Final Report

VMT Admin Sump Spill: Final Report on Sea Otter Response Prepared by Drs. Randall Davis, Pamela Tuomi and Georgina Davis International Wildlife Research (IWR) June 2020

1. Summary

Alyeska Pipeline Service Company personnel discovered a small oil spill around 19:55 on April 12, 2020 when they observed sheen near the Valdez Marine Terminal (VMT) small boat harbor. Within 20 min, they had reported the spill to Alaska Department of Environmental Conservation (ADEC). The source of the spill was identified as the Admin Sump located uphill from the VMT small boat harbor and west of the Emergency Response Building (ERB). The sump was isolated and secured on April 13. Alyeska responders surrounded the sheen with oil spill containment and absorbent boom to prevent further spreading. Sea otter and sea bird stabilization modules with two fiberglass pool-pens and one large pool were positioned near the small boat harbor. At least two IWR trained veterinary technicians were on-site from April 17 to May 9 to care for any oiled sea otters and assist with initial care of any oiled birds. Trained observers on two vessels were positioned near the spill to monitor for oiled sea otters and seabirds. Although wildlife observers reported sea otters swimming in the impact area, they only observed one in or near the sheen. They observed no distressed sea otters through May 6 when IWR responders ceased operations. The stabilization modules remained on-site and in readiness mode.

2. Background

Sea otters are the smallest marine mammal and rely entirely on their fur for thermal insulation in the marine environment. Fur acts as a thermal insulator because it traps air next to the skin. If the fur becomes contaminated with oil, this air layer is eliminated, which reduces the otter's thermal insulation by 70%. This increases heat loss and can result in lethal hypothermia (decrease in core body temperature). Depending on the composition and age of crude oil, the toxics effects can debilitate or kill sea otters. As a result, Alyeska has contingency plans for capturing, cleaning and rehabilitating up to 200 oiled sea otters. IWR is the guaranteed contractor for operating Alyeska's Oiled Sea Otter Rehabilitation facility with a roster of HAZWOPER-

trained scientific experts, Veterinarians, Veterinarian Technicians and wildlife responders. IWR also trains capture vessel crews and advises on contingency planning.

Alyeska Pipeline Service Company (hereafter referred to as Alyeska) personnel discovered a small oil spill around 19:55 on April 12 when they observed sheen near the Valdez Marine Terminal (VMT) small boat harbor (Fig. 1). Within 20 min, they had reported the spill to Alaska Department of Environmental Conservation (ADEC). The source of the spill was identified as the Admin Sump (58-SU-3) located uphill from the VMT small boat harbor and west of the Emergency Response Building (ERB). The oil traveled beneath the snow covered ground, emerged near the VMT small boat harbor east of Berth 4, and flowed into the waters of Port Valdez. The sump was isolated and secured on April 13. Alyeska employees surrounded the sheen with oil spill containment and absorbent boom to prevent further spreading (Fig. 2). Other initial response actions included deployment of sensitive area protection boom around the Solomon Gulch Fish Hatchery and the Valdez Duck Flats, followed by exclusion and deflection boom placement around seal haulout areas on Saw and Seal Islands. In addition to oil skimming operations, other cleanup and containment tactics included cold-water deluge of the shoreline that was coated with oil and capture of oily water runoff via a culvert with underflow dams and piping.

As a result of the release of an estimated 1,421 gallons of crude oil (data provided by Alyeska as of 19 June 2020), the U.S. Fish and Wildlife Service (USFWS) requested that Alyeska prepare to capture, stabilize, and rehabilitate any otters that became oiled and debilitated. Alyeska then asked IWR to initiate a response, which included trained responders. Because of State of Alaska and Valdez Municipality COVID-19 travel restrictions adhered to by the Incident Command, IWR recruited resident trained responders in Anchorage and Seward, who traveled to Valdez and initiated a rescue and rehabilitation response. This report focuses on the observations of sea otters in the area affected by the spill.

