

Tahltan Lake Smolt Enumeration and Sampling, 2015

(A study funded by the Northern Fund under the auspices of the Pacific Salmon Commission)

Final Report
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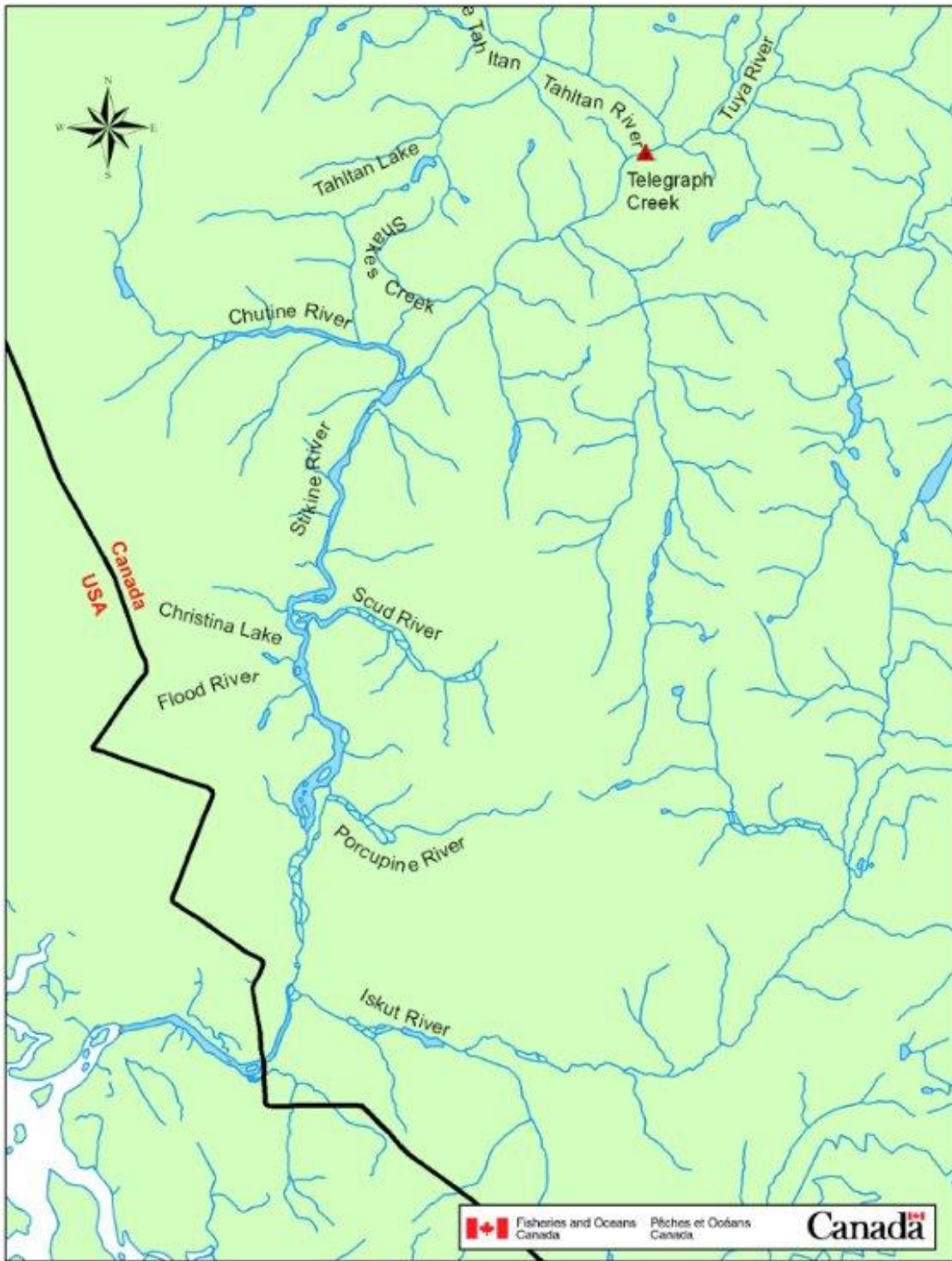
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Figure 1 Map - Stikine River drainage and major tributaries.



Executive Summary

In 2015 funding was received from the Northern Fund (N/F) under the umbrella of the Pacific Salmon Commission (PSC) to carry out the enumeration and sampling of sockeye smolt emigration from Tahltan Lake. An estimated total of 2,123,168 smolts were enumerated. A total of 556 representative daily samples were collected and used for recording length (mm), weight (grams), age (scale smears) and otolith analysis to generate wild/ enhanced survivorship ratios (2015) of: enhanced ~ 56.03%, wild ~ 43.97%. Daily readings were recorded for Tahltan Lake temperatures and staff gauge levels. Monthly lake samples were collected and recorded for temperature, chlorophyll, phosphorus, Secchi depth, and zooplankton.

1.0 Introduction

Tahltan Lake is located in the Stikine River drainage in northwestern British Columbia. It is the largest contributor of sockeye salmon to the Stikine drainage. It makes up the largest component of the Stikine commercial and First Nation food fisheries.

The sockeye smolt enumeration program has been conducted by Fisheries & Oceans Canada annually at Tahltan Lake since 1984. The program is typically in operation from the first week in May to mid-June. The crew is made up of two Tahltan Fisheries Technicians and one Department of Fisheries & Oceans Canada (DFO) Aquatic Science Technician. The weir is monitored by the crew twenty-four hours a day once the smolts start migrating.

2.0 Objectives

The objective of the project is to estimate the number of sockeye smolts emigrating from Tahltan Lake and also to gain a daily representative sample of smolts emigrating from the lake.

The count is used to estimate sockeye adult returns to the lake in future years which feeds into Transboundary management decisions.

The daily representative samples yield age, length, weight, and a wild/ enhanced contribution ratio.

3.0 Methods

The sockeye smolts that are emigrating out of the lake and into Johnny Tashoots creek will all be funnelled into two *wolf traps*. The traps are located approximately 75 feet downstream from the lake outlet. The smolts are funneled into the traps by means of wooden paneling that are affixed with small diameter vexar that the smolts cannot pass through. The panels are arranged in such a manner in the creek from left bank and right bank to form a v pattern downstream towards the traps.

The smolts are counted volumetrically when migrating in large numbers with a 25 litre round bucket which yields an estimated average count per one bucket via water displacement when smolts are added to the bucket. The average bucket size per day is calculated from the average fork-length of thirty randomly collected smolts from the daily migration which correlates with a pre-determined count for one bucket. When migration is slow the smolts are counted individually. Smolt migration numbers through the wolf traps are recorded hourly at the top of each hour and then totaled again for a daily twenty-four hour period.

Sockeye smolts are randomly collected throughout the day and placed into a holding pen beside the wolf traps. The number of smolts sampled per day is proportional to the daily run size with a goal of four-hundred samples overall that is representative of the total run.

Measurements are taken to the nearest millimeter for fork-length, weighed in grams for weight, two scale smears per sample for age, and heads collected for otolith analysis which would yield wild/ enhanced ratio for fry to smolt survivorship.

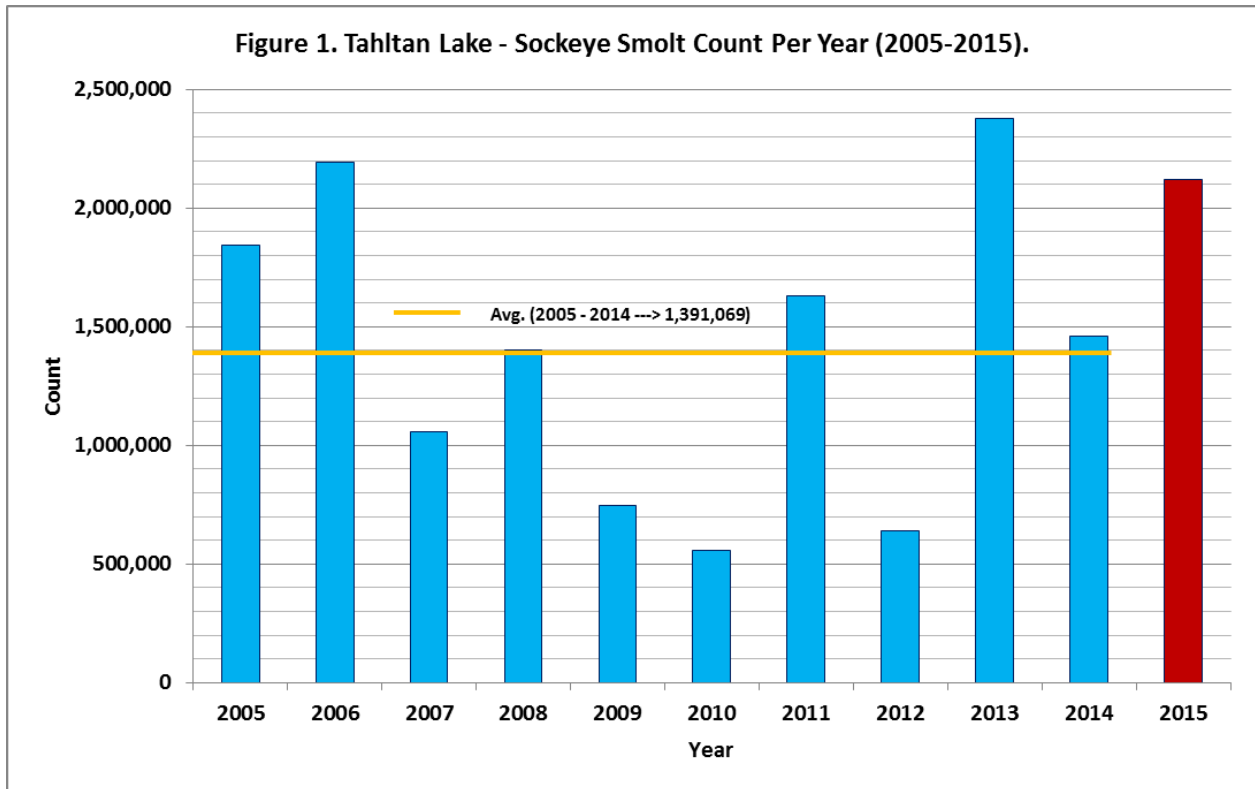
4.0 Results

The weir was installed on May 7th and fish tight at 1700 hours and was taken down on June 10th at 1200 hours.

Counts:

The estimated count of smolts for 2015 is 2,123,168; this is roughly 34% above the ten year average count of 1,391,069.

