Group	Pace	Primary Behavior	Secondary Behavior				
1	Linear	False	Moderate	Travelling	Unknown				
Beluga Counts	White	Gray	Calf	Neonate	Unknown	Other MM Counts	Other Adult	Other Calf	Total Other
0	0	0	0	0	0	1	0		

Comments

NEX: 1322 Fix ID 601 single SSL spotted coming around Cairn Point, traveling south; NEX: 1333 Fix ID 602 single SSL crossed inbound line but farther off shore, still traveling south; NEX: 1336 Fix ID 603 single SSL in front of NEX, traveling south at a decent pace; SSL last seen at 1334

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
127	601	5/30/2020 1:22:02 PM	61.258339	-149.88014	2794.99038
127	602	5/30/2020 1:33:09 PM	61.259915	-149.89584	2875.98699
127	603	5/30/2020 1:36:46 PM	61.254325	-149.887499	2277.28

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="1"/>	<input type="text" value="0"/>	<input type="text" value=""/>	<input type="text" value=""/>					

Comments

***SC: 1446 Fix 604 SSL was looking, and dove in a northern direction, radioed into PCT.; 1456 Fix 605 surfaced twice then went down.; Last Seen 1456.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
128	604	5/30/2020 2:47:06 PM	61.226048	-149.936814	2469.04968
128	605	5/30/2020 2:56:17 PM	61.235796	-149.974091	4300.5861

Group ID	Created Date	Last Update	Species Common Name						
130	5/31/2020 11:43:36 AM	5/31/2020 2:12:51 PM	Harbor Seal						
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
0	0	0	0	0	0	1	0		

Comments

PW: 1145 Fix 611 Harbor seal spotted traveling toward PW station. PW: 1222 Fix ID 612 Harbor seal milling between Point Mack and PW; PW: 1255 Fix ID 613 HS seen milling between Point Mack and PW ; Last seen 1337

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
130	611	5/31/2020 11:45:22 AM	61.220875	-149.995563	5639.124
130	612	5/31/2020 12:24:29 PM	61.216044	-149.992775	5662.37435
130	613	5/31/2020 12:55:06 PM	61.214097	-149.989237	5568.45916

Group ID 131	Created Date 5/31/2020 3:31:40 PM	Last Update 5/31/2020 4:30:19 PM	Species Common Name Harbor Seal
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Spread 1	Formation Linear	Combined Group False	Pace Moderate	Primary Behavior Travelling	Secondary Behavior Milling
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Beluga Counts	White 0	Gray 0	Calf 0	Neonate 0	Unknown 0	Other MM Counts	Other Adult 1	Other Calf 0	Total Other
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Comments

PW: 1532 Fix 615 Harbor seal spotted swimming to the west of PW. Last seen 1549.

Group ID	Fix ID	Fix Time	MM Latitude	MM Longitude	Distance To PCT
131	615	5/31/2020 3:32:15 PM	61.214992	-149.99464	5797.56584

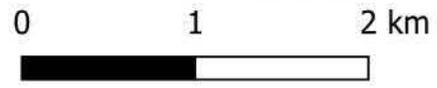
**2020 POA PCT
Marine Mammal Sightings
Overview
5/25/20 - 5/31/20**

Marine Mammal Sightings

▲ PSO Station

Marine Mammal Groups

- Group 107 Harbor Seal
- Group 109 Harbor Seal
- Group 110 Beluga
- Group 111 Harbor Seal
- Group 113 Beluga
- Group 114 Harbor Seal
- Group 115 Harbor Seal
- Group 116 Harbor Seal
- Group 117 Beluga
- Group 119 Harbor Seal
- Group 120 Steller Sea Lion
- Group 121 Harbor Seal
- Group 122 Harbor Seal
- Group 123 Harbor Seal
- Group 124 Steller Sea Lion
- Group 126 Harbor Seal
- Group 127 Steller Sea Lion
- Group 128 Steller Sea Lion
- Group 130 Harbor Seal
- Group 131 Harbor Seal



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



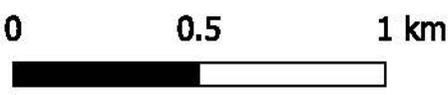
**2020 POA PCT
Marine Mammal Tracks
05/25/20 - 05/31/20
Figure 1**