3. Response Participants

1. Alyeska/SERVS

Stacia Miller, Environmental Branch Director, Operations Section Ken Wilson, Wildlife Coordinator, Environment Unit/Planning Section

2. IWR

Dr. Randall Davis, President

Dr. Terrie Williams, Regional Director Dr. Pamela Tuomi, Veterinarian Dr. Georgina Davis, Personnel and Training Director Lauren Altieri, Veterinary Technician Andrea Michl, Veterinary Technician Lindsay Vanhouton, Veterinary Technician Mark Kansteiner, Wildlife Technician

4. Response

Stacia Miller from Alyeska contacted Dr. Randall Davis (IWR) on April 12 to initiate a sea otter response for a small oil spill near the oil terminal in Port Valdez. Dr. Davis alerted IWR veterinarian Dr. Pamela Tuomi who was residing in Anchorage. Dr. Tuomi, assisted by Dr. Georgina Davis (IWR Training Coordinator), began contacting IWR trained Veterinary Technicians for immediate deployment to Valdez. With the rapid assistance of Dawn McQuay (Alyeska Contracting, Logistics Section) and Ryan Kegley (Chugach Alaska Services), Veterinarian Technicians Lauren Altieri and Andrea Michl were hired and sent to Valdez on April 17. Dr. Tuomi shipped veterinary medical supplies from Anchorage to Valdez, and preexisting sea otter and bird stabilization supplies were inventoried and placed in the sea otter and bird stabilization modules.

Alyeska deployed two vessels with IWR trained crews to monitor, capture and transport oiled sea otters from April 14 to May 6. These vessels, the *Cape Trinity* and the *Enterprise*, also were used for sea otter and bird observations. Observers on these vessels monitored the spill area during daylight hours. When they observed sea otters, they recorded the time, location, and general behavior using standard Wildlife Observation Forms (see Appendix 1). In addition, they recorded the presence of other marine mammals and birds.

Another Wildlife Task Force operated the sea otter and bird stabilization modules positioned near the small boat harbor, which included areas for stabilization, cleaning, recovery, and monitoring (Figs. 4-6). The sea otter module included two sea otter pool-pens and one 12-ft diameter pool with running seawater (Figs. 7 and 8). This facility was designed for stabilizing oiled sea otters in the event of a large oil spill, However, in this case, it was adequate for cleaning and rehabilitating up to four oil sea otters without opening the large rehabilitation facility on the Terminal Property. At least two IWR trained responders were on-site from April

17 to May 9 to care for any oiled sea otters and to assist with seabirds. These IWR trained responders included Veterinary Technicians Lauren Altieri, Andrea Michl, and Lindsay Vanhouton. They were assisted by Wildlife Technician Mark Kansteiner. Dr. Davis and Dr. Tuomi communicated daily with these staff via cell phone calls, emails and Zoom meetings, provided and reviewed medical and otter care protocols, and gave direction on details for set up of the module facilities. In addition, local Valdez veterinarian Dr. Kate Van Duine was on call if needed. A supply of frozen seafood for captive sea otters was stored at a local supermarket if needed. While wildlife observers on the vessels reported sea otters swimming near the sheen in the impact area, no distressed or oiled sea otters were observed and none were captured.

5. Lessons

A. Overview: IWR has been Alyeska's guaranteed contractor for oiled sea otter contingency planning and response since 1994 in the aftermath of the 1989 Exxon Valdez spill. IWR conducts a yearly training course for responders that provides them with an OSHA HAZWOPER 8-hour First Responder Certificate, which allows them to work with oiled wildlife in Alyeska's Oiled Sea Otter Rehabilitation Facility in Port Valdez. The trained responders are then placed on a roster for call-up in the event of an oil spill involving sea otters. This advanced training enabled IWR to mobilize two Veterinarian Technicians within 48 hours and have them on-site in Port Valdez within 96 hours after the spill was declared. This was possible despite restrictions on the movement of people within the state (especially to the town of Valdez) because of COVID-19. IWR also trains Task Force vessel crews for the capture, handling, and transport of oiled sea otters. Hence, these crews were able to be on-site near the spill and monitor oiled sea otters within two days after the spill was declared. Finally, preexisting oiled sea otter and bird stabilization modules and veterinary medical supplies were positioned near the spill within 72 hours and two sea otter pool-pens and one large pool with running seawater were added not long after. Because out-of-state IBR (Alyeska's bird response contractor) staff were prohibited by COVID-19 restrictions from traveling to Valdez, the seabird response facility in Anchorage was mobilized and IWR staff were trained and assigned to perform initial assessment and stabilization of any oiled seabirds.