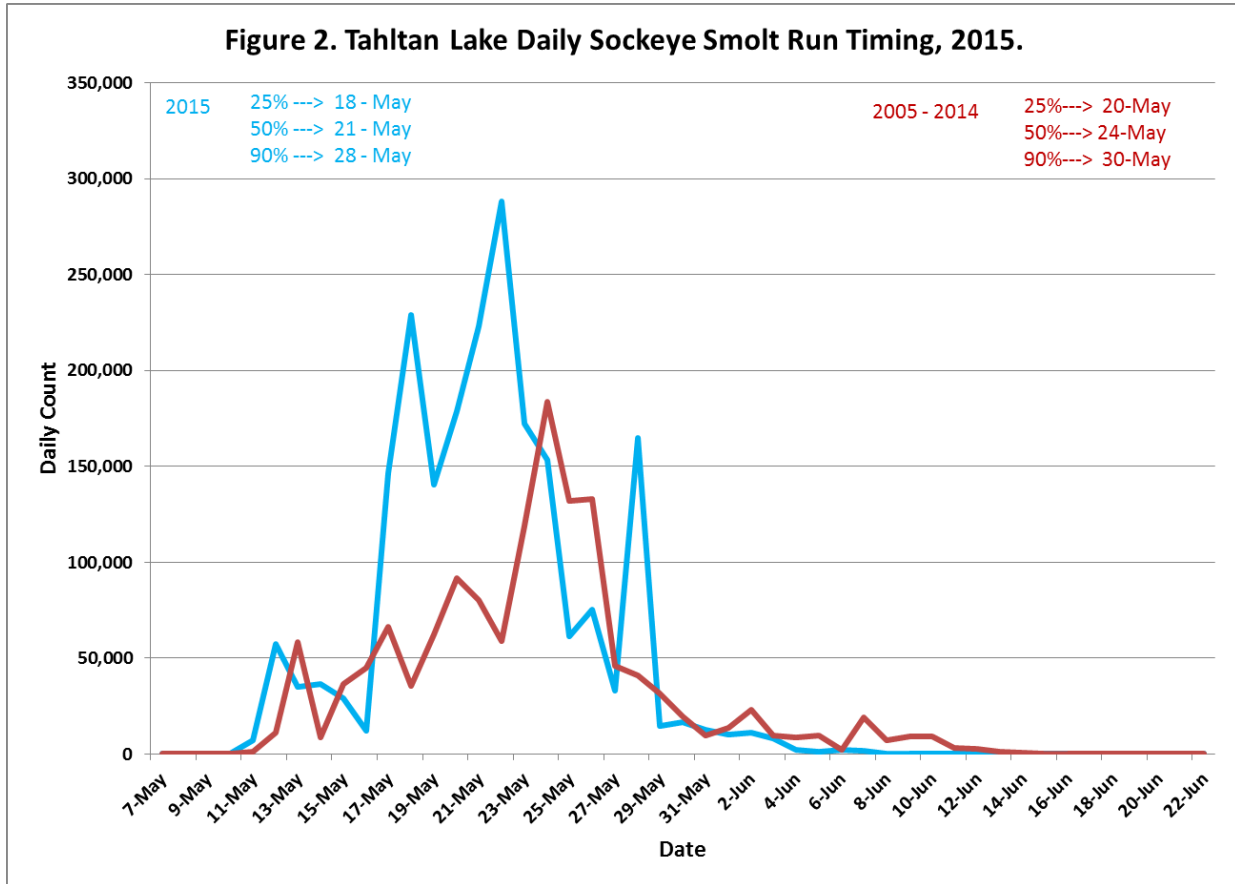
Figure 2 Summary of the estimated sockeye smolt counts at Tahltan Lake weir from 2005-2015.



Run Timing:

The figure below summarizes the daily migration of sockeye smolts through the weir for 2015 and shows a comparison to the average run timing vs. years 2005 – 2014. Tahltan Lake ice was out on May 14/ 2015, which is eight days earlier than the May 22 average from 2009 - 2014.

Figure 3 Summary of Tahltan Lake daily sockeye smolt run timing, 2015.



Water Temperature:

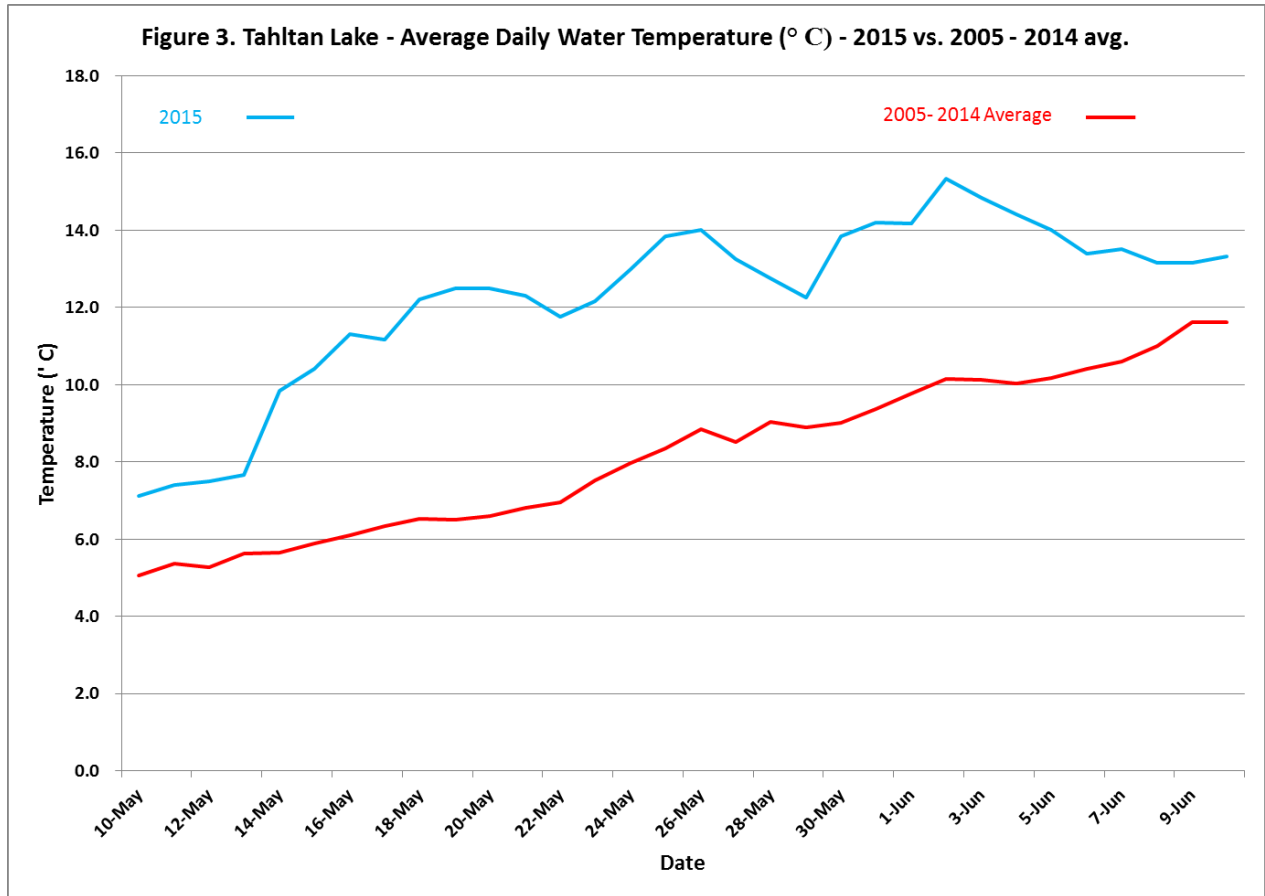
The table below illustrates the daily/ monthly comparisons between 2015 Tahltan Lake water temperatures and the average (+/-) difference from 2010–2014. Daily temperatures are recorded with a hand held alcohol thermometer every four hours at the top of the hour (0400, 0800, 1200, 1600, 2000, and 2400) and have been recorded since 1984. New record daily average high temperatures that were set in 2015 are highlighted in yellow in the table below. The greatest differences of +4.4 °C and +3.4 °C were in the months of May and June respectively.

Table 1 Summary of Tahltan Lake average daily water temperatures (Celsius) - 2015 vs. 2005 – 2014 avg.

	Date	Temp. 2015	(+/-) 2005-2014 Avg.	Date	Temp. 2015	(+/-) 2005-2014 Avg.
	10-May	7.1	2.1	1-Jun	14.2	4.4
	11-May	7.4	2.0	2-Jun	15.3	5.2
	12-May	7.5	2.2	3-Jun	14.8	4.7
	13-May	7.7	2.0	4-Jun	14.4	4.4
	14-May	9.8	4.2	5-Jun	14.0	3.8
	15-May	10.4	4.5	6-Jun	13.4	3.0
	16-May	11.3	5.2	7-Jun	13.5	2.9
	17-May	11.2	4.8	8-Jun	13.2	2.2
	18-May	12.2	5.7	9-Jun	13.2	1.6
	19-May	12.5	6.0	10-Jun	13.3	1.7
	20-May	12.5	5.9		Avg.	3.4
	21-May	12.3	5.5			
	22-May	11.8	4.8			
	23-May	12.2	4.7			
	24-May	13.0	5.0			
	25-May	13.8	5.5			
	26-May	14.0	5.2			
	27-May	13.3	4.7			
	28-May	12.8	3.7			
	29-May	12.3	3.4			
	30-May	13.8	4.8			
	31-May	14.2	4.8			
		Avg.	4.4			

The figure below summarizes the daily average Tahltan Lake water temperatures for 2015 and compares them to the 2005 – 2014 average. The early ice out date of May 14th is most likely due to below average winter snow pack and sunny conditions which resulted in significantly higher water temperatures earlier in the season.

Figure 4 Summary of Tahltan Lake average daily water temperatures (Celsius) - 2015 vs. 2010-2014 avg.



Sampling:

A total of 556 representative daily samples were collected. The samples yielded scales, fork-lengths, weights, and heads. The scale samples were analyzed at the Pacific Biological Station in Nanaimo and generated ages of 91% one-year olds, 8% two year olds, and 1% 3 year olds. The head (otolith) samples were analysed in the Whitehorse lab and generated ratios of: (2015) enhanced ~ 56.03%, wild ~ 43.97% vs. 2005-2014 average of enhanced ~ 40.23%, wild ~ 59.77%.

The table below is a summary and comparison of ages, lengths, and weights of sockeye smolts for 2015 averages vs. 2010-2014 averages. The 2015 average fork lengths for age 1 and 2 smolts were 6.5 mm and 21.3 mm longer than the 2010-2014 averages. The 2015 average weights for age 1 and 2 smolts were also 1.4 grams and 7.8 grams heavier than the 2010-2014 averages.