Marine Mammal Tracks

▲ Point Woronzof PSO Station

Marine Mammal Groups

- Group 107 Harbor Seal
- Group 109 Harbor Seal
- Group 114 Harbor Seal
- Group 119 Harbor Seal
- Group 121 Harbor Seal
- Group 130 Harbor Seal
- Group 131 Harbor Seal



61 | N
61 North Environmental



Map Imagery Source:
Google Earth, 2020



**2020 POA PCT
Marine Mammal Tracks
05/25/20 - 05/31/20
Figure 2**

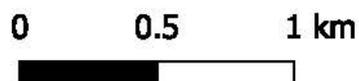
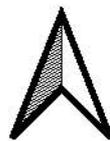


Marine Mammal Tracks

 North Expansion PSO Station

Marine Mammal Groups

-  Group 113 Beluga
-  Group 126 Harbor Seal
-  Group 128 Steller Sea Lion

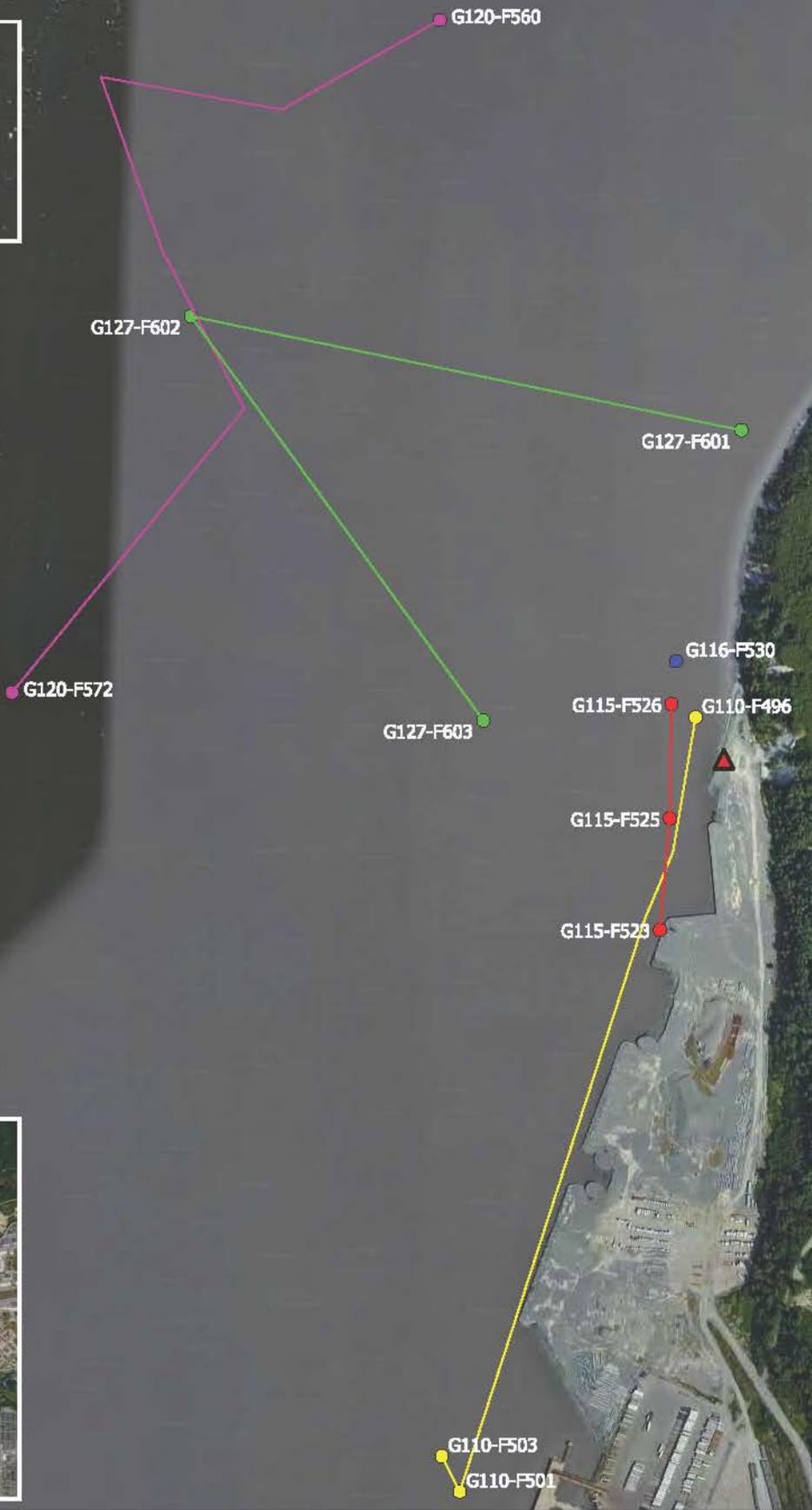


61 | N

61 North Environmental

Map Imagery Source:
Google Earth, 2020

**2020 POA PCT
Marine Mammal Tracks
05/25/20 - 05/31/20
Figure 3**



Marine Mammal Tracks

North Expansion PSO Station

Marine Mammal Groups

- Group 110 Beluga
- Group 115 Harbor Seal
- Group 116 Harbor Seal
- Group 120 Steller Sea Lion
- Group 127 Steller Sea Lion