The rapid response to Admin Sump Spill is a testament to years of contingency planning, training, stockpiling supplies, and the construction of stabilization modules. IWR's preparations

and the leadership of Stacia Miller and Ken Wilson produced a professional and measured response that has received praise from the USFWS and other federal and state agencies.

B. Assessment: The response was executed on time and as planned

- 1. IWR trained responders were hired and sent to Valdez within 96 hours, in spite of COVID-19 travel prohibitions and restrictions.
- 2. IWR responders followed Alyeska safety and COVID-19 quarantine rules. There were no injuries or illness.
- 3. Task Force vessels with IWR-trained capture crews were on-site within 24 hours
- 4. Stabilization modules were on-site within 36 hours.
- 5. Sea otter pen-pools and one large pool with running seawater were operational within five days. This was the first time the pen-pools and large pool have been tested.
- 6. IWR trained responders were rotated as needed while maintaining minimum (2) staffing.

C. Future Improvements:

- 1. Currently, Alyeska has two fiberglass sea otter pen-pools that can hold four sea otters. The rehabilitation facility is designed for up to 200 oiled sea otters. Additional fiberglass pen-pools should be built in preparation for larger spills.
- 2. Periodic inspection of sea otter stabilization kits by qualified personnel is needed to ensure that all appropriate inventory items are in place and up to date.



Fig. 1. Spill area sheen near the Valdez Marine Terminal (VMT) small boat harbor. The area was surrounded with oil containment and absorbent boom to prevent further spreading.



Fig. 2. Spill area sheen near the Valdez Marine Terminal (VMT) small boat harbor. The area was surrounded with oil containment and absorbent boom to prevent further spreading.



Fig. 3. (a) Terminal property at Port Valdez showing the cumulative locations of sea otters near the spill area adjacent to the Valdez Marine Terminal (VMT) small boat harbor. (b) Close-up of spill area (blue polygon) with sea otter sightings. Only one sea otter was observed in or near sheen, and it did not appear to be distressed. Many of the sightings (Appendix 1) were repeats of the same animals between April 14 and May 6. Color-coding for sea otter sightings: Red: April 12-18; Orange: April 19-25; Yellow: April 26 to May 2; Green: May 3-4; Blue: May 5-6 (land observations). 8



Fig. 4. Oiled sea otter and seabird stabilization modules. Modules had electricity, hot and cold water, and wastewater removal.



Fig. 5. Oiled sea otter and seabird stabilization modules showing (a) recovery area, (b) laboratory, (c) recovery cages with simulated sea otters, and (d) stabilization supplies.



Fig. 6. Oiled sea otter cleaning area with stainless steel table, temperature controlled water supply and simulated sea otter.



Fig. 7. Fiberglass two otter pen-pools with simulated sea otters.



Fig. 8. Fiberglass pool (12 ft diameter) with seawater supply (42 gal min⁻¹) for holding sea otters.

Appendix 1. Sea otter sightings from vessels positioned near the spill area used in Fig. 3. Sightings are color coded by date in Fig. 3.

