Lower Snake Temperature Management

June 26, 2007

- General Observations
  - Temperature in Snake River at Lower Granite 18.5^{o}C
    - During June it is common to experience rapid heating events(0.4 ^{o}C/day gain)
    - 2006 earliest arrival of 19 ^{o}C water on June 28 to Lower Granite (1995-2006)
    - Critical period to avoid warm water on Lower Snake River is early July as flows from warm water sources are receding
  - Low flows in the Snake River at Anatone and Clearwater River at Orofino
    - Low flows result in long travel times through Lower Granite Pool (5.5 days)
    - Important to look at upstream temperature loading to consider temperature management alternatives
    - Temperature management metric
      - T_{Inflow}>18.5 ^{o}C consider DWR flow augmentation alternatives
      - where $T_{inflow}=(Q_{SPDI}*T_{LEWI}+Q_{SPDI}*T_{anaw})/(Q_{SPDI}+Q_{ANAW})$
      - One degree C gain during passage LWG pool
      - June 26 T_{inflow}=18.0 ^{o}C
  - Larger percent flow contributed by cold water source DWR during low flow year
    - Stronger influence of DWR releases on SR temperatures

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- Forecasts
  - Weather
    - Seven day forecast for Lewiston used to generate hourly Meteorologic input
    - Long term weather from SILW for 2004
  - Flows (STP)
    - Clearwater River at Orofino falling from 4 kcfs by July 5
    - Snake River at Anatone falling from 20 kcfs by July 5
    - Dworshak full pool passing inflow through July 4
  - Temperatures Boundary Conditions at Anatone and Orofino
    - 2004 average year