0 100 200 300 m

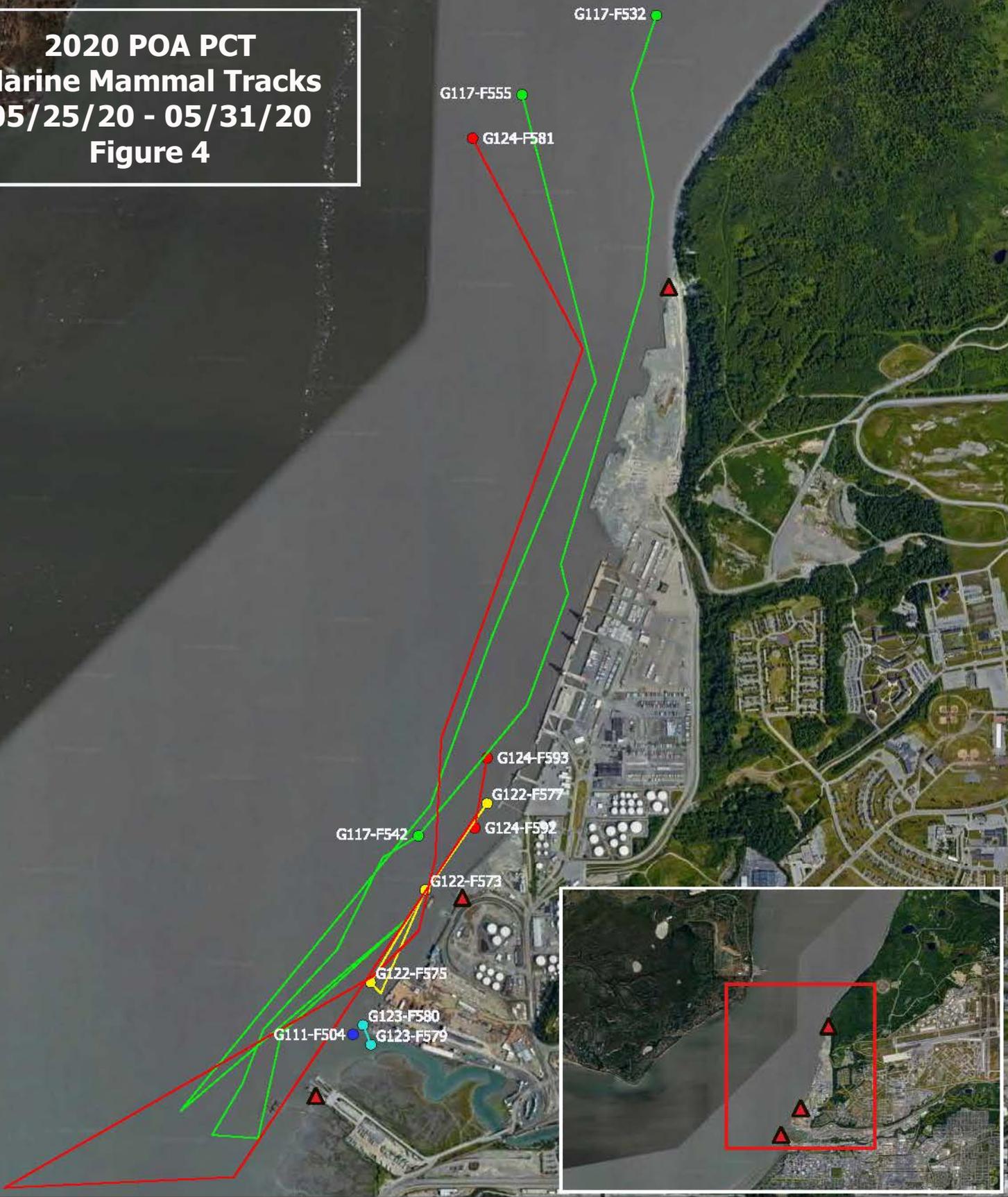


61 | N

61 North Environmental

Map Imagery Source:
Google Earth, 2020

**2020 POA PCT
Marine Mammal Tracks
05/25/20 - 05/31/20
Figure 4**

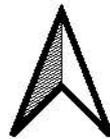


Marine Mammal Tracks

▲ PSO Station

Marine Mammal Groups

- Group 111 Harbor Seal
- Group 117 Beluga
- Group 122 Harbor Seal
- Group 123 Harbor Seal
- Group 124 Steller Sea Lion



61 | N

61 North Environmental

Map Imagery Source:
Google Earth, 2020

Pile Driving Activity

Drive Date	Pile Type	Pile Location Name	Pile Diameter (inches)	Hammer Type	Total time (minutes)
27-Apr	Temporary Trestle	10 S-1	24	Vibratory	23
27-Apr	Temporary Trestle	10 S-2	36	Vibratory	70
28-Apr	Temporary Trestle	9 S-3	36	Vibratory	37
28-Apr	Temporary Trestle	10 S-3	36	Vibratory	26
28-Apr	Temporary Trestle	10 S-4	36	Vibratory	26
29-Apr	Temporary Trestle	9 S-1	24	Vibratory	21
29-Apr	Temporary Trestle	9 S-2	36	Vibratory	49
29-Apr	Temporary Trestle	9 S-5	36	Vibratory	43
