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MEMORANDUM

TO: Liz Hamilton, NSIA

FROM: Michele DeHart

DATE: April 16, 2014

RE: Juvenile Migration Conditions for Fall Chinook Adults Returning in 2014

On February 14th, 2014, the fishery managers in Washington and Oregon provided their 2013 Forecast/Actual Returns and 2014 Preseason Forecasts for Columbia River Fall Chinook. A record fall Chinook return occurred in 2013, and predictions for 2014 are expected to exceed that record. You requested that we provide you with the juvenile migration conditions for Upriver Bright Fall Chinook that returned in 2013, and for those predicted to return in 2014.

Specifically, based on the U.S. v Oregon Technical Advisory Committee Subgroup document:

- A record 784,100 URB Fall Chinook returned in 2013. The return was predominated by 3-year-old fish from the 2011 juvenile migration.
- A new record of 973,300 is predicted for 2014. The return is expected to be predominated by 4-year-old fish from the 2011 juvenile migration.

The 2011 migration year was a high-flow year. Over the 83-year record between 1929 and 2011, the 2011 January–July runoff volume at Lower Granite Dam and The Dalles Dam ranked 9th and 4th, respectively. For most of April into the beginning of May, flow and spill were at the Biological Opinion levels, and total dissolved gas levels met the 115% tailrace and 120% tailrace criteria. However, above average spring precipitation occurred in 2011 resulting in flows increasing well in excess of Biological Opinion flow objectives from mid-May through July. The flow, spill, and total dissolved gas data, plotted together with the subyearling Chinook passage index indicating the timing of fall Chinook in the Snake and middle Columbia rivers, suggest that the majority of the fall Chinook that returned in 2013, and predicted to return in 2014, originated in river

conditions that far exceeded the Biological Opinion flow and spill targets, with total dissolved gas levels that often exceeded 125%.

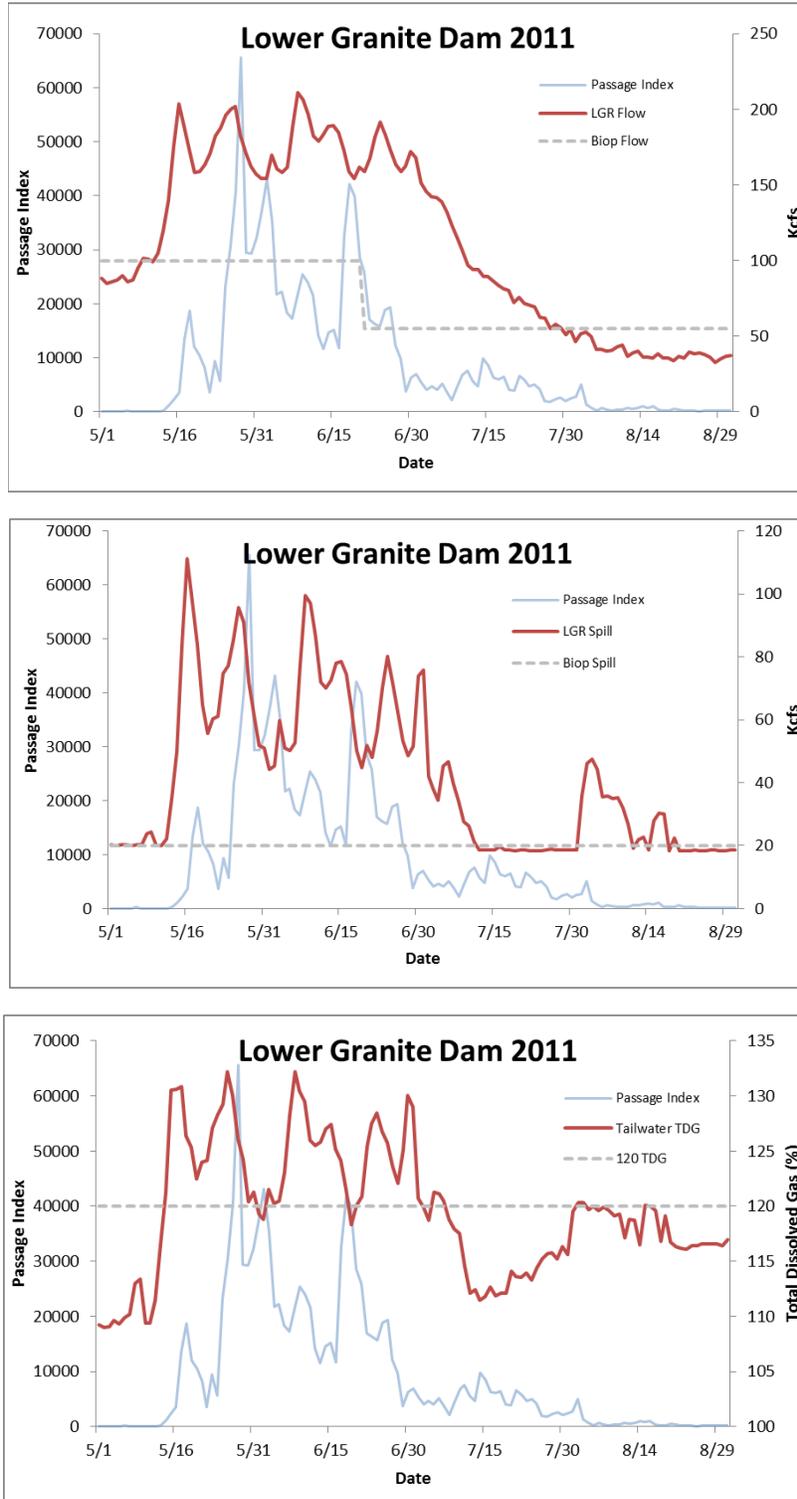


Figure 1. Flow, spill and total dissolved gas levels measured at Lower Granite Dam in 2011, together with the subyearling Chinook passage index.

