

# HOWARD A. HANSON DAM

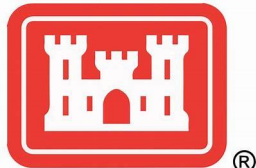
## FIRO Challenges, Hopes, and Dreams

Kevin Shaffer, P.E.  
Chief, Water Management  
U.S. Army Corps of Engineers, Seattle District

Greg Volkhardt  
Source Water & Treatment Operations  
Tacoma Water

## FIRO Annual Meeting

August 2-4, 2022



# Howard A. Hanson Dam



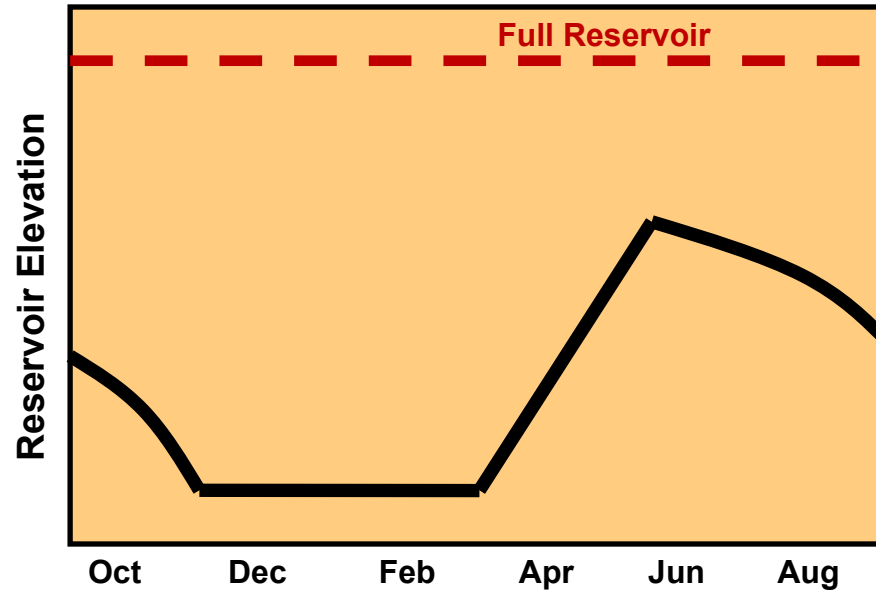
Three primary authorized purposes

- Flood risk management
- Fisheries conservation
- City of Tacoma water supply

# Western Washington Overview

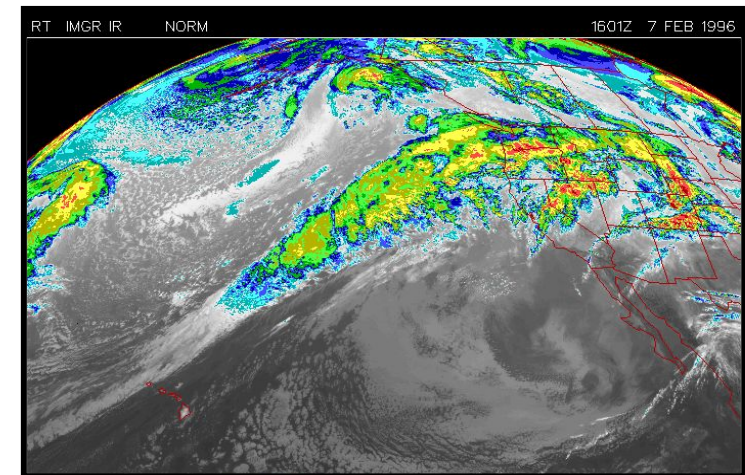
## Seasonality:

- Flood season is typically mid-October through mid-March
- Storage and conservation season is late February through October



## Flood Characteristics:

- Typically of short duration (1-3 days of rain)
- Caused exclusively by atmospheric rivers
  - Winter snowmelt can contribute to flooding, but cannot cause a flood
- High forecast uncertainty of timing, location, and intensity





# Spring refill

- Eagle Gorge Reservoir relies on spring **rains** and the previous winter's **snowpack** for refill in the **spring**
  - *We don't need both...* if we have either normal spring rains or normal winter snowpack, we can refill the reservoir
  - Usually extends from late February through late May/early June
  - Target capture is 50,000 acre-feet
  - In a typical year, only need to capture about 20% of spring runoff



