

**MEMORANDUM FOR THE RECORD****SUBJECT** 15 LGS 011 Little Goose Elevated Juvenile Disease Rate

**Description of the problem:** Little Goose has detected elevated disease rates in juvenile salmonids recently. From 16 September to 22 September, the mean disease rate was 26% for 622 fish. Of the 26%, more than 90% of the fish were affected by columnaris disease. Below is the text from the 2015 Fish Passage Plan, Appendix B, section 4.6.5:

4.6.5. When mortality from columnaris disease (*Flavobacterium columnare*) in the condition sample exceeds 10% for three consecutive days after August 17, collection for transport will end and the system will be placed in primary bypass with a condition sample taken every third day. The collection of fish for condition sampling will end after one 24-hour sample period, or when 100 juvenile salmonids are collected for examination. The FPC will be notified and FPAC will review available data for future recommendations.

Below are recent numbers from Little Goose:

Date	Total Disease Rate	Total Columnaris Rate	Total Mortality Rate
16-Sep	36.00%	30.90%	3.50%
17-Sep	32.00%	28.40%	7.60%
18-Sep	23.00%	21.60%	5.80%
19-Sep	21.00%	19.80%	12.00%
20-Sep	21.50%	21.50%	3.20%
21-Sep	30.00%	28.00%	9.40%
22-Sep	27.00%	24.60%	8.50%
23-Sep	53.00%	47.50%	26.90%
24-Sep	33.33%	31.60%	2.80%

Columnaris cannot be determined as the direct cause of mortality without performing a necropsy, however the high rates of columnaris symptoms along with high mortality rates imply that columnaris infection is responsible for the loss. Total mortality rate on 23 September was 26.90% and counted as DAY 1 of columnaris mortality exceeding 10% for three consecutive days, in accordance with section 4.6.5 of Appendix B in the 2015 Fish Passage Plan. Columnaris mortality on 24 September was 2.80%, ending the count of three consecutive days of columnaris mortality exceeding 10%. However, total disease rate remains high, of which columnaris constitutes greater than 90% of total detected disease.

## Temperature String Data from Little Goose Forebay

Temperature in Degrees Celsius

neg	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	>30
<32	32	34	36	37	39	41	43	45	46	48	50	52	54	55	57	59	61	63	64	66	68	70	72	73	75	77	79	81	82	84	86	>86

Equivalent Degrees Fahrenheit

Date	Time	0.5m	1.5m	3m	5m	10m	15m	20m	25m	30m	35m
9/16/2015	6:00	18.23	18.25	18.26	18.22	18.25	18.21	18.08	17.88	17.86	17.83
	12:00	18.47	18.33	18.31	18.26	18.26	18.17	18.12	17.96	17.88	17.82
	18:00	18.74	18.5	18.4	18.34	18.33	18.24	18.15	17.93	17.85	17.83
9/17/2015	6:00	18.4	18.42	18.43	18.39	18.41	18.29	18.28	18.25	18.12	17.77
	12:00	18.76	18.6	18.51	18.41	18.36	18.29	18.28	18.25	18.06	17.85
	18:00	18.61	18.64	18.63	18.58	18.42	18.32	18.3	18.25	18.06	17.83
9/18/2015	6:00	18.36	18.38	18.4	18.35	18.38	18.34	18.27	18.16	17.88	17.86
	12:00	18.55	18.55	18.4	18.34	18.35	18.28	18.23	17.83	17.84	17.87
	18:00	18.71	18.75	18.73	18.34	18.33	18.16	17.89	17.83	17.85	17.87
9/19/2015	6:00	18.33	18.34	18.36	18.31	18.22	17.87	17.79	17.78	17.8	17.78
	12:00	18.62	18.41	18.33	18.24	18.17	17.96	17.8	17.76	17.58	17.59
	18:00	18.67	18.7	18.68	18.52	18.18	17.82	17.77	17.61	17.41	17.43
9/20/2015	6:00	18.37	18.4	18.4	18.28	18.02	17.72	17.51	17.19	17.19	17.21
	12:00	18.4	18.42	18.42	18.32	18.19	17.84	17.67	17.36	17.18	17.16
	18:00	18.35	18.37	18.38	18.28	17.85	17.48	17.17	17.02	17.05	17.08
9/21/2015	6:00	17.64	17.66	17.67	17.63	17.53	17.08	16.99	16.98	17.01	17.04
	12:00	17.89	17.83	17.8	17.74	17.62	17.07	16.99	16.98	17.01	17.04
	18:00	18.47	18.36	18.29	17.9	17.75	17.51	17.12	16.98	17.01	17.03
9/22/2015	6:00	17.94	17.99	17.99	17.95	17.92	17.79	17.67	17.52	17.08	17.03
	12:00	18.31	18.15	18.03	17.94	17.94	17.79	17.67	17.51	17.04	17.04
	18:00	18.59	18.5	18.29	17.95	17.95	17.86	17.72	17.59	17.16	17.04
9/23/2015	6:00	17.9	17.93	17.95	17.91	17.95	17.91	17.9	17.8	17.55	17.06
	12:00	18.22	18.03	17.99	17.91	17.93	17.88	17.86	17.79	17.48	17.06
	18:00	18.72	18.73	18.57	17.95	17.95	17.89	17.87	17.8	17.24	17.07
9/24/2015	6:00	17.97	17.98	18.01	17.96	18	17.93	17.9	17.85	17.51	17.07
	12:00	18.12	18.1	18.07	17.98	17.98	17.92	17.9	17.88	17.68	17.08
	18:00	18.57	18.58	18.2	17.99	17.99	17.92	17.9	17.85	17.2	17.09

Forebay temperatures ranged from 16.98 °C (63 °F) to 18.76 °C (65 °F) during this timeframe.

- A. Species – Chinook and Steelhead
- B. Origin – Undetermined
- C. Length – N/A
- D. Marks and tags – N/A
- E. Marks and Injuries found on carcass – N/A
- F. Cause and Time of Death – Disease, particularly columnaris
- G. Impact on fish passage – N/A
- H. Action Taken – None
- I. Length of time for repairs: N/A

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**Comments from agencies**