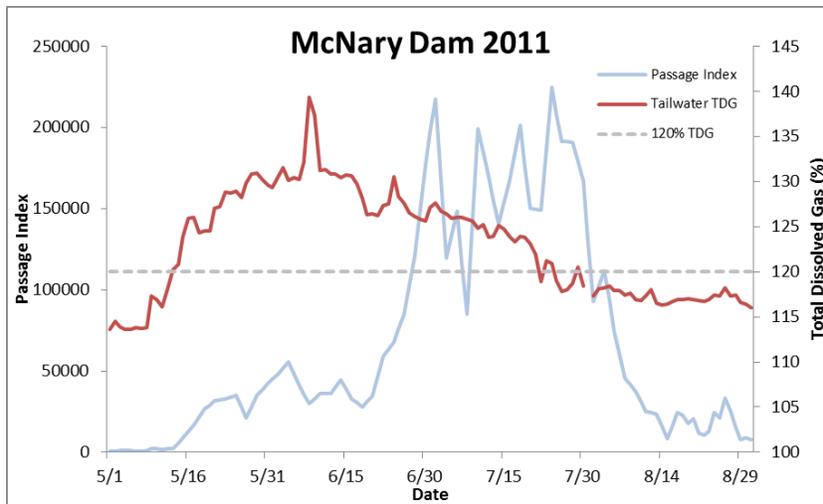
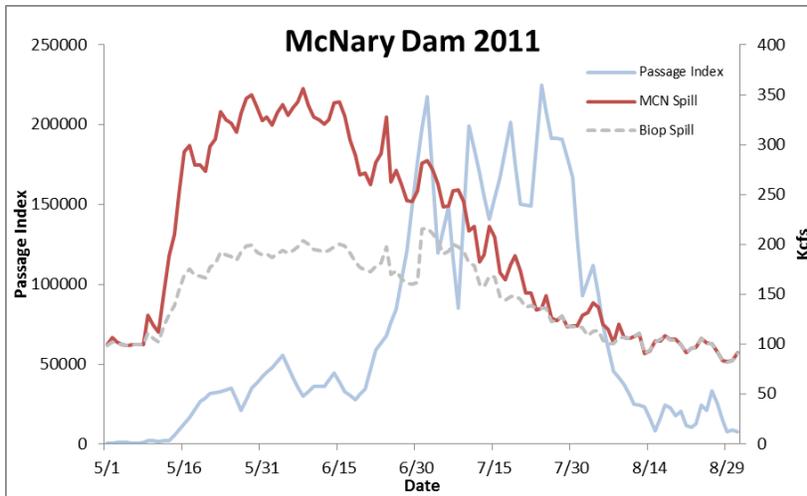
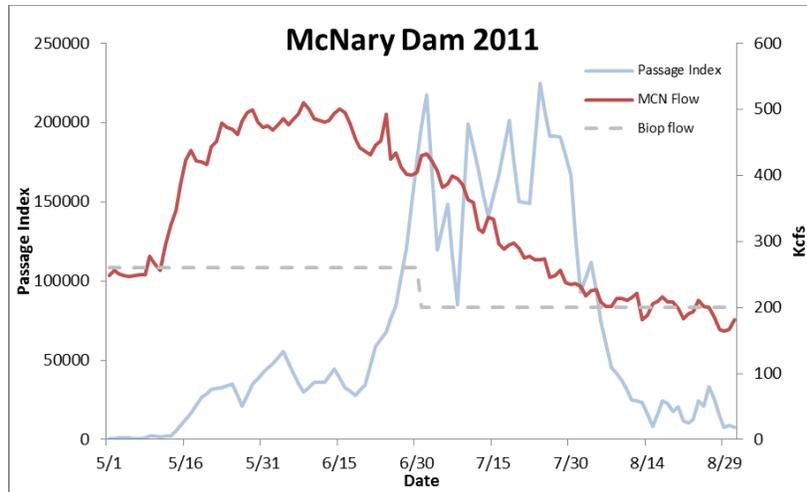


Figure 2. Flow, spill, and total dissolved gas levels measured at McNary Dam in 2011, together with the subyearling Chinook passage index.

We have presented the data describing the migration conditions that prevailed during the subyearling Chinook juvenile migration period, for the predominate fish comprising the 2013 record and 2014 predicted returns. However, we hope to conduct a more complete analysis of the smolt-to-adult return rates, and the relation to juvenile migration and ocean conditions in the future, upon completion of adult returns for this group of fish.