Seattle PI



Seattle Times

# FIRO Benefits



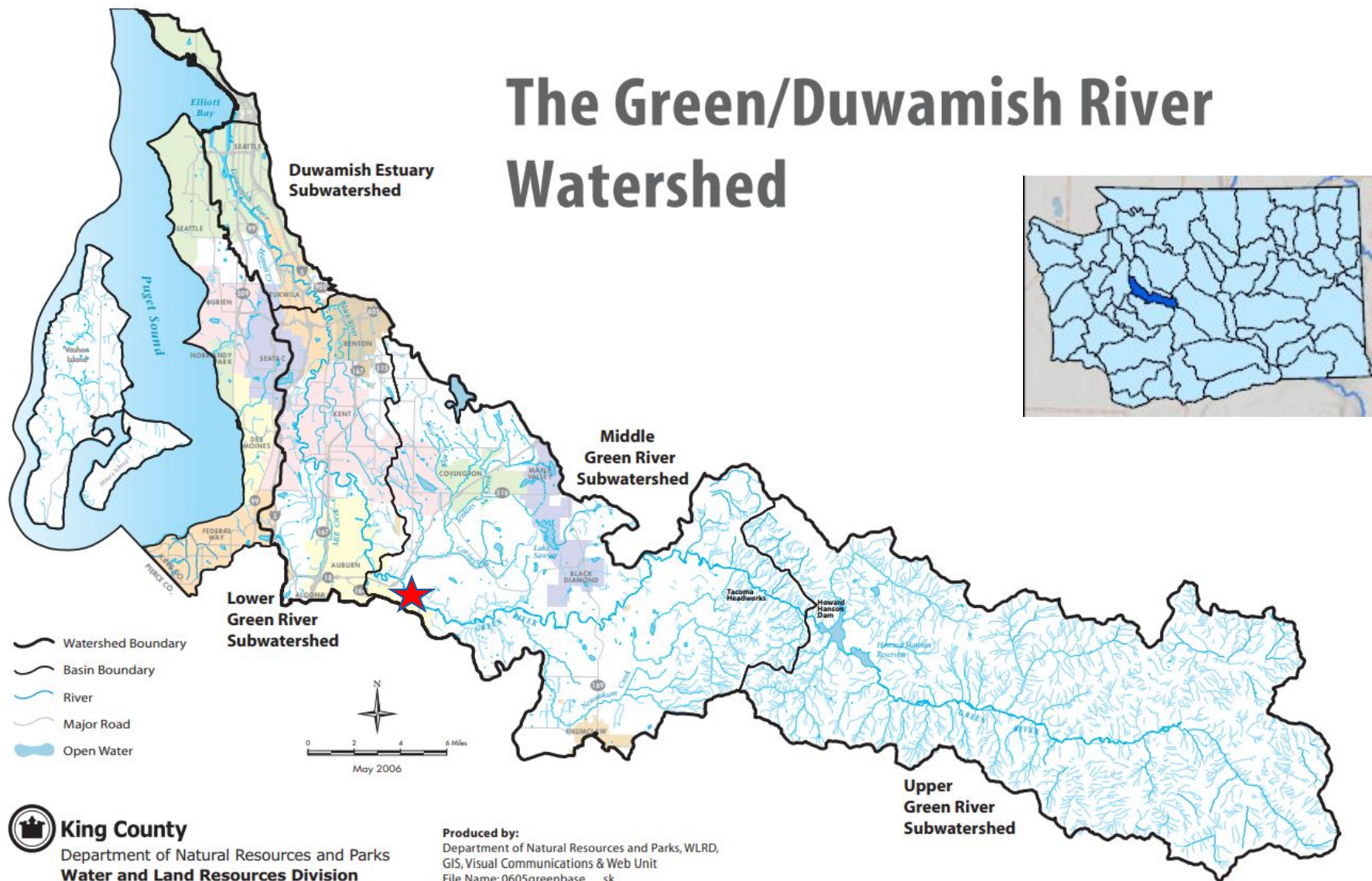