30-Apr	Temporary Trestle	9 S-1	24	Vibratory	26
30-Apr	Temporary Trestle	10 S-1	24	Vibratory	30
30-Apr	Template	T-1	24	Vibratory	15
30-Apr	Template	T-2	24	Vibratory	16
1-May	Temporary Trestle	10 S-3	36	Vibratory	10
1-May	Temporary Trestle	10 S-4	36	Vibratory	13
2-May	No Pile Driving				
3-May	No Pile Driving				
4-May	Temporary Trestle	8 S-1	24	Vibratory	14
4-May	Temporary Trestle	8 S-4	24	Vibratory	15
4-May	Temporary Trestle	8 S-5	36	Vibratory	27
4-May	Template	T-3	24	Vibratory	5
5-May	Temporary Trestle	8 S-1	24	Vibratory	7
5-May	Temporary Trestle	8 S-3	24	Vibratory	8
5-May	Temporary Trestle	8 S-4	24	Vibratory	3
5-May	Template	T-3	24	Vibratory	8
5-May	Template	T-4	24	Vibratory	7
5-May	Template	T-6	24	Vibratory	20
6-May	Temporary Trestle	7 S-4	24	Vibratory	17
6-May	Temporary Trestle	8 S-2	36	Vibratory	36
6-May	Temporary Trestle	8 S-3	24	Vibratory	10
6-May	Temporary Trestle	8 S-5	36	Vibratory	20
6-May	Template	T-5	24	Vibratory	19
7-May	Temporary Trestle	7 S-5	36	Vibratory	60
7-May	Template	T-8	24	Vibratory	10