Table 2 Summary of Tahltan Lake sockeye smolt age, length, and weight averages. 2015 vs. 2010-2014.

Table 2: Tahltan Lake Sockeye Smolt Age (years), Length (mm), & Weight (grams).			
<i>Note: Scale analysis used for ages.</i>			
2015		Age	
Data	1	2	3
Sample Count	493	58	4
Average Fork Length	90.4	124.4	153.5
Sample Count	493	58	4
Average Weight	6.7	17.3	29.9
2010-2014		Age	
Data	1	2	3
Sample Count	2330	178	
Average Fork Length	83.9	103.1	
Sample Count	2331	178	
Average Weight	5.3	9.5	
Year - 2015 vs. (2010-2014)		Age	
	1	2	3
Fork Length (+/-)	6.5	21.3	
Weight (+/-)	1.4	7.8	

5.0 Budget Summary

As presented in Appendix 3, the expenditures of Northern Funds amounted to \$39,253.67 which was slightly under the budgeted amount of \$40,062.00. The 10% holdback of \$4,006.20 - \$808.33 = \$3197.67 is anticipated once the final project report is accepted by the Pacific Salmon Commission. A summary of Fund expenditures in relation to budgeted amounts is as follows:

Description	Budget (PSC)	Expenditure	Balance
Salary	15,135.00	18,428.95	-3,293.95
Salary EPB @ 20%	3,027.00	3,685.79	-658.79
Air Charter	10,200.00	8,014.13	2,185.87
Travel	1,800.00	475.03	1,324.97
Site Supplies & Materials	7,800.00	6,866.07	933.93
Repairs & Maintenance	2,100.00	1,783.70	316.30
Grand Total	40,062.00	39,253.67	808.33

6.0 Conclusion

The program was completed within the timeframe of the project proposal. The count for 2015 was 2,123,168. The run timing was a couple days earlier in 2015 and was most likely due to an earlier than average ice out date. A total a 556 representative samples were collected. Scale analysis yielded ages of 91% one year olds, 8% two year olds, and 1% 3 year olds. The head (otolith) samples were analysed in the Whitehorse lab and generated enhanced/ wild survivorship ratios of: (2015) enhanced ~ 56.03%, wild ~ 43.97%. Tahltan Lake water temperatures were significantly higher in average daily seasonal temperatures with new daily average high temperatures set in the months of May and June which was likely a result of below average winter snow pack and seasonally above average air temperatures.

7.0 Acknowledgements

Pete Etherton – (DFO) Program Manager

Cheri Frocklage – Tahltan Fisheries Co-ordinator

Michael Nole – Tahltan Fisheries Technician

John Nole – Tahltan Fisheries Technician

Albert Dennis – Tahltan Fisheries Technician

Lake Else Air LTD. – Air Charter

Yukon Transboundary Rivers Area Administration Staff

8.0 Appendix

Appendix 1 - Tahltan Lake sockeye smolt daily counts, 2015.

	Date	Stat Week	Daily Count	Cum. Count	Weekly Count	Daily Prop.	Cum. Prop.	Weekly Prop.
	7-May	19	0	0		0.000	0.000	
	8-May	19	0	0		0.000	0.000	
	9-May	19	0	0	0	0.000	0.000	0.000
	10-May	20	146	146		0.000	0.000	
	11-May	20	7124	7270		0.003	0.003	
	12-May	20	57244	64514		0.027	0.030	
	13-May	20	34944	99458		0.016	0.047	
	14-May	20	36558	136016		0.017	0.064	
	15-May	20	29046	165062		0.014	0.078	
	16-May	20	12153	177215	177215	0.006	0.083	0.083
	17-May	21	146338	323553		0.069	0.152	
25%	18-May	21	229123	552676		0.108	0.260	
	19-May	21	140326	693002		0.066	0.326	
	20-May	21	178666	871668		0.084	0.411	
50%	21-May	21	222730	1094398		0.105	0.515	
	22-May	21	287900	1382298		0.136	0.651	
	23-May	21	172260	1554558	1377343	0.081	0.732	0.649
	24-May	22	153310	1707868		0.072	0.804	
	25-May	22	61495	1769363		0.029	0.833	
	26-May	22	75288	1844651		0.035	0.869	
	27-May	22	33023	1877674		0.016	0.884	
90%	28-May	22	165039	2042713		0.078	0.962	
	29-May	22	14407	2057120		0.007	0.969	
	30-May	22	16489	2073609	519051	0.008	0.977	0.244
	31-May	23	12615	2086224		0.006	0.983	
	1-Jun	23	10126	2096350		0.005	0.987	
	2-Jun	23	10912	2107262		0.005	0.993	
	3-Jun	23	8038	2115300		0.004	0.996	
	4-Jun	23	2222	2117522		0.001	0.997	
	5-Jun	23	1083	2118605		0.001	0.998	
	6-Jun	23	2244	2120849	47240	0.001	0.999	0.022
	7-Jun	24	1488	2122337		0.001	1.000	
	8-Jun	24	381	2122718		0.000	1.000	
	9-Jun	24	345	2123063		0.000	1.000	
	10-Jun	24	105	2123168		0.000	1.000	
	11-Jun	24	0	2123168		0.000	1.000	
	12-Jun	24	0	2123168		0.000	1.000	
	13-Jun	24	0	2123168	2319	0.000	1.000	0.001
	14-Jun	25	0	2123168		0.000	1.000	
	15-Jun	25	0	2123168		0.000	1.000	
	16-Jun	25	0	2123168		0.000	1.000	
	17-Jun	25	0	2123168		0.000	1.000	
	18-Jun	25	0	2123168		0.000	1.000	
	19-Jun	25	0	2123168	0	0.000	1.000	0.000
			2123168		2123168	1.000		1.000
				25%	530792	18-May		
				50%	1061584	21-May		
				90%	1910851	28-May		
				Peak Day	287900	22-May		

Appendix 2 - Tahltan Lake sockeye smolt sample data, 2015.

Vial #	Date	Stat. Wk.	Bk. #	Sc. #	Age (GR)	Age (EU)	WT.	FL.	K-Factor	Box #	Marked Y/N	Thermal Mark	Brood Year	Comments
1	10-May	20	77351	1	22	10	6.9	93	0.86	1	N			
2	10-May	20	77351	2	22	10	7.1	92	0.91	1	Y	R-TAHLTAN LK	2013	
3	10-May	20	77351	3	22	10	5.9	88	0.87	1	N			
4	10-May	20	77351	4	22	10	7.1	93	0.88	1	Y	R-TAHLTAN LK	2013	
5	10-May	20	77351	5	22	10	5.0	83	0.87	1	N			
6	11-May	20	77351	6	22	10	4.7	83	0.82	1	Y	R-TAHLTAN LK	2013	
7	11-May	20	77351	7	22	10	6.4	93	0.80	1	N			
8	11-May	20	77351	8	22	10	6.7	92	0.86	1	Y	R-TAHLTAN LK	2013	
9	11-May	20	77351	9	22	10	7.3	95	0.85	1	Y	R-TAHLTAN LK	2013	
10	11-May	20	77351	10	22	10	6.0	88	0.88	1	Y	R-TAHLTAN LK	2013	
11	11-May	20	77351	11	22	10	7.0	93	0.87	1	Y	R-TAHLTAN LK	2013	
12	11-May	20	77351	12	22	10	6.3	91	0.84	1	N			
13	11-May	20	77351	13	22	10	7.9	97	0.87	1	N			
14	11-May	20	77351	14	22	10	6.9	93	0.86	1	Y	R-TAHLTAN LK	2013	
15	11-May	20	77351	15	22	10	4.1	78	0.86	1	N			
16	12-May	20	77351	16	22	10	7.0	93	0.87	1	N			
17	12-May	20	77351	17	22	10	6.8	90	0.93	1	Y	R-TAHLTAN LK	2013	
18	12-May	20	77351	18	22	10	5.4	86	0.85	1	Y	R-TAHLTAN LK	2013	
19	12-May	20	77351	19	22	10	5.1	85	0.83	1	N			
20	12-May	20	77351	20	22	10	7.0	92	0.90	1	Y	R-TAHLTAN LK	2013	
21	12-May	20	77351	21	33	20	8.7	102	0.82	1	N			
22	12-May	20	77351	22	22	10	5.1	84	0.86	1	Y	R-TAHLTAN LK	2013	
23	12-May	20	77351	23	22	10	6.9	93	0.86	1	N			
24	12-May	20	77351	24	22	10	7.0	92	0.90	1	Y	R-TAHLTAN LK	2013	
25	12-May	20	77351	25	22	10	7.8	96	0.88	1	Y	R-TAHLTAN LK	2013	
26	12-May	20	77352	1	22	10	8.2	97	0.90	1	Y	R-TAHLTAN LK	2013	
27	12-May	20	77352	2	33	20	9.8	103	0.90	1	N			
28	12-May	20	77352	3	22	10	4.4	78	0.93	1	N			
29	12-May	20	77352	4	33	20	9.6	105	0.83	1	N			
30	12-May	20	77352	5	22	10	10.2	105	0.88	1	Y	R-TAHLTAN LK	2013	
31	12-May	20	77352	6	22	10	4.3	83	0.75	1	N			
32	13-May	20	77352	7	22	10	6.5	90	0.89	1	N			
33	13-May	20	77352	8	22	10	7.2	92	0.92	1	Y	R-TAHLTAN LK	2013	
34	13-May	20	77352	9	22	10	8.0	99	0.82	1	Y	R-TAHLTAN LK	2013	
35	13-May	20	77352	10	22	10	5.7	88	0.84	1	N			
36	13-May	20	77352	11	22	10	7.9	95	0.92	1	N			
37	13-May	20	77352	12	22	10	9.5	102	0.90	1	N			
38	13-May	20	77352	13	22	10	6.8	91	0.90	1	N			
39	13-May	20	77352	14	22	10	7.2	94	0.87	1	Y	R-TAHLTAN LK	2013	
40	13-May	20	77352	15	22	10	6.3	89	0.89	1	Y	R-TAHLTAN LK	2013	
41	13-May	20	77352	16	22	10	6.0	89	0.85	1	Y	R-TAHLTAN LK	2013	
42	14-May	20	77352	17	22	10	5.6	87	0.85	1	N			
43	14-May	20	77352	18	22	10	5.9	89	0.84	1	Y	R-TAHLTAN LK	2013	
44	14-May	20	77352	19	22	10	6.1	89	0.87	1	N			
45	14-May	20	77352	20	22	10	6.2	90	0.85	1	N			
46	14-May	20	77352	21	22	10	6.2	89	0.88	1	Y	R-TAHLTAN LK	2013	
47	14-May	20	77352	22	22	10	8.9	98	0.95	1	Y	R-TAHLTAN LK	2013	
48	14-May	20	77352	23	22	10	6.8	91	0.90	1	Y	R-TAHLTAN LK	2013	Overgrinded but really looks like 6,3h.
49	14-May	20	77352	24	22	10	6.6	90	0.91	1	N			
50	14-May	20	77352	25	22	10	6.3	89	0.89	1	N			
51	14-May	20	77353	1	22	10	5.3	85	0.86	1	N			
52	15-May	20	77353	2	22	10	7.3	95	0.85	1	Y	R-TAHLTAN LK	2013	
53	15-May	20	77353	3	22	10	6.2	90	0.85	1	N			
54	15-May	20	77353	4	22	10	5.8	87	0.88	1	Y	R-TAHLTAN LK	2013	
55	15-May	20	77353	5	22	10	6.2	89	0.88	1	Y	R-TAHLTAN LK	2013	
56	15-May	20	77353	6	22	10	8.3	98	0.88	1	N			
57	15-May	20	77353	7	22	10	7.9	98	0.84	1	Y	R-TAHLTAN LK	2013	
58	15-May	20	77353	8	22	10	6.2	89	0.88	1	Y	R-TAHLTAN LK	2013	
59	15-May	20	77353	9	22	10	5.2	85	0.85	1	Y	R-TAHLTAN LK	2013	
60	15-May	20	77353	10	22	10	5.2	85	0.85	1	N			
61	15-May	20	77353	11	22	10	5.6	88	0.82	1	N			
62	16-May	20	77353	12	22	10	5.1	81	0.96	1	Y	R-TAHLTAN LK	2013	
63	16-May	20	77353	13	22	10	8.1	96	0.92	1	N			
64	16-May	20	77353	14	22	10	6.7	90	0.92	1	Y	R-TAHLTAN LK	2013	
65	16-May	20	77353	15	22	10	7.2	93	0.90	1	Y	R-TAHLTAN LK	2013	
66	16-May	20	77353	16	22	10	6.1	90	0.84	1	N			
67	16-May	20	77353	17	33	20	11.5	111	0.84	1	N			
68	16-May	20	77353	18	22	10	7.4	97	0.81	1	Y	R-TAHLTAN LK	2013	
69	16-May	20	77353	19	22	10	5.3	85	0.86	1	Y	R-TAHLTAN LK	2013	
70	16-May	20	77353	20	22	10	7.1	90	0.97	1	Y	R-TAHLTAN LK	2013	
71	16-May	20	77353	21	22	10	7.3	95	0.85	1	N			
72	17-May	21	77353	22	22	10	6.0	87	0.91	1	Y	R-TAHLTAN LK	2013	
73	17-May	21	77353	23	22	10	6.0	88	0.88	1	Y	R-TAHLTAN LK	2013	
74	17-May	21	77353	24	22	10	6.1	90	0.84	1	Y	R-TAHLTAN LK	2013	
75	17-May	21	77353	25	22	10	6.3	90	0.86	1	Y	R-TAHLTAN LK	2013	