- Fisheries

- Water Supply





# The Green/Duwamish River Watershed



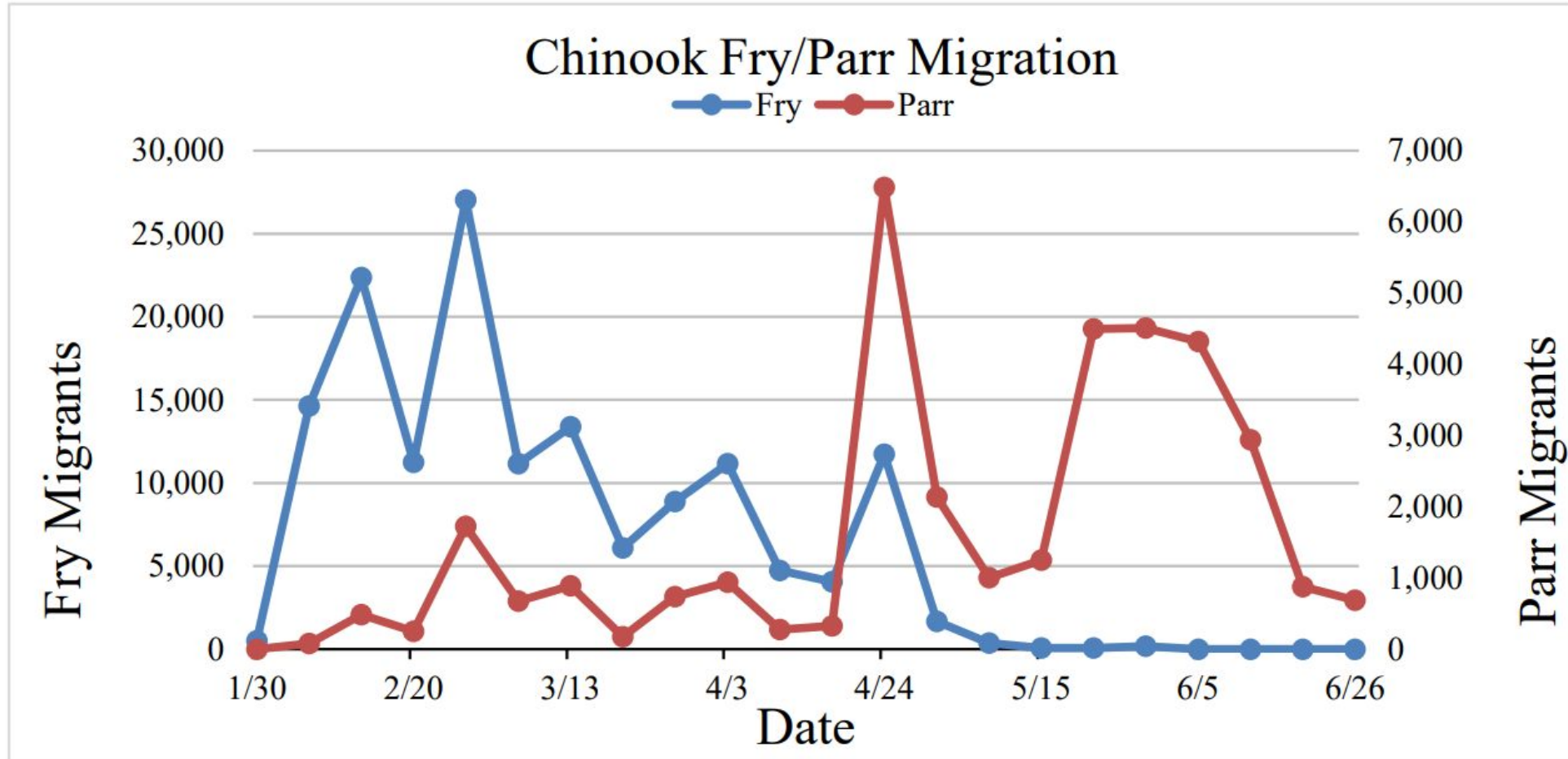
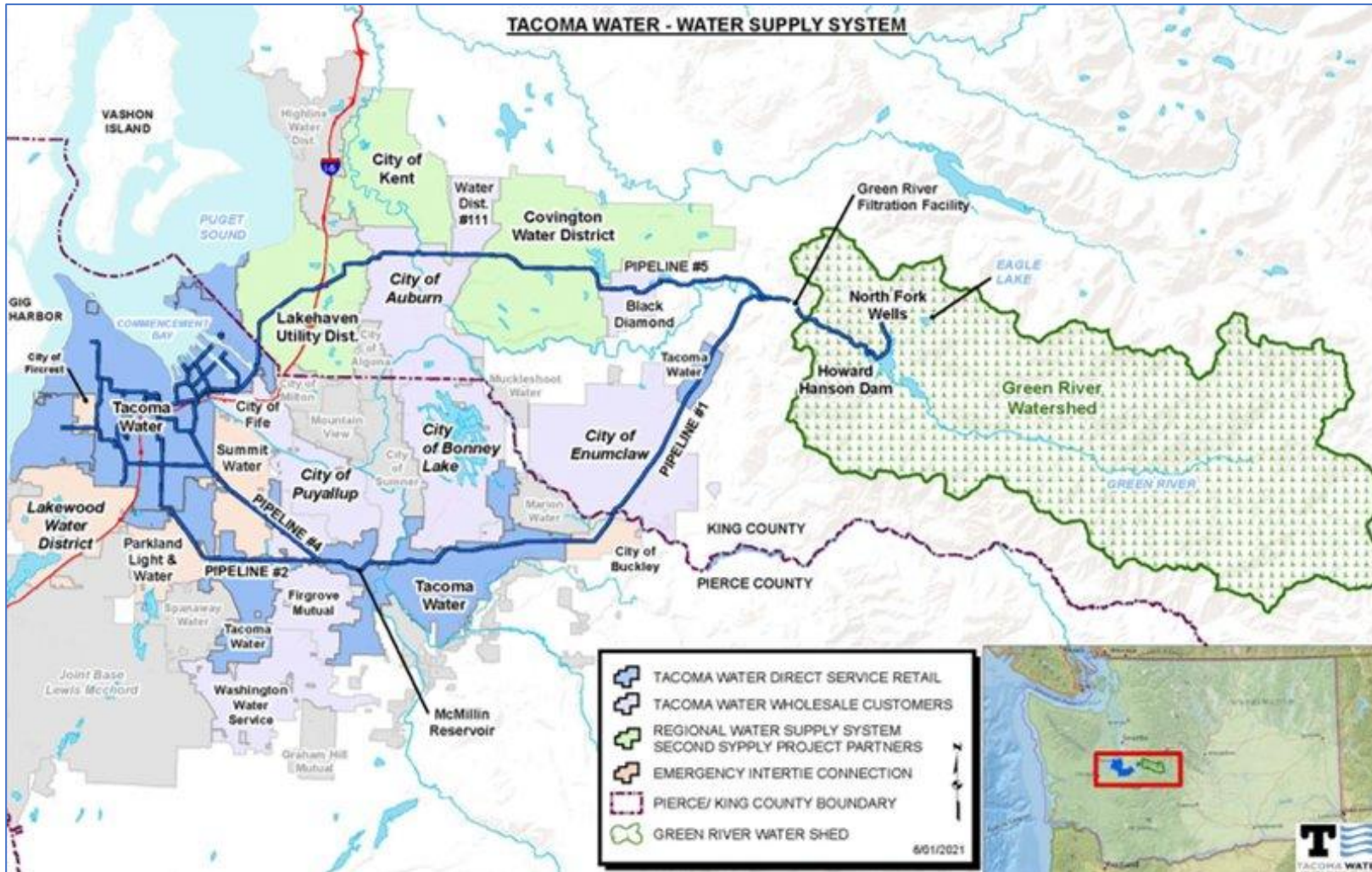