8-May	No Pile Driving				
9-May	No Pile Driving				
10-May	Template	T-7	24	Vibratory	25
11-May	Permanent	M T-3	48	Vibratory	89
12-May	Permanent	M T-1	48	Vibratory	92
12-May	Permanent	M T-2	48	Vibratory	77
13-May	Temporary Trestle	7 S-5	36	Impact	3
14-May	Permanent	M T-1	48	Impact	31
14-May	Permanent	MT-2	48	Impact	30
14-May	Permanent	M T-3	48	Impact	30
15-May	Permanent	N T-1	48	Vibratory	66
15-May	Permanent	N T-1	48	Impact	5
15-May	Permanent	N T-3	48	Vibratory	55
15-May	Permanent	N T-3	48	Impact	9
16-May	Permanent	N T-1	48	Impact	7
16-May	Permanent	N T-3	48	Impact	7
17-May	Temporary Trestle	6 S-2	36	Vibratory	13
17-May	Temporary Trestle	6 S-5	36	Vibratory	25
17-May	Temporary Trestle	7 S-1	24	Vibratory	20
17-May	Temporary Trestle	7 S-2	36	Vibratory	40
17-May	Temporary Trestle	7 S-3	24	Vibratory	22
17-May	Temporary Trestle	7 S-4	24	Vibratory	18
18-May	Temporary Trestle	6 S-1	24	Vibratory	29
18-May	Temporary Trestle	6 S-3	24	Vibratory	15
18-May	Temporary Trestle	6 S-4	24	Vibratory	14
19-May	No Pile Driving				
20-May	Permanent	K T-1	48	Vibratory	32
20-May	Permanent	K T-2	48	Vibratory	79
20-May	Permanent	K T-3	48	Vibratory	48
21-May	Temporary Trestle	6 S-2	36	Vibratory	40
21-May	Temporary Trestle	6 S-2	36	Impact	19
21-May	Temporary Trestle	6 S-5	36	Impact	41
21-May	Permanent	K T-1	48	Impact	31
21-May	Permanent	K T-2	48	Impact	33

21-May	Permanent	K T-3	48	Impact	24
22-May	Temporary Trestle	5 S-5	36	Vibratory	30
22-May	Template	T-9	24	Vibratory	12
23-May	Permanent	L T-3	48	Vibratory	47
24-May	Permanent	L T-1	48	Vibratory	60
24-May	Permanent	L T-2	48	Vibratory	84
25-May	No Pile Driving				
26-May	Permanent	L T-1	48	Impact	26
26-May	Permanent	L T-2	48	Impact	29
26-May	Permanent	L T-3	48	Impact	2
27-May	No Pile Driving				
28-May	Temporary Trestle	5 S-1	24	Vibratory	5
28-May	Temporary Trestle	5 S-3	24	Vibratory	4
28-May	Temporary Trestle	5 S-4	24	Vibratory	6
28-May	Temporary Trestle	5 S-5	36	Vibratory	8
28-May	Template	T-10	24	Vibratory	11
28-May	Permanent	L T-3	48	Impact	26
29-May	Temporary Trestle	5 S-1	24	Vibratory	16
29-May	Temporary Trestle	5 S-2	36	Vibratory	48
29-May	Temporary Trestle	5 S-3	24	Vibratory	8
29-May	Temporary Trestle	5 S-4	24	Vibratory	9
30-May	No Pile Driving				
31-May	Permanent	J T-1	48	Vibratory	35
31-May	Permanent	J T-1	48	Impact	34
31-May	Permanent	J T-2	48	Vibratory	36
31-May	Permanent	J T-2	48	Impact	27
31-May	Permanent	J T-3	48	Vibratory	38
31-May	Permanent	J T-3	48	Impact	33