76	17-May	21	77354	1	22	10	4.7	82	0.85	1	N		
77	17-May	21	77354	2	22	10	6.5	91	0.86	1	Y	R-TAHLTAN LK	2013
78	17-May	21	77354	3	22	10	5.9	89	0.84	1	Y	R-TAHLTAN LK	2013
79	17-May	21	77354	4	33	20	9.1	100	0.91	1	N		
80	17-May	21	77354	5	22	10	6.1	91	0.81	1	Y	R-TAHLTAN LK	2013
81	17-May	21	77354	6	22	10	7.0	93	0.87	1	N		
82	17-May	21	77354	7	22	10	5.5	88	0.81	1	N		
83	17-May	21	77354	8	22	10	7.3	92	0.94	1	Y	R-TAHLTAN LK	2013
84	17-May	21	77354	9	22	10	7.2	93	0.90	1	N		
85	17-May	21	77354	10	22	10	6.9	90	0.95	1	N		
86	17-May	21	77354	11	22	10	7.2	91	0.96	1	Y	R-TAHLTAN LK	2013
87	17-May	21	77354	12	22	10	7.7	94	0.93	1	Y	R-TAHLTAN LK	2013
88	17-May	21	77354	13	22	10	7.6	94	0.92	1	N		
89	17-May	21	77354	14	22	10	7.2	92	0.92	1	Y	R-TAHLTAN LK	2013
90	17-May	21	77354	15	22	10	6.2	90	0.85	1	Y	R-TAHLTAN LK	2013
91	17-May	21	77354	16	22	10	8.8	100	0.88	1	Y	R-TAHLTAN LK	2013
92	17-May	21	77354	17	22	10	6.9	92	0.89	1	Y	R-TAHLTAN LK	2013
93	17-May	21	77354	18	22	10	5.2	84	0.88	1	N		
94	17-May	21	77354	19	22	10	6.7	90	0.92	1	Y	R-TAHLTAN LK	2013
95	17-May	21	77354	20	22	10	7.3	93	0.91	1	Y	R-TAHLTAN LK	2013
96	17-May	21	77354	21	22	10	5.6	83	0.98	1	N		
97	17-May	21	77354	22	22	10	5.8	87	0.88	1	N		
98	17-May	21	77354	23	22	10	5.4	85	0.88	1	N		
99	17-May	21	77354	24	22	10	5.7	85	0.93	1	N		
100	17-May	21	77354	25	22	10	6.7	90	0.92	1	Y	R-TAHLTAN LK	2013
101	17-May	21	77355	1	22	10	7.9	95	0.92	2	Y	R-TAHLTAN LK	2013
102	17-May	21	77355	2	22	10	7.5	89	1.06	2	Y	R-TAHLTAN LK	2013
103	17-May	21	77355	3	22	10	7.1	90	0.97	2	Y	R-TAHLTAN LK	2013
104	17-May	21	77355	4	22	10	9.2	97	1.01	2	Y	R-TAHLTAN LK	2013
105	17-May	21	77355	5	22	10	7.2	89	1.02	2	Y	R-TAHLTAN LK	2013
106	17-May	21	77355	6	22	10	7.0	91	0.93	2	N		
107	17-May	21	77355	7	33	20	10.6	105	0.92	2	N		
108	17-May	21	77355	8	22	10	6.6	89	0.94	2	Y	R-TAHLTAN LK	2013
109	17-May	21	77355	9	22	10	6.8	89	0.96	2	Y	R-TAHLTAN LK	2013
110	17-May	21	77355	10	22	10	7.6	91	1.01	2	Y	R-TAHLTAN LK	2013
111	17-May	21	77355	11	22	10	8.2	93	1.02	2	Y	R-TAHLTAN LK	2013
112	17-May	21	77355	12	22	10	3.5	73	0.90	2	N		
113	17-May	21	77355	13	22	10	7.0	90	0.96	2	N		
114	18-May	21	77355	14	22	10	6.2	89	0.88	2	Y	R-TAHLTAN LK	2013
115	18-May	21	77355	15	22	10	5.2	85	0.85	2	N		
116	18-May	21	77355	16	22	10	4.6	86	0.72	2	N		
117	18-May	21	77355	17	22	10	6.5	90	0.89	2	N		
118	18-May	21	77355	18	22	10	5.0	87	0.76	2	N		
119	18-May	21	77355	19	22	10	7.9	97	0.87	2	Y	R-TAHLTAN LK	2013
120	18-May	21	77355	20	33	20	11.9	109	0.92	2	N		
121	18-May	21	77355	21	22	10	7.2	79	1.46	2	Y	R-TAHLTAN LK	2013
122	18-May	21	77355	22	22	10	5.7	87	0.87	2	N		
123	18-May	21	77355	23	22	10	6.2	89	0.88	2	N		
124	18-May	21	77355	24	22	10	6.1	87	0.93	2	N		
125	18-May	21	77355	25	33	20	10.2	108	0.81	2	N		
126	18-May	21	77356	1	22	10	5.8	83	1.01	2	N		
127	18-May	21	77356	2	22	10	6.2	87	0.94	2	N		
128	18-May	21	77356	3	22	10	4.4	77	0.96	2	N		
129	18-May	21	77356	4	22	10	7.6	94	0.92	2	N		
130	18-May	21	77356	5	22	10	5.5	83	0.96	2	N		
131	18-May	21	77356	6	22	10	8.0	97	0.88	2	N		
132	18-May	21	77356	7	22	10	6.3	97	0.69	2	Y	R-TAHLTAN LK	2013
133	18-May	21	77356	8	22	10	6.9	90	0.95	2	Y	R-TAHLTAN LK	2013
134	18-May	21	77356	9	22	10	8.2	98	0.87	2	Y	R-TAHLTAN LK	2013
135	18-May	21	77356	10	22	10	5.4	85	0.88	2	No Sample		
136	18-May	21	77356	11	22	10	8.7	96	0.98	2	N		
137	18-May	21	77356	12	22	10	7.3	90	1.00	2	N		
138	18-May	21	77356	13	22	10	4.9	85	0.80	2	N		
139	18-May	21	77356	14	22	10	6.1	88	0.90	2	Y	R-TAHLTAN LK	2013
140	18-May	21	77356	15	22	10	4.2	80	0.82	2	N		
141	18-May	21	77356	16	22	10	6.0	88	0.88	2	N		
142	18-May	21	77356	17	22	10	7.8	97	0.85	2	Y	R-TAHLTAN LK	2013
143	18-May	21	77356	18	22	10	7.0	90	0.96	2	Y	R-TAHLTAN LK	2013
144	18-May	21	77356	19	22	10	6.1	87	0.93	2	N		
145	18-May	21	77356	20	22	10	7.0	90	0.96	2	Y	R-TAHLTAN LK	2013
146	18-May	21	77356	21	22	10	4.5	77	0.99	2	Y	R-TAHLTAN LK	2013
147	18-May	21	77356	22	22	10	7.1	92	0.91	2	Y	R-TAHLTAN LK	2013
148	18-May	21	77356	23	22	10	7.7	93	0.96	2	Y	R-TAHLTAN LK	2013
149	18-May	21	77356	24	22	10	8.3	92	1.07	2	N		
150	18-May	21	77356	25	22	10	6.4	86	1.01	2	Y	R-TAHLTAN LK	2013