Date	Time	Lat (dd)	Long (dd)	# otter	s Notes
4/14	16:07	61.0883	-146.3383	na	Allison Point
4/14	16:15	61.0883	-146.3583	na	East metering
4/14	16:23	61.0917	-146.3783	na	Berth 3
4/14	16:31	61.0933	-146.3833	na	near sheen, animal clean
4/14	16:56	61.0917	-146.4100	na	west of berth 5
4/14	13:19	61.0917	-146.3383	na	3-4, berth 3
4/14	14:36	61.0883	-146.4083	na	No Oil
4/15	11:18	61.0902	-146.3844	2	11:18 2 otters of berth 3
4/15	10:15	61.0850	-146.4533	2	Sawmill spit N.O.
4/15	11:38	61.0900	-146.3683	1	berth 1 N.O.
4/15	12:05	61.0883	-146.3200	1	Hatcher N.O.
4/15	15:15	61.0956	-146.3368	na	frolicking/diving
4/15	15:24	61.0989	-146.3626	na	swimming far away
4/15	na	61.0942	-146.3738	na	one otter had a pup / looked healthy
4/16	19:02	61.0900	-146.3717	1	N.O.
4/16	19:03	61.0900	-146.3733	1	N.O.
4/16	19:14	61.0900	-146.3967	2	N.O.
4/16	18:40	61.0850	-146.3283	1	N.O.
4/16	18:47	61.0900	-146.3450	na	N.O.
4/16	na	61.0883	-146.3533	1	na
4/16	16:30	61.0900	-146.3850	na	N.O.
4/16	16:45	61.0900	-146.4133	na	N.O.
4/16	17:30	61.0917	-146.3733	2	N.O.
4/16	na	61.0883	-146.3300	1	N.O.
4/16	8:00	61.0913	-146.4000	2	Happy, healthy, baby is actve; alert
4/16	8:10	61.0910	-146.3890	1	Happy, healthy, active
4/16	9:10	61.0910	-146.3890	3	7 Mile beach. Mother/baby juvenile otters
4/16	9:15	61.0910	-146.3890	7	Happy, healthy, active
4/16	11:45	61.1140	-146.4175	1	Happy, healthy, active
4/16	17:50	61.0897	-146.4241	1	1 single adult, swimming
4/16	18:05	61.0924	-146.3932	2	2 adults, energetic
4/16	18:42	61.0888	-146.4070	2	possible recounting of mom/pup pair
4/16	20:12	61.0876	-146.4210	1	[illegible]
4/16	20:40	61.1046	-146.3716	1	swimming by [illegible] island catwalk
4/15	20:15	61.0884	-146.4070	na	na
na	18:17	61.0883	-146.3133	na	N.O.
na	18:24	61.0900	-146.3017	1	N.O.
na	18:28	61.0883	-146.3100	na	N.O.

na	18:30	61.0950	-146.3100	20	N.O. large float
Date	Time	Lat (dd)	Long (dd)	# otters	s Notes
4/17	9:10	61.0903	-146.4287	1	adult health N.O.
4/17	9:16	61.0890	-146.4234	1	Swimming, surfaced, diving N.O.
4/17	9:45	61.0893	-146.4022	2	mother/pup floating, healthy, normal behavior N.O.
4/17	7:46	61.0856	-146.4372	1	Frolicking near Sawmill Spit - N.O.
4/17	7:50	61.0843	-146.4450	1	[illegible] floating no oiling
4/17	8:39	61.0933	-146.4523	2	floating on back - no oiling
4/17	9:59	61.0913	-146.3843	2	floating, healthy, N.O.
4/17	9:59	61.1046	-146.3758	1	resting, health, N.O.
4/17	9:59	61.1129	-146.3511	2	mom/pup floating, healthy, N.O.
4/17	10:06	61.0983	-146.4064	2	mom/pup floating, cleaning, N.O.
4/17	11:10	61.0883	-146.3992	1	preening, swimming, N.O.
4/21	7:33	61.0870	-146.4083	2	N.O. mom and pup
4/21	7:36	61.0883	-146.4083	1	N.O. Seal Island
4/21	7:38	61.0900	-146.4117	1	N.O. west of Seal Island
4/21	7:44	61.0917	-146.4033	2	N.O. berth 5
4/21	8:01	61.0900	-146.3817	1	N.O. berth 3
4/21	8:06	61.0900	-146.3716	2	N.O.
4/21	8:10	61.0900	-146.3626	1	N.O.
4/21	8:31	61.0900	-146.3050	1	N.O.
4/21	8:41	61.0900	-146.3083	1	N.O.
4/21	9:06	61.0933	-146.3667	2	N.O.
4/21	15:45	61.0917	-146.4067	2	N.O.
4/21	15:47	61.0917	-146.4017	3	N.O.
4/21	15:50	61.0883	-146.3933	1	N.O.
4/21	16:00	61.0900	-146.3817	1	N.O.
4/21	16:13	61.0867	-146.3450	1	N.O.
4/21	16:22	61.0867	-146.3217	2	
4/21	16:25	61.0883	-146.3133	1	N.O.
4/21	16:54	61.0900	-146.3650	2	N.O.
4/21	17:06	61.0917	-146.3817	2	N.O.
4/21	17:!2	61.0917	-146.3983	2	N.O. Berth 5
4/21	17:27	61.0850	-146.4400	2	N.O.
4/21	6:50	61.0853	-146.4266	1	1 adult swimming, healthy N.O.
4/21	7:02	61.0895	-146.4329	1	1 adult swimming, healthy N.O.
4/21	7:04	61.0883	-146.4099	2	adult with pup, swimming, healthy N.O.
4/21	8:03	61.0899	-146.4046	1	1 adult swimming, alert N.O.
4/21	8:06	61.0897	-146.3995	2	1 adult swimming, alert N.O.
4/21	8:20	61.0955	-146.3830	3	1 adult swimming, alert N.O.
4/21	8:32	61.0934	-146.3683	1	1 adult swimming, alert N.O.
4/21	16:15	61.0900	-146.3834	2	adult with pup, swimming, healthy N.O.
4/21	16:21	61.0902	-146.3737	1	1 adult swimming, alert N.O.