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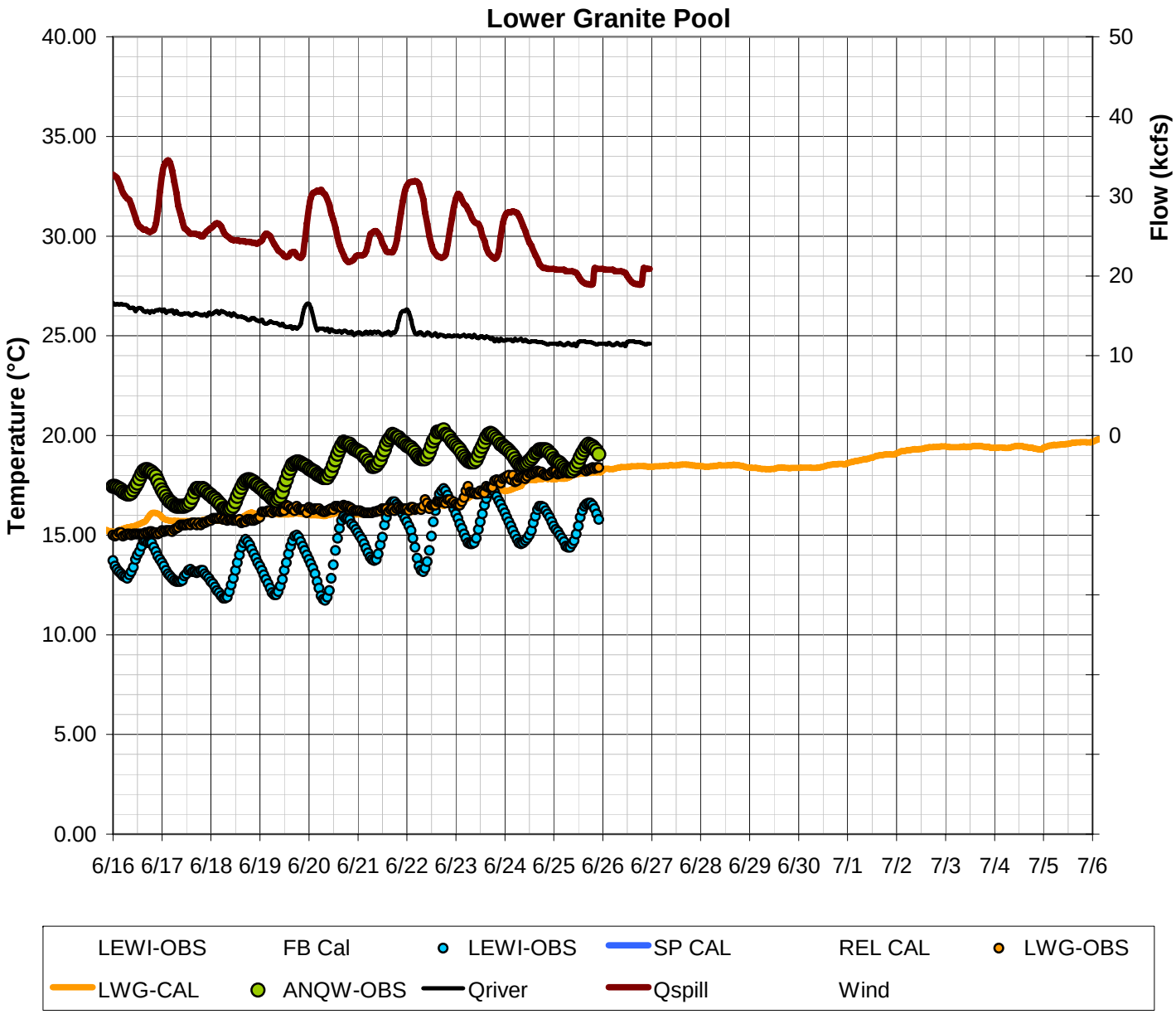
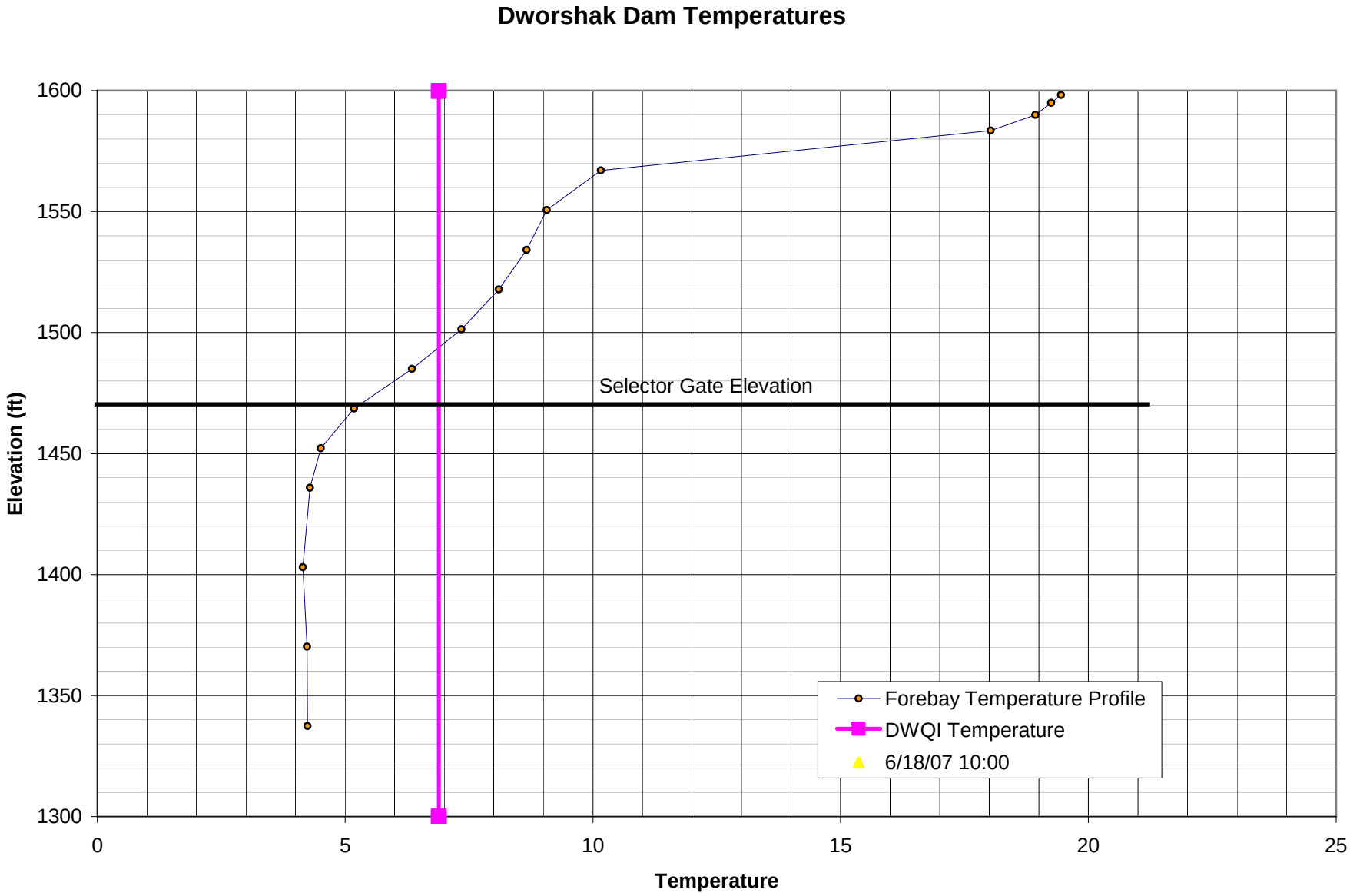
- Results of CEQUAL-W2 simulation (April 1-July 30)
  - SR Temps at LWG levels off in several days
    - Approaches 20 ^{o}C on July 5
- Recommendations –
  - Continue to update short term forecasts
  - Track average inflow temperatures T_{inflow} as trigger for temperature management action



Water Temperature Forecast for the Snake River at Lower Granite Dam



Current Dworshak Forebay Temperature Profile and Release Temperature