NO.	DATE	BY	ISSUE / DESCRIPTION

DESIGNED BY: SWS	DRAWN BY: TJM
APPROVED BY: KHC	REVISION NO.: 0
DATE: 11/26/19	



PORT OF ALASKA - ANCHORAGE MODERNIZATION PROGRAM -
TEMPORARY WORK TRESTLE DESIGN
ANCHORAGE, ALASKA

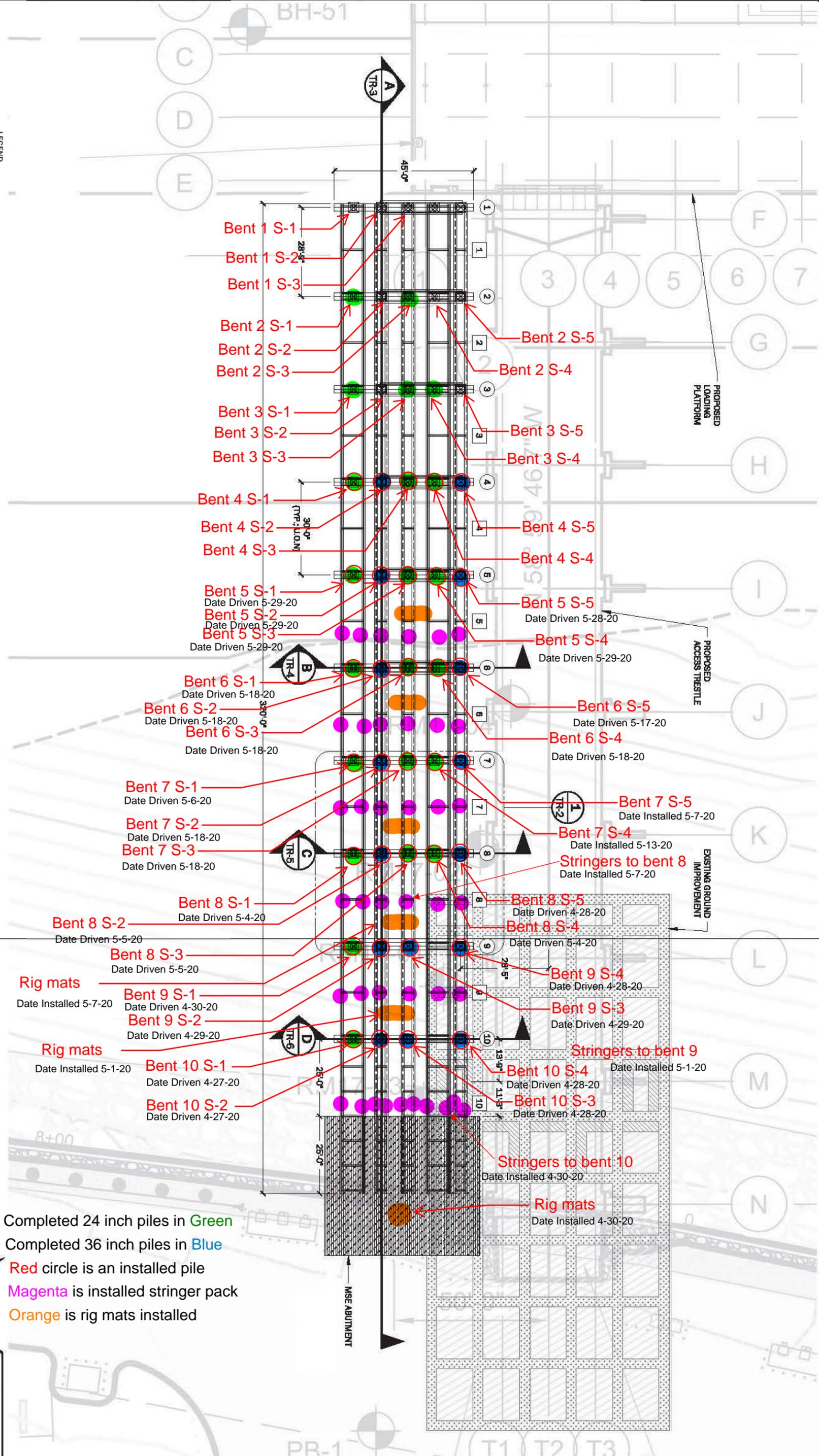
OVERALL PLAN VIEW

DRAWING NUMBER:
TR-1
SHEET: 2 OF 11

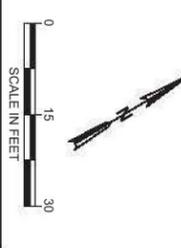
LEGEND

1	TEMPORARY SPAN NUMBER
1	TEMPORARY BENT NUMBER

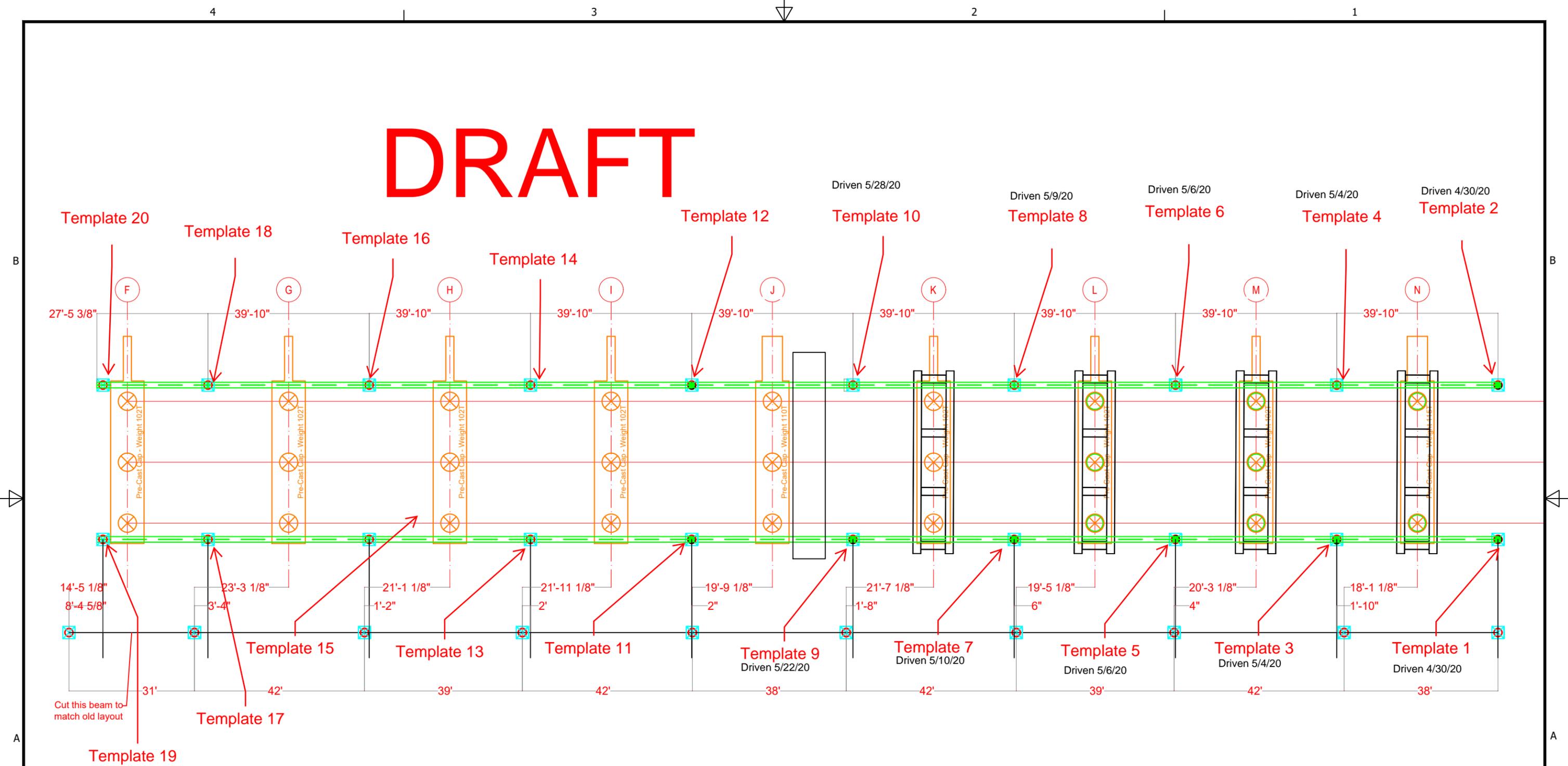
OVERALL PLAN VIEW
SCALE: 1" = 15'-0"



Completed 24 inch piles in Green
Completed 36 inch piles in Blue
Red circle is an installed pile
Magenta is installed stringer pack
Orange is rig mats installed



DRAFT





**Pacific
Pile & Marine**
700 S Riverside Drive, Seattle, WA 98108
PH: 206.331.3873 FAX: 206.774.5958

DRAWN	DATE	Port of Alaska - PCT Pile Layout with Beam Lengths				
JTW	9/18/19					
CHECKED	DATE					
-	-					
CHECKED	DATE					
-	-					
APPROVED	DATE	DWG NO.	SHEET	SIZE	SCALE:	REV
-	-	-	-OF-	11x17	AS NOTED	-