4/21	17:00	61.0927	-146.3646	1	1 adult swimming, alert N.O.
Date	Time	Lat (dd)	Long (dd)	# otter	s Notes
4/24	15:08	61.0833	-146.4500	2	N.O.
4/24	15:12	61.0833	-146.4333	1	N.O.
4/24	16:55	61.0938	-146.3275	1	N.V.O.
4/24	17:07	61.0937	-146.3562	2	N.V.O.
4/24	13:10	61.0965	-146.3835	4	Swimming Diving
4/24	15:15	61.0932	-146.3817	2	Swimming Healthy
4/24	16:22	61.0882	-146.3086	1	floating on back, healthy
4/24	16:50	61.0965	-146.3359	2	1 adult, swimming, with healthy pup
4/24	16:55	61.0997	-146.3382	1	Swimming Healthy non oiled
4/25	14:33	61.0900	-146.3183	1	N.O.
4/25	14:38	61.0900	-146.3067	1	N.O.
4/25	14:52	61.0883	-146.3267	1	N.O.
4/25	14:56	61.0867	-146.3433	1	N.O.
4/25	15:00	61.0883	-146.3550	1	N.O.
4/25	15:14	61.0883	-146.3967	3	N.O.
4/25	15:24	61.0883	-146.4133	4	N.O.
4/25	15:15	61.0876	-146.3921	1	Swimming, diving, alert
4/25	16:32	61.0889	-146.4124	2	Sea Island, swimming
4/25	19:20	61.0879	-146.4109	3	Adults, 1 pup, healthy
4/25	19:45	61.0873	-146.4096	1	Adults, floating, healthy
4/26	6:40	61.0867	-146.4083	2	N.O.
4/26	6:46	61.0883	-146.4083	1	N.O.
4/26	6:46	61.0883	-146.4067	1	N.O.
4/26	7:10	61.0900	-146.3783	1	N.O.
4/26	7:22	61.0883	-146.3533	1	N.O.
4/26	7:22	61.0883	-146.3533	1	N.O.
4/25	8:48	61.0883	-146.4400	2	N.O.
4/26	6:00	61.0895	-146.4094	1	Swimming, diving, alert
4/26	6:40	61.0865	-146.4076	1	Swimming, alert
4/26	6:40	61.0863	-146.4049	1	Swimming, alert
4/26	6:40	61.0907	-146.4144	2	Floating with pup on chest; healthy
4/26	14:39	61.0867	-146.4400	1	na
4/26	15:06	61.0917	-146.4067	1	na
4/26	15:17	61.0900	-146.3967	1	na
4/26	15:28	61.0900	-146.3833	2	otter + pup
4/26	16:45	61.0950	-146.3817	2	na
4/26	12:30	61.0917	-146.3968	4	3 Adults, 1 pup; healthy
4/26	12:37	61.0918	-146.3867	2	1 Adult, 1 pup
4/26	13:00	61.0877	-146.3431	1	Swimming, diving, active
4/26	14:15	61.0967	-146.3416	1	Swimming, energetic, healthy
4/26	16:20	61.0959	-146.3728	1	Adult, juvenile, baby, healthy
4/26	16:25	61.0903	-146.3803	1	Swimming, rolling, healthy