151	18-May	21	77357	1	22	10	8.7	94	1.05	2	Y	R-TAHLTAN LK	2013
152	18-May	21	77357	2	22	10	6.6	88	0.97	2	N		
153	18-May	21	77357	3	22	10	8.7	93	1.08	2	N		
154	18-May	21	77357	4	22	10	8.3	92	1.07	2	Y	R-TAHLTAN LK	2013
155	18-May	21	77357	5	22	10	5.8	84	0.98	2	N		
156	18-May	21	77357	6	22	10	6.3	86	0.99	2	N		
157	18-May	21	77357	7	22	10	6.6	86	1.04	2	Y	R-TAHLTAN LK	2013
158	18-May	21	77357	8	22	10	7.9	91	1.05	2	Y	R-TAHLTAN LK	2013
159	18-May	21	77357	9	22	10	6.9	90	0.95	2	N		
160	19-May	21	77357	10	22	10	5.1	83	0.89	2	N		
161	19-May	21	77357	11	22	10	5.2	85	0.85	2	N		
162	19-May	21	77357	12	22	10	6.5	90	0.89	2	N		
163	19-May	21	77357	13	22	10	4.5	83	0.79	2	Y	R-TAHLTAN LK	2013
164	19-May	21	77357	14	22	10	5.2	84	0.88	2	N		
165	19-May	21	77357	15	22	10	5.4	86	0.85	2	N		
166	19-May	21	77357	16	22	10	5.3	85	0.86	2	N		
167	19-May	21	77357	17	22	10	6.3	90	0.86	2	N		
168	19-May	21	77357	18	22	10	5.4	84	0.91	2	Y	R-TAHLTAN LK	2013
169	19-May	21	77357	19	22	10	5.4	85	0.88	2	N		
170	19-May	21	77357	20	22	10	5.8	87	0.88	2	Y	R-TAHLTAN LK	2013
171	19-May	21	77357	21	22	10	6.5	91	0.86	2	N		
172	19-May	21	77357	22	22	10	6.7	92	0.86	2	Y	R-TAHLTAN LK	2013
173	19-May	21	77357	23	22	10	7.9	95	0.92	2	Y	R-TAHLTAN LK	2013
174	19-May	21	77357	24	22	10	3.9	78	0.82	2	N		
175	19-May	21	77357	25	22	10	5.6	88	0.82	2	N		
176	19-May	21	77358	1	22	10	7.0	92	0.90	2	N		
177	19-May	21	77358	2	22	10	6.2	87	0.94	2	N		
178	19-May	21	77358	3	22	10	7.5	93	0.93	2	Y	R-TAHLTAN LK	2013
179	19-May	21	77358	4	22	10	6.6	90	0.91	2	Y	R-TAHLTAN LK	2013
180	19-May	21	77358	5	22	10	6.5	88	0.95	2	Y	R-TAHLTAN LK	2013
181	19-May	21	77358	6	22	10	5.1	82	0.92	2	N		
182	19-May	21	77358	7	22	10	5.2	82	0.94	2	N		
183	19-May	21	77358	8	22	10	8.1	94	0.98	2	Y	R-TAHLTAN LK	2013
184	19-May	21	77358	9	22	10	4.5	79	0.91	2	N		
185	19-May	21	77358	10	22	10	4.3	77	0.94	2	N		
186	19-May	21	77358	11	22	10	7.7	95	0.90	2	Y	R-TAHLTAN LK	2013
187	19-May	21	77358	12	22	10	5.5	84	0.93	2	N		
188	20-May	21	77358	13	22	10	7.1	94	0.85	2	Y	R-TAHLTAN LK	2013
189	20-May	21	77358	14	22	10	6.3	90	0.86	2	Y	R-TAHLTAN LK	2013
190	20-May	21	77358	15	22	10	5.8	86	0.91	2	Y	R-TAHLTAN LK	2013
191	20-May	21	77358	16	22	10	7.4	93	0.92	2	Y	R-TAHLTAN LK	2013
192	20-May	21	77358	17	22	10	8.9	100	0.89	2	Y	R-TAHLTAN LK	2013
193	20-May	21	77358	18	22	10	5.9	88	0.87	2	Y	R-TAHLTAN LK	2013
194	20-May	21	77358	19	22	10	7.7	94	0.93	2	Y	R-TAHLTAN LK	2013
195	20-May	21	77358	20	33	20	12.3	112	0.88	2	Y	R-TAHLTAN LK	2012
196	20-May	21	77358	21	22	10	6.7	90	0.92	2	Y	R-TAHLTAN LK	2013
197	20-May	21	77358	22	22	10	7.7	93	0.96	2	Y	R-TAHLTAN LK	2013
198	20-May	21	77358	23	22	10	7.4	94	0.89	2	N		
199	20-May	21	77358	24	22	10	7.2	93	0.90	2	Y	R-TAHLTAN LK	2013
200	20-May	21	77358	25	33	20	19.1	130	0.87	2	N		
201	20-May	21	77359	1	22	10	6.5	89	0.92	3	Y	R-TAHLTAN LK	2013
202	20-May	21	77359	2	22	10	6.6	92	0.85	3	N		
203	20-May	21	77359	3	33	20	19.2	129	0.89	3	Y	R-TAHLTAN LK	2012
204	20-May	21	77359	4	22	10	6.7	94	0.81	3	Y	R-TAHLTAN LK	2013
205	20-May	21	77359	5	22	10	6.6	93	0.82	3	Y	R-TAHLTAN LK	2013
206	20-May	21	77359	6	22	10	5.2	85	0.85	3	N		
207	20-May	21	77359	7	22	10	6.7	92	0.86	3	Y	R-TAHLTAN LK	2013
208	20-May	21	77359	8	22	10	6.3	89	0.89	3	Y	R-TAHLTAN LK	2013
209	20-May	21	77359	9	22	10	6.0	90	0.82	3	N		
210	20-May	21	77359	10	22	10	6.9	92	0.89	3	Y	R-TAHLTAN LK	2013
211	20-May	21	77359	11	22	10	8.7	99	0.90	3	N		
212	20-May	21	77359	12	33	20	17.8	124	0.93	3	N		
213	20-May	21	77359	13	33	20	21.9	135	0.89	3	N		
214	20-May	21	77359	14	22	10	7.2	92	0.92	3	Y	R-TAHLTAN LK	2013
215	20-May	21	77359	15	22	10	8.2	97	0.90	3	Y	R-TAHLTAN LK	2013
216	20-May	21	77359	16	22	10	9.5	100	0.95	3	Y	R-TAHLTAN LK	2013
217	20-May	21	77359	17	22	10	7.9	94	0.95	3	Y	R-TAHLTAN LK	2013
218	20-May	21	77359	18	22	10	9.0	96	1.02	3	Y	R-TAHLTAN LK	2013
219	20-May	21	77359	19	22	10	4.1	78	0.86	3	N		
220	20-May	21	77359	20	22	10	7.2	91	0.96	3	Y	R-TAHLTAN LK	2013
221	20-May	21	77359	21	22	10	7.2	90	0.99	3	N		
222	20-May	21	77359	22	22	10	7.2	92	0.92	3	Y	R-TAHLTAN LK	2013
223	20-May	21	77359	23	22	10	7.4	93	0.92	3	Y	R-TAHLTAN LK	2013
224	21-May	21	77359	24	22	10	6.2	88	0.91	3	Y	R-TAHLTAN LK	2013
225	21-May	21	77359	25	22	10	7.6	95	0.89	3	Y	R-TAHLTAN LK	2013