Figure 3. Weekly migration of natural-origin subyearling Chinook migrants at the Green River screw trap in 2021. Subyearling migrants are partitioned into two freshwater rearing strategies fry ( $\leq 45$  mm FL) and parr ( $> 45$  mm FL) migrants.



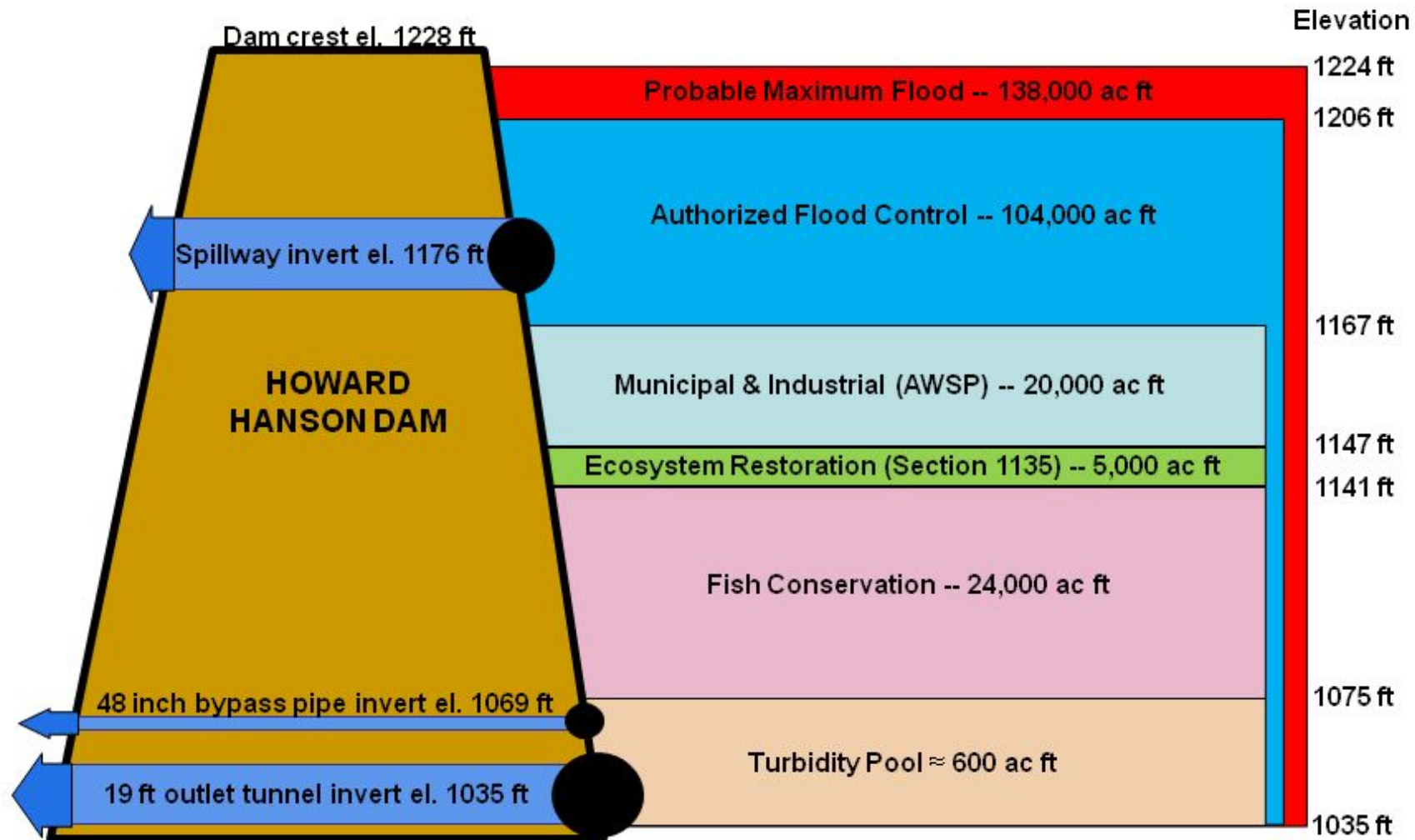
# Tacoma Water System Overview



- Green River Supply established in 1913
- 325,000+ people directly served by Tacoma Water
- 221,000 people are served in Partner service areas
- 1400+ miles of water main
- Average daily use of ~50 million gallons per day (MGD) (~60 MGD with Partners included)
- Summer Peak demand of ~ 80-90 MGD (100 MGD with Partners included) (~120MGD in 2021 Heat Wave)
- 95% Green River, 5% groundwater wells