4/26	16:27	61.0914	-146.3844	2	Swimming, alert, healthy
Date	Time	Lat (dd)	Long (dd)	# otter	s Notes
4/26	17:25	61.0898	-146.4281	2	Female w pup, swimming
4/26	17:56	61.0901	-146.4220	2	Swimming, rolling, alert
4/27	7:40	61.0886	-146.4120	1	Swimming, alert, non-oiled
4/27	7:55	61.0883	-146.4465	1	Swimming, alert, non-oiled
4/27	8:10	61.0776	-146.4675	1	Swimming, healthy
4/27	10:00	61.0924	-146.4101	2	Eating large Tanner crab - healthy, alert
4/27	10:07	61.0939	-146.3951	3	2 Adults, 1 pup - healthy, active
4/27	10:10	61.0914	-146.3946	2	Female w pup, healthy, active
4/27	14:35	61.0856	-146.4397	1	N.O.
4/27	14:58	61.0910	-146.4113	2	N.O.
4/27	15:01	61.0900	-146.4055	2	N.O.
4/27	15:12	61.0892	-146.3960	1	N.O.
4/27	15:27	61.0905	-146.3758	2	N.O.
4/27	15:28	61.0905	-146.3723	3	N.O.
4/27	15:54	61.0895	-146.3117	4	N.O.
4/27	16:08	61.0942	-146.2977	1	N.O.
4/27	12:55	61.0901	-146.3142	1	Swimming, alert, healthy
4/27	14:45	61.0972	-146.2819	1	Swimming, alert, healthy
4/27	15:32	61.0894	-146.3127	10	Adults, no pups visible; healthy
4/27	16:40	61.0862	-146.3243	1	Swimming, diving, alert
4/27	17:07	61.0881	-146.3541	1	Swimming, bobbing, healthy
4/28	8:25	61.0871	-146.3918	1	Floating, swimming
4/28		61.0877	-146.3320	2	N.O.
4/28		61.0880	-146.3283	3	N.O.
4/28		61.0893	-146.3110	1	N.O.
4/28	15:36	61.0967	-146.3512	5	N.O.
4/28	15:40	61.0968	-146.3603	3	N.O.
4/28	15:43	61.0962	-146.3708	2	N.O.
4/28	15:45	61.0958	-146.3777	2	N.O.
4/28	15:55	61.0938	-146.3888	4	N.O.
4/28	16:09	61.0888	-146.4018	1	N.O.
4/28	16:31	61.0867	-146.4335	2	N.O.
4/28	14:00	61.0878	146.3900	1	Swimming, alert, normal
4/28	14:11	61.0913	146.3713	2	Swimming adults, healthy
4/28	14:25	61.0890	146.3644	2	Swimming adults, healthy
4/28	14:45	61.0864	146.3946	1	In boom, swimming
4/29	6:48	61.0895	-146.4002	1	N.O.
4/29	6:58	61.0893	-146.3980	1	N.O.
4/29	7:02	61.0878	-146.3918	2	N.O.
4/29	7:10	61.0902	-146.3852	1	N.O.
4/29	7:16	61.0905	-146.3727	4	N.O.
4/29	7:28	61.0888	-146.3511	1	N.O.