226	21-May	21	77360	1	22	10	7.9	96	0.89	3	Destroyed		
227	21-May	21	77360	2	22	10	7.2	95	0.84	3	Y	R-TAHLTAN LK	2013
228	21-May	21	77360	3	33	20	15.1	119	0.90	3	N		
229	21-May	21	77360	4	33	20	10.8	107	0.88	3	N		
230	21-May	21	77360	5	22	10	9.1	99	0.94	3	Y	R-TAHLTAN LK	2013
231	21-May	21	77360	6	22	10	5.9	88	0.87	3	Y	R-TAHLTAN LK	2013
232	21-May	21	77360	7	22	10	6.7	90	0.92	3	N		
233	21-May	21	77360	8	22	10	6.1	85	0.99	3	Y	R-TAHLTAN LK	2013
234	21-May	21	77360	9	22	10	5.0	83	0.87	3	N		
235	21-May	21	77360	10	22	10	7.2	93	0.90	3	Y	R-TAHLTAN LK	2013
236	21-May	21	77360	11	22	10	6.6	90	0.91	3	Y	R-TAHLTAN LK	2013
237	21-May	21	77360	12	22	10	8.9	100	0.89	3	Y	R-TAHLTAN LK	2013
238	21-May	21	77360	13	22	10	6.4	88	0.94	3	Y	R-TAHLTAN LK	2013
239	21-May	21	77360	14	33	20	15.2	118	0.93	3	N		
240	21-May	21	77360	15	33	20	26.7	143	0.91	3	N		
241	21-May	21	77360	16	22	10	7.6	93	0.94	3	Y	R-TAHLTAN LK	2013
242	21-May	21	77360	17	22	10	6.8	90	0.93	3	Y	R-TAHLTAN LK	2013
243	21-May	21	77360	18	22	10	8.4	96	0.95	3	N		
244	21-May	21	77360	19	33	20	22.0	136	0.87	3	N		
245	21-May	21	77360	20	22	10	6.5	88	0.95	3	N		
246	21-May	21	77360	21	22	10	6.8	89	0.96	3	N		
247	21-May	21	77360	22	22	10	8.0	94	0.96	3	Y	R-TAHLTAN LK	2013
248	21-May	21	77360	23	22	10	7.2	90	0.99	3	Y	R-TAHLTAN LK	2013
249	21-May	21	77360	24	22	10	6.0	88	0.88	3	Y	R-TAHLTAN LK	2013
250	21-May	21	77360	25	22	10	9.5	103	0.87	3	N		
251	21-May	21	77361	1	22	10	6.9	91	0.92	3	N		
252	21-May	21	77361	2	22	10	5.0	82	0.91	3	Y	R-TAHLTAN LK	2013
253	21-May	21	77361	3	22	10	6.8	92	0.87	3	Y	R-TAHLTAN LK	2013
254	21-May	21	77361	4	33	20	15.6	122	0.86	3	N		
255	21-May	21	77361	5	22	10	6.8	93	0.85	3	N		
256	21-May	21	77361	6	22	10	7.0	91	0.93	3	Y	R-TAHLTAN LK	2013
257	21-May	21	77361	7	22	10	5.2	85	0.85	3	N		
258	21-May	21	77361	8	22	10	6.9	90	0.95	3	Y	R-TAHLTAN LK	2013
259	21-May	21	77361	9	22	10	5.2	84	0.88	3	Y	R-TAHLTAN LK	2013
260	21-May	21	77361	10	22	10	5.9	85	0.96	3	Y	R-TAHLTAN LK	2013
261	21-May	21	77361	11	22	10	8.8	95	1.03	3	N		
262	21-May	21	77361	12	33	20	14.1	115	0.93	3	Y	R-TAHLTAN LK	2012
263	21-May	21	77361	13	22	10	6.3	87	0.96	3	N		
264	21-May	21	77361	14	22	10	4.8	78	1.01	3	Y	R-TAHLTAN LK	2013
265	21-May	21	77361	15	22	10	9.4	102	0.89	3	Y	R-TAHLTAN LK	2012
266	21-May	21	77361	16	22	10	8.9	96	1.01	3	Y	R-TAHLTAN LK	2013
267	21-May	21	77361	17	22	10	6.6	90	0.91	3	Y	R-TAHLTAN LK	2013
268	21-May	21	77361	18	22	10	8.0	93	0.99	3	N		
269	22-May	21	77361	19	22	10	8.0	95	0.93	3	Y	R-TAHLTAN LK	2013
270	22-May	21	77361	20	22	10	7.1	94	0.85	3	N		
271	22-May	21	77361	21	33	20	12.3	109	0.95	3	N		
272	22-May	21	77361	22	22	10	5.3	85	0.86	3	N		
273	22-May	21	77361	23	22	10	6.6	91	0.88	3	N		
274	22-May	21	77361	24	22	10	4.3	79	0.87	3	N		
275	22-May	21	77361	25	22	10	6.9	90	0.95	3	Y	R-TAHLTAN LK	2013
276	22-May	21	77362	1	22	10	6.3	89	0.89	3	Y	R-TAHLTAN LK	2013
277	22-May	21	77362	2	22	10	4.6	83	0.80	3	N		
278	22-May	21	77362	3	22	10	6.0	88	0.88	3	Y	R-TAHLTAN LK	2013
279	22-May	21	77362	4	22	10	5.5	86	0.86	3	Y	R-TAHLTAN LK	2013
280	22-May	21	77362	5	22	10	5.3	85	0.86	3	Y	R-TAHLTAN LK	2013
281	22-May	21	77362	6	22	10	7.4	93	0.92	3	N		
282	22-May	21	77362	7	22	10	4.8	81	0.90	3	N		
283	22-May	21	77362	8	22	10	6.8	92	0.87	3	Y	R-TAHLTAN LK	2013
284	22-May	21	77362	9	33	20	14.9	120	0.86	3	N		
285	22-May	21	77362	10	22	10	6.3	87	0.96	3	Y	R-TAHLTAN LK	2013
286	22-May	21	77362	11	22	10	8.0	97	0.88	3	N		
287	22-May	21	77362	12	22	10	8.2	93	1.02	3	Y	R-TAHLTAN LK	2013
288	22-May	21	77362	13	22	10	7.0	88	1.03	3	Y	R-TAHLTAN LK	2013
289	22-May	21	77362	14	22	10	6.1	88	0.90	3	Y	R-TAHLTAN LK	2013
290	22-May	21	77362	15	22	10	8.2	94	0.99	3	Y	R-TAHLTAN LK	2013
291	22-May	21	77362	16	22	10	6.1	86	0.96	3	N		
292	22-May	21	77362	17	22	10	7.5	93	0.93	3	N		
293	22-May	21	77362	18	22	10	6.1	88	0.90	3	Y	R-TAHLTAN LK	2013
294	22-May	21	77362	19	22	10	5.4	83	0.94	3	N		
295	22-May	21	77362	20	22	10	9.3	98	0.99	3	Y	R-TAHLTAN LK	2013
296	22-May	21	77362	21	22	10	4.3	78	0.91	3	N		
297	22-May	21	77362	22	22	10	6.4	90	0.88	3	Y	R-TAHLTAN LK	2013
298	22-May	21	77362	23	22	10	5.2	83	0.91	3	Y	R-TAHLTAN LK	2013
299	22-May	21	77362	24	22	10	7.0	93	0.87	3	Y	R-TAHLTAN LK	2013
300	22-May	21	77362	25	22	10	7.9	95	0.92	3	Y	R-TAHLTAN LK	2013

301	22-May	21	77363	1	22	10	7.4	95	0.86	4	Y	R-TAHLTAN LK	2013	
302	22-May	21	77363	2	22	10	7.4	94	0.89	4	Y	R-TAHLTAN LK	2013	
303	22-May	21	77363	3	33	20	14.7	117	0.92	4	N			
304	22-May	21	77363	4	22	10	6.6	90	0.91	4	Y	R-TAHLTAN LK	2013	
305	22-May	21	77363	5	22	10	6.6	91	0.88	4	Y	R-TAHLTAN LK	2013	
306	22-May	21	77363	6	22	10	7.7	94	0.93	4	N			
307	22-May	21	77363	7	22	10	9.6	101	0.93	4	Y	R-TAHLTAN LK	2013	
308	22-May	21	77363	8	22	10	8.1	98	0.86	4	Y	R-TAHLTAN LK	2013	
309	22-May	21	77363	9	22	10	5.8	86	0.91	4	Y	R-TAHLTAN LK	2013	
310	22-May	21	77363	10	22	10	7.4	93	0.92	4	N			
311	22-May	21	77363	11	22	10	6.3	92	0.81	4	N			
312	22-May	21	77363	12	22	10	7.2	91	0.96	4	Y	R-TAHLTAN LK	2013	
313	22-May	21	77363	13	22	10	8.9	100	0.89	4	Y	R-TAHLTAN LK	2013	
314	22-May	21	77363	14	22	10	8.3	98	0.88	4	Y	R-TAHLTAN LK	2013	
315	22-May	21	77363	15	33	20	22.5	137	0.88	4	N			
316	22-May	21	77363	16	22	10	7.9	95	0.92	4	N			
317	22-May	21	77363	17	22	10	9.9	98	1.05	4	Y	R-TAHLTAN LK	2013	
318	22-May	21	77363	18	22	10	6.8	91	0.90	4	Y	R-TAHLTAN LK	2013	
319	22-May	21	77363	19	22	10	6.2	88	0.91	4	Y	R-TAHLTAN LK	2013	
320	22-May	21	77363	20	22	10	14.6	118	0.89	4	N			
321	22-May	21	77363	21	22	10	7.3	93	0.91	4	Y	R-TAHLTAN LK	2013	
322	22-May	21	77363	22	22	10	8.2	94	0.99	4	Y	R-TAHLTAN LK	2013	
323	22-May	21	77363	23	22	10	6.9	92	0.89	4	Y	R-TAHLTAN LK	2013	
324	22-May	21	77363	24	22	10	6.2	86	0.97	4	N			
325	22-May	21	77363	25	22	10	7.3	92	0.94	4	Y	R-TAHLTAN LK	2013	
326	22-May	21	77364	1	22	10	4.9	80	0.96	4	N			
327	23-May	21	77364	2	22	10	6.7	93	0.83	4	Y	R-TAHLTAN LK	2013	
328	23-May	21	77364	3	22	10	6.4	91	0.85	4	Y	R-TAHLTAN LK	2013	
329	23-May	21	77364	4	22	10	5.1	85	0.83	4	Y	R-TAHLTAN LK	2013	
330	23-May	21	77364	5	22	10	7.2	93	0.90	4	Y	R-TAHLTAN LK	2013	
331	23-May	21	77364	6	22	10	5.9	90	0.81	4	N			
332	23-May	21	77364	7	22	10	7.5	96	0.85	4	Y	R-TAHLTAN LK	2013	
333	23-May	21	77364	8	22	10	6.9	93	0.86	4	Y	R-TAHLTAN LK	2013	
334	23-May	21	77364	9	22	10	5.2	86	0.82	4	N			
335	23-May	21	77364	10	22	10	5.3	84	0.89	4	N			
336	23-May	21	77364	11	22	10	6.6	93	0.82	4	Y	R-TAHLTAN LK	2013	
337	23-May	21	77364	12	22	10	6.9	92	0.89	4	N			
338	23-May	21	77364	13	22	10	5.9	88	0.87	4	Y	R-TAHLTAN LK	2013	
339	23-May	21	77364	14	22	10	7.4	93	0.92	4	Y	R-TAHLTAN LK	2013	
340	23-May	21	77364	15	22	10	6.8	91	0.90	4	Y	R-TAHLTAN LK	2013	
341	23-May	21	77364	16	33	20	13.6	116	0.87	4	N			
342	23-May	21	77364	17	22	10	7.2	94	0.87	4	N			
343	23-May	21	77364	18	22	10	6.4	90	0.88	4	Y	R-TAHLTAN LK	2013	
344	23-May	21	77364	19	22	10	6.6	92	0.85	4	N			
345	23-May	21	77364	20	22	10	5.0	84	0.84	4	Y	R-TAHLTAN LK	2013	
346	23-May	21	77364	21	33	20	17.7	128	0.84	4	N			
347	23-May	21	77364	22	22	10	7.4	95	0.86	4	N			
348	23-May	21	77364	23	22	10	5.2	86	0.82	4	N			
349	23-May	21	77364	24	22	10	4.6	82	0.83	4	N			
350	23-May	21	77364	25	22	10	6.8	91	0.90	4	N			
351	23-May	21	77365	1	22	10	5.0	83	0.87	4	Y	R-TAHLTAN LK	2013	
352	23-May	21	77365	2	OM	MO	6.6	92	0.85	4	Y	R-TAHLTAN LK	2013	Scale not readable
353	23-May	21	77365	3	22	10	8.0	97	0.88	4	N			
354	23-May	21	77365	4	22	10	6.1	90	0.84	4	Y	R-TAHLTAN LK	2013	
355	23-May	21	77365	5	22	10	7.7	93	0.96	4	Y	R-TAHLTAN LK	2013	
356	23-May	21	77365	6	33	20	10.1	105	0.87	4	N			
357	23-May	21	77365	7	22	10	4.4	79	0.89	4	N			
358	23-May	21	77365	8	22	10	5.8	85	0.94	4	N			
359	23-May	21	77365	9	22	10	7.0	91	0.93	4	Y	R-TAHLTAN LK	2013	
360	23-May	21	77365	10	22	10	6.5	90	0.89	4	Y	R-TAHLTAN LK	2013	
361	24-May	22	77365	11	22	10	5.3	87	0.80	4	Y	R-TAHLTAN LK	2013	
362	24-May	22	77365	12	22	10	6.5	88	0.95	4	Y	R-TAHLTAN LK	2013	
363	24-May	22	77365	13	22	10	6.1	89	0.87	4	Y	R-TAHLTAN LK	2013	
364	24-May	22	77365	14	22	10	6.2	91	0.82	4	Y	R-TAHLTAN LK	2013	
365	24-May	22	77365	15	22	10	6.2	89	0.88	4	N			
366	24-May	22	77365	16	22	10	4.7	82	0.85	4	Y	R-TAHLTAN LK	2013	
367	24-May	22	77365	17	22	10	6.3	91	0.84	4	Y	R-TAHLTAN LK	2013	
368	24-May	22	77365	18	22	10	6.6	94	0.79	4	Y	R-TAHLTAN LK	2013	
369	24-May	22	77365	19	22	10	8.3	97	0.91	4	Y	R-TAHLTAN LK	2013	
370	24-May	22	77365	20	33	20	15.8	120	0.91	4	Y	R-TAHLTAN LK	2012	
371	24-May	22	77365	21	33	20	15.8	124	0.83	4	Y	R-TAHLTAN LK	2012	
372	24-May	22	77365	22	22	10	8.3	98	0.88	4	N			
373	24-May	22	77365	23	33	20	17.1	126	0.85	4	Y	R-TAHLTAN LK	2012	
374	24-May	22	77365	24	22	10	6.6	90	0.91	4	Y	R-TAHLTAN LK	2013	
375	24-May	22	77365	25	22	10	5.8	90	0.80	4	N			