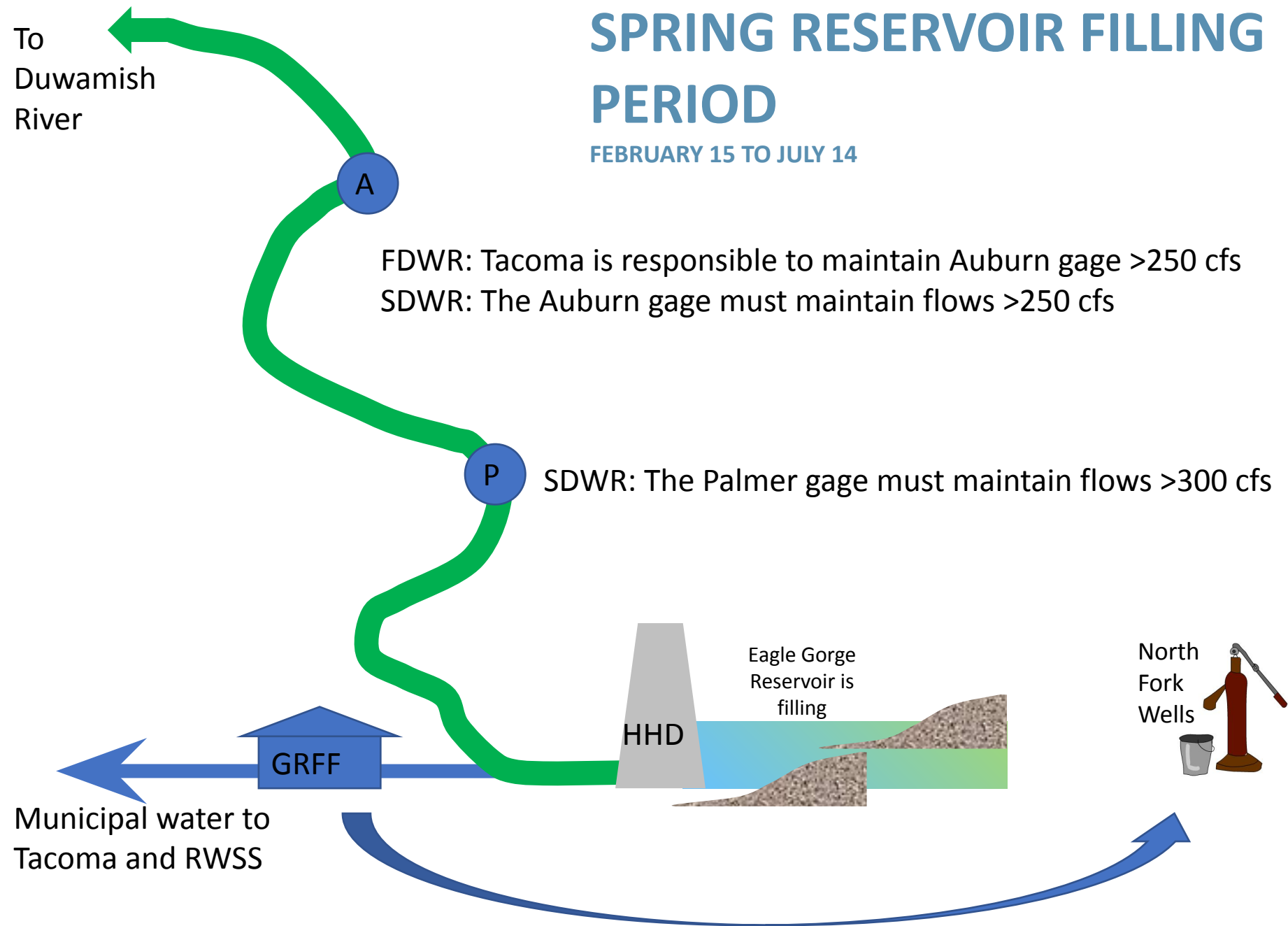


# Spring Water Storage And Allocation



# SPRING RESERVOIR FILLING PERIOD