4/29	7:39	61.0875	-146.3273	1	N.O.
Date	Time	Lat (dd)	Long (dd)	# otter	rs Notes
4/29	7:44	61.0887	-146.3142	2	N.O.
4/29	7:47	61.0895	-146.3088	2	N.O.
4/29	8:04	61.0960	-146.3170	7	N.O.
4/29	8:06	61.0955	-146.3235	6	N.O.
4/29	8:11	61.0965	-146.3388	1	N.O.
4/29	8:16	61.0967	-146.3540	2	N.O.
4/29	8:24	61.0978	-146.3812	8	N.O.
4/29	8:30	61.0982	-146.3950	2	N.O.
4/29	8:46	61.0912	-146.4342	5	N.O.
4/29	9:01	61.0858	-146.4263	1	N.O.
4/29	7:00	61.0880	-146.3953	2	Adult + pup, diving, alert
4/29	7:50	61.0890	-146.3916	2	Adult + pup, diving, alert
4/29	7:55	61.0864	-146.4363	1	Swimming
4/29	8:20	61.0855	-146.4343	1	Swimming
4/29	16:15	61.0886	-146.3936	1	Floating, only head visible
4/30	8:09	61.0873	-146.4338	2	Swimming, rolling
4/30	11:10	61.0875	-146.3882	1	Swimming on back, normal
4/30	11:15	61.0898	-146.3825	3	Swimming, diving, healthy
4/30	16:02	61.0867	-146.4095	1	Swimming, diving, healthy
4/30	16:30	61.0902	-146.3927	2	Female with pup, swimming, healthy
4/30	16:36	61.0881	-146.3658	1	Swimming, diving, healthy
4/30	16:40	61.0868	-146.3617	2	Swimming, diving, healthy
5/1	11:17	61.0901	-146.3840	2	Swimming on backs, normal
5/1	15:15	61.0864	146.4404	1	Swimming, alert, rolling
5/1	15:27	61.0903	146.4136	1	Swimming, diving
5/1	15:36	61.0896	146.3959	4	Swimming diving, 2 adults, 2 pups
5/1	15:50	61.0885	146.3644	2	Swimming, rolling, alert
5/2	9:02	61.0880	-146.3946	2	Female w pup swimming, healthy
5/2	9:15	61.0943	-146.3986	1	Swimming fast, on stomach
5/2	9:36	61.0913	-146.4097	2	Floating on backs, eating, healthy
5/2	9:42	61.0900	-146.4135	1	Swimming, healthy looking
5/2	11:36	61.0878	-146.4150	1	Near bank, swimming
5/2	13:22	61.0900	-146.3839	3	2 adults, 1 pup, swimming
5/2	13:24	61.0915	-146.3811	4	4 females/2 pups, healthy, alert
5/2	13:42	61.0884	-146.3441	3	Swimming on backs, 2 adults, 1 pup
5/2	15:40	61.0963	-146.3419	3	2 adults, 1 pup, swimming
5/2	16:40	61.0918	-146.3353	1	Swimming on back, alert
5/2	17:17	61.0935	-146.3472	1	Swimming on back, healthy
5/2	17:32	61.0906	-146.3646	2	1 Adult w pup, swimming
5/2	17:38	61.0933	-146.3736	2	1 Adults w pup, swimming on chest
5/2	18:05	61.0898	-146.3854	1	1 Adult w pup, swimming, alert
5/2	18:10	61.0901	-146.3889	4	2 Adults 2 pups, healthy

5/2	18:22	61.0896 -146.393	16 4	3 adults, 1 pup swimming
Date	Time	Lat (dd) Long (de	d) # ott	ters Notes
5/3	9:40	61.0830 -146.454	44 1	l Near beach, swimming
5/3	10:49	61.0868 -146.410	02 1	L Swimming, feeding
5/3	13:05	61.0909 -146.370	06 1	L Swimming on back, feeding
5/3	16:50	61.0872 -146.364	40 1	L Swimming, diving
5/3	17:28	61.0879 -146.393	38 1	L Swimming by Causeway
5/4	6:31	61.0915 -146.393	10 4	3 Adults, 1 pup, swimming
5/4	6:43	61.0910 -146.398	81 1	L Swimming w pup, healthy
5/4	6:52	61.0906 -146.370	03 5	5 In water, swimming
5/4	8:43	61.0969 -146.392	20 2	2 Swimming
5/4	8:50	61.0942 -146.403	34 8	5 Adults 3 pups, Swimming, all healthy
5/4	8:52	61.0946 -146.41	54 1	l Floating on back, alert
5/4	15:20	61.0889 -146.398	84 1	L Swimming, healthy
5/4	17:46	61.0877 -146.356	54 3	3 2Adults, 1 yearling, healthy
5/4	17:53	61.0901 -146.368	86 3	3 Swimming, relaxing, healthy
5/5	14:51	N of Big Boom Big Buoy	1	L Feeding, N.O.
5/5	18:40	inside of outer big boom	1	L Feeding, N.O.
5/5	20:00	NW of outer boom, moving	; 2	2 Swimming west to B-4, N.O
5/6	16:12	just past the end of B4	2	2 Floating swimming, N.O.
5/6	18:09	NW of spill outside outer boo	m 1	L Swimming, Feeding, N.O.
5/6	18:17	N of spill outside of outer boo	om 2	2 Feeding, N.O.
5/6	18:23	N of Spill outside of outer boo	om 2	2 Feeding, N.O.