376	24-May	22	77366	1	22	10	7.1	91	0.94	4	Y	R-TAHLTAN LK	2013
377	24-May	22	77366	2	22	10	6.0	87	0.91	4	Y	R-TAHLTAN LK	2013
378	24-May	22	77366	3	22	10	6.4	88	0.94	4	Y	R-TAHLTAN LK	2013
379	24-May	22	77366	4	22	10	6.5	90	0.89	4	N		
380	24-May	22	77366	5	22	10	6.8	91	0.90	4	N		
381	24-May	22	77366	6	22	10	8.2	93	1.02	4	Y	R-TAHLTAN LK	2013
382	24-May	22	77366	7	33	20	24.4	138	0.93	4	N		
383	24-May	22	77366	8	22	10	7.1	91	0.94	4	Y	R-TAHLTAN LK	2013
384	24-May	22	77366	9	22	10	6.8	89	0.96	4	Y	R-TAHLTAN LK	2013
385	24-May	22	77366	10	22	10	7.8	92	1.00	4	Y	R-TAHLTAN LK	2013
386	24-May	22	77366	11	22	10	5.5	84	0.93	4	Y	R-TAHLTAN LK	2013
387	24-May	22	77366	12	22	10	6.6	89	0.94	4	N		
388	24-May	22	77366	13	22	10	5.3	82	0.96	4	Y	R-TAHLTAN LK	2013
389	24-May	22	77366	14	22	10	8.3	98	0.88	4	Y	R-TAHLTAN LK	2013
390	24-May	22	77366	15	22	10	6.6	91	0.88	4	N		
391	24-May	22	77366	16	22	10	5.0	85	0.81	4	N		
392	25-May	22	77366	17	33	20	6.7	95	0.78	4	Y	R-TAHLTAN LK	2013
393	25-May	22	77366	18	22	10	5.5	89	0.78	4	N		
394	25-May	22	77366	19	22	10	8.5	99	0.88	4	Y	R-TAHLTAN LK	2013
395	25-May	22	77366	20	22	10	4.7	83	0.82	4	Y	R-TAHLTAN LK	2013
396	25-May	22	77366	21	22	10	5.4	88	0.79	4	Y	R-TAHLTAN LK	2013
397	25-May	22	77366	22	22	10	6.1	90	0.84	4	Y	R-TAHLTAN LK	2013
398	25-May	22	77366	23	22	10	6.2	90	0.85	4	Y	R-TAHLTAN LK	2013
399	25-May	22	77366	24	22	10	6.8	95	0.79	4	N		
400	25-May	22	77366	25	22	10	5.3	87	0.80	4	Y	R-TAHLTAN LK	2013
401	25-May	22	77367	1	22	10	4.6	79	0.93	5	N		
402	25-May	22	77367	2	22	10	5.2	83	0.91	5	N		
403	25-May	22	77367	3	22	10	5.3	88	0.78	5	N		
404	26-May	22	77367	4	22	10	7.6	95	0.89	5	Y	R-TAHLTAN LK	2013
405	26-May	22	77367	5	22	10	7.5	94	0.90	5	Y	R-TAHLTAN LK	2013
406	26-May	22	77367	6	22	10	5.9	88	0.87	5	N		
407	26-May	22	77367	7	22	10	7.5	98	0.80	5	Y	R-TAHLTAN LK	2013
408	26-May	22	77367	8	22	10	5.0	86	0.79	5	N		
409	26-May	22	77367	9	22	10	6.5	93	0.81	5	Y	R-TAHLTAN LK	2013
410	26-May	22	77367	10	22	10	4.6	82	0.83	5	N		
411	26-May	22	77367	11	22	10	4.8	83	0.84	5	N		
412	26-May	22	77367	12	22	10	6.1	85	0.99	5	N		
413	26-May	22	77367	13	22	10	6.9	92	0.89	5	Y	R-TAHLTAN LK	2013
414	26-May	22	77367	14	22	10	7.0	91	0.93	5	N		
415	26-May	22	77367	15	22	10	5.3	83	0.93	5	Y	R-TAHLTAN LK	2013
416	26-May	22	77367	16	22	10	3.8	76	0.87	5	N		
417	26-May	22	77367	17	22	10	6.4	89	0.91	5	N		
418	26-May	22	77367	18	33	20	17.8	125	0.91	5	N		
419	27-May	22	77367	19	22	10	5.9	90	0.81	5	Y	R-TAHLTAN LK	2013
420	27-May	22	77367	20	22	10	5.7	88	0.84	5	Y	R-TAHLTAN LK	2013
421	27-May	22	77367	21	22	10	5.3	86	0.83	5	N		
422	27-May	22	77367	22	22	10	4.7	82	0.85	5	Y	R-TAHLTAN LK	2013
423	27-May	22	77367	23	22	10	6.1	89	0.87	5	N		
424	27-May	22	77367	24	22	10	6.1	88	0.90	5	Y	R-TAHLTAN LK	2013
425	27-May	22	77367	25	22	10	7.9	98	0.84	5	N		
426	27-May	22	77368	1	22	10	4.8	83	0.84	5	Y	R-TAHLTAN LK	2013
427	27-May	22	77368	2	22	10	6.2	88	0.91	5	Y	R-TAHLTAN LK	2013
428	27-May	22	77368	3	33	20	16.3	124	0.85	5	N		
429	28-May	22	77368	4	22	10	6.4	91	0.85	5	N		
430	28-May	22	77368	5	22	10	6.1	91	0.81	5	Y	R-TAHLTAN LK	2013
431	28-May	22	77368	6	22	10	5.5	85	0.90	5	N		
432	28-May	22	77368	7	22	10	6.4	91	0.85	5	Y	R-TAHLTAN LK	2013
433	28-May	22	77368	8	33	20	13.0	117	0.81	5	N		
434	28-May	22	77368	9	22	10	5.1	85	0.83	5	Y	R-TAHLTAN LK	2013
435	28-May	22	77368	10	22	10	7.4	93	0.92	5	Y	R-TAHLTAN LK	2013
436	28-May	22	77368	11	22	10	7.0	94	0.84	5	N		
437	28-May	22	77368	12	22	10	7.0	93	0.87	5	Y	R-TAHLTAN LK	2013
438	28-May	22	77368	13	22	10	6.4	89	0.91	5	Y	R-TAHLTAN LK	2013
439	28-May	22	77368	14	22	10	5.6	86	0.88	5	N		
440	28-May	22	77368	15	22	10	4.0	78	0.84	5	N		
441	28-May	22	77368	16	22	10	6.2	92	0.80	5	N		
442	28-May	22	77368	17	22	10	8.4	96	0.95	5	N		
443	28-May	22	77368	18	22	10	5.7	89	0.81	5	Y	R-TAHLTAN LK	2013
444	28-May	22	77368	19	22	10	6.7	93	0.83	5	Y	R-TAHLTAN LK	2013
445	28-May	22	77368	20	22	10	6.8	90	0.93	5	N		
446	28-May	22	77368	21	22	10	5.7	88	0.84	5	Y	R-TAHLTAN LK	2013
447	28-May	22	77368	22	22	10	8.0	94	0.96	5	N		
448	28-May	22	77368	23	22	10	7.4	93	0.92	5	N		
449	28-May	22	77368	24	22	10	7.1	93	0.88	5	Y	R-TAHLTAN LK	2013
450	28-May	22	77368	25	22	10	6.1	87	0.93	5	Y	R-TAHLTAN LK	2013

451	28-May	22	77369	1	22	10	7.1	92	0.91	5	Y	R-TAHLTAN LK	2013	
452	28-May	22	77369	2	22	10	5.6	86	0.88	5	Y	R-TAHLTAN LK	2013	
453	28-May	22	77369	3	22	10	8.7	96	0.98	5	Y	R-TAHLTAN LK	2013	
454	28-May	22	77369	4	22	10	6.3	87	0.96	5	Y	R-TAHLTAN LK	2013	
455	28-May	22	77369	5	22	10	4.6	80	0.90	5	Y	R-TAHLTAN LK	2013	
456	28-May	22	77369	6	22	10	4.8	77	1.05	5	Y	R-TAHLTAN LK	2013	
457	28-May	22	77369	7	22	10	5.3	83	0.93	5	Y	R-TAHLTAN LK	2013	
458	28-May	22	77369	8	22	10	5.5	86	0.86	5	N			
459	28-May	22	77369	9	22	10	7.4	93	0.92	5	Y	R-TAHLTAN LK	2013	
460	28-May	22	77369	10	22	10	5.2	83	0.91	5	N			
461	28-May	22	77369	11	22	10	8.8	95	1.03	5	N			
462	29-May	22	77369	12	22	10	6.3	92	0.81	5	N			
463	29-May	22	77369	13	33	20	16.7	125	0.86	5	N			
464	29-May	22	77369	14	22	10	5.8	89	0.82	5	Y	R-TAHLTAN LK	2013	
465	29-May	22	77369	15	22	10	7.6	94	0.92	5	Y	R-TAHLTAN LK	2013	
466	29-May	22	77369	16	22	10	7.3	98	0.78	5	N			
467	29-May	22	77369	17	22	10	6.2	89	0.88	5	Y	R-TAHLTAN LK	2013	
468	29-May	22	77369	18	22	10	4.9	85	0.80	5	Y	R-TAHLTAN LK	2013	
469	29-May	22	77369	19	22	10	10.4	106	0.87	5	Y	R-TAHLTAN LK	2013	
470	29-May	22	77369	20	22	10	6.0	93	0.75	5	Y	R-TAHLTAN LK	2013	
471	29-May	22	77369	21	22	10	6.4	90	0.88	5	Y	R-TAHLTAN LK	2013	
472	30-May	22	77369	22	22	10	7.6	94	0.92	5	N			
473	30-May	22	77369	23	22	10	7.3	93	0.91	5	N			
474	30-May	22	77369	24	22	10	9.9	104	0.88	5	Y	R-TAHLTAN LK	2013	
475	30-May	22	77369	25	22	10	7.7	98	0.82	5	Y	R-TAHLTAN LK	2013	
476	30-May	22	77370	1	22	10	6.3	88	0.92	5	N			
477	30-May	22	77370	2	22	10	8.9	101	0.86	5	Y	R-TAHLTAN LK	2013	
478	30-May	22	77370	3	22	10	6.4	92	0.82	5	Y	R-TAHLTAN LK	2013	
479	30-May	22	77370	4	33	20	21.6	133	0.92	5	Y	R-TAHLTAN LK	2012	
480	30-May	22	77370	5	22	10	5.4	86	0.85	5	N			
481	30-May	22	77370	6	33	20	12.3	113	0.85	5	N			
482	31-May	23	77370	7	22	10	8.1	95	0.94	5	Y	R-TAHLTAN LK	2013	
483	31-May	23	77370	8	22	10	6.1	88	0.90	5	N			
484	31-May	23	77370	9	22	10	6.4	94	0.77	5	Y	R-TAHLTAN LK	2013	
485	31-May	23	77370	10	22	10	5.7	89	0.81	5	Y	R-TAHLTAN LK	2013	
486	31-May	23	77370	11	22	10	4.7	85	0.77	5	Y	R-TAHLTAN LK	2013	
487	31-May	23	77370	12	22	10	6	87	0.91	5	Y	R-TAHLTAN LK	2013	
488	31-May	23	77370	13	22	10	9.5	100	0.95	5	Y	R-TAHLTAN LK	2013	
489	31-May	23	77370	14	22	10	6.1	93	0.76	5	Y	R-TAHLTAN LK	2013	
490	31-May	23	77370	15	33	20	13.1	118	0.80	5	N			
491	31-May	23	77370	16	33	20	21.4	135	0.87	5	Y	R-TAHLTAN LK	2012	
492	1-Jun	23	77370	17	22	10	5.5	85	0.90	5	N			
493	1-Jun	23	77370	18	33	20	17	124	0.89	5	Y	R-TAHLTAN LK	2012	
494	1-Jun	23	77370	19	22	10	8.2	97	0.90	5	Y	R-TAHLTAN LK	2013	
495	1-Jun	23	77370	20	22	10	4.9	89	0.70	5	Y	R-TAHLTAN LK	2013	
496	1-Jun	23	77370	21	22	10	7.4	95	0.86	5	N			
497	1-Jun	23	77370	22	22	10	7.9	95	0.92	5	Y	R-TAHLTAN LK	2013	
498	1-Jun	23	77370	23	33	20	17.4	125	0.89	5	Destroyed			
499	1-Jun	23	77370	24	22	10	6.4	90	0.88	5	N			
500	1-Jun	23	77370	25	33	20	20.6	133	0.88	5	N			
501	1-Jun	23	77371	1	33	20	29.7	151	0.86	6	N			
502	2-Jun	23	77371	2	22	10	6.5	91	0.86	6	N			
503	2-Jun	23	77371	3	22	10	5.4	86	0.85	6	Y	R-TAHLTAN LK	2013	
504	2-Jun	23	77371	4	22	10	7.5	96	0.85	6	Y	R-TAHLTAN LK	2013	
505	2-Jun	23	77371	5	22	10	5.9	87	0.90	6	N			
506	2-Jun	23	77371	6	22	10	7.3	92	0.94	6	Y	R-TAHLTAN LK	2013	
507	2-Jun	23	77371	7	33	20	14.8	120	0.86	6	N			
508	2-Jun	23	77371	8	22	10	7.2	93	0.90	6	Y	R-TAHLTAN LK	2013	
509	2-Jun	23	77371	9	22	10	6.6	92	0.85	6	N			
510	2-Jun	23	77371	10	22	10	5.8	89	0.82	6	N			
511	2-Jun	23	77371	11	22	10	4.9	85	0.80	6	N			
512	3-Jun	23	77371	12	44	30	31.3	155	0.84	6	N			
513	3-Jun	23	77371	13	22	10	6.3	95	0.73	6	Y	R-TAHLTAN LK	2013	
514	3-Jun	23	77371	14	22	10	9.8	103	0.90	6	Y	R-TAHLTAN LK		Mark was there. Otolith over-grinded and lost.
515	3-Jun	23	77371	15	33	20	19.1	128	0.91	6	Y	R-TAHLTAN LK	2012	
516	3-Jun	23	77371	16	33	20	20.4	137	0.79	6	N			
517	3-Jun	23	77371	17	33	20	22.2	138	0.84	6	N			
518	3-Jun	23	77371	18	22	10	6.7	94	0.81	6	Y	R-TAHLTAN LK	2013	
519	3-Jun	23	77371	19	22	10	8.3	97	0.91	6	Y	R-TAHLTAN LK	2013	
520	3-Jun	23	77371	20	22	10	6.9	93	0.86	6	N			
521	3-Jun	23	77371	21	22	10	7.8	95	0.91	6	Y	R-TAHLTAN LK	2013	
522	4-Jun	23	77371	22	22	10	7.4	96	0.84	6	Y	R-TAHLTAN LK	2013	
523	4-Jun	23	77371	23	22	10	5.8	87	0.88	6	Y	R-TAHLTAN LK	2013	
524	4-Jun	23	77371	24	22	10	6.5	91	0.86	6	N			
525	4-Jun	23	77371	25	22	10	6.6	89	0.94	6	N			

Appendix 3 - Budget Summary

Project Budget Form										
Name of Project: Tahltan Lake Smolt Enumeration 2015									Page 1 of 2	
ELIGIBLE COSTS										
Labour										
Wages & Salaries										
Position	# of crew	# of work days	hrs per day	rate per hour	Total (In-kind & Cash & PSC Amount)	In-Kind & Cash	PSC	Spent (PSC)	Variance (+/-)	
DFO Stock Assessment Biologist BI-3	1	5	7.5	39	1,463.00	1,463.00				
DFO Stock Assessment Biologist BI-2	1	15	7.5	37	4,163.00	4,163.00				
Fisheries Technician (Tahltan Fisheries)	3	59	7.5	25	15,135.00	0.00	15,135.00	18,428.95	-3,293.95	
Person Days (# of crew x work days)	79			sub total	20,761.00	5,626.00	15,135.00	18,428.95	-3,293.95	
Labour - Employer Costs (percent of wages subtotal amount)										
	rate	20%		sub total	4,152.20	1,125.20	3,027.00	3,685.79	-658.79	
Subcontractors & Consultants	# of crew	# of work days	hrs per day	rate per hour	Total (In-kind & Cash & PSC Amount)	In-Kind & Cash	PSC	Spent (PSC)	Variance (+/-)	
Air Charter					10,200.00	0.00	10,200.00	8,014.13	2,185.87	
Insurance if applicable	rate	0%		sub total	10,200.00	0.00	10,200.00	8,014.13	2,185.87	
Volunteer Labour	# of crew	# of work days	hrs per day	rate per hour	Total (In-kind & Cash & PSC Amount)	In-Kind & Cash	PSC	Spent (PSC)	Variance (+/-)	
Skilled										
Un-skilled										
Insurance if applicable	rate	0%		sub total						
Total Labour Costs					35,113.20	6,751.20	28,362.00	30,128.87	-1,766.87	
Site / Project Costs										
Travel (do not include to & from work)	Core Mandate				1,800.00	0.00	1,800.00	475.03	1,324.97	
Small Tools & Equipment										
Site Supplies & Materials	Groceries, fuel, tools, etc.				7,800.00	0.00	7,800.00	6,866.07	933.93	
Equipment Rental										
Work & Safety Gear										
Repairs & Maintenance	Outboard (E-TEC 30), Chainsaw				2,100.00	0.00	2,100.00	1,783.70	316.30	
Permits										
Technical Monitoring										
Other site costs										
Total Site / Project Costs					11,700.00	0.00	11,700.00	9,124.80	2,575.20	

Project Budget Form

ELIGIBLE COSTS

Page 2 of 2

				Total (In-kind & Cash & PSC Amount)	In-Kind & Cash	PSC	Spent (PSC)	Variance (+/-)
Training (e.g. Swift water, bear aware, electrofishing, etc.).								
Name of course	# of crew	# of work days	Cost Per Person					
Firearms	2	2	300	600.00	600.00			
Total Training Costs				600.00	600.00	0.00	0.00	0.00

Overhead / Indirect Costs								
Office space; including utilities, etc.								
Insurance								
Office supplies								
Telephone & long Distance	(Satellite Phone/ Internet)			1,200.00	1,200.00			
Photocopies & printing								
Other overhead costs	Admin Overhead @ 3%			1,422.00	1,422.00			
Total Overhead Costs				2,622.00	2,622.00	0.00	0.00	

Capital Costs / Assets								
Assets are things of value that have an initial cost of \$250 or more and which can be readily misappropriated for personal use or gain or which are not, or will not be, fully consumed during the term of the project.								
Total Capital Costs				0.00	0.00	0.00	0.00	0.00

Project Total Costs				50,035.20	9,973.20	40,062.00	39,253.67	808.33
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Budget Summary	Total Budget Costs	Budget (PSC)	Actual Spent (PSC)	Variance (+/-)
Total Labour Costs (Includes in kind cost)	35,113.20	28,362.00	30,128.87	-1,766.87
Total Site / Project Costs	11,700.00	11,700.00	9,124.80	2,575.20
Total Training Costs (In kind cost)	600.00	0.00	0.00	0.00
Total Overhead Costs (In kind cost)	2,622.00	0.00	0.00	0.00
Total Capital Costs	0.00	0.00	0.00	0.00
Project Total	50,035.20	40,062.00	39,253.67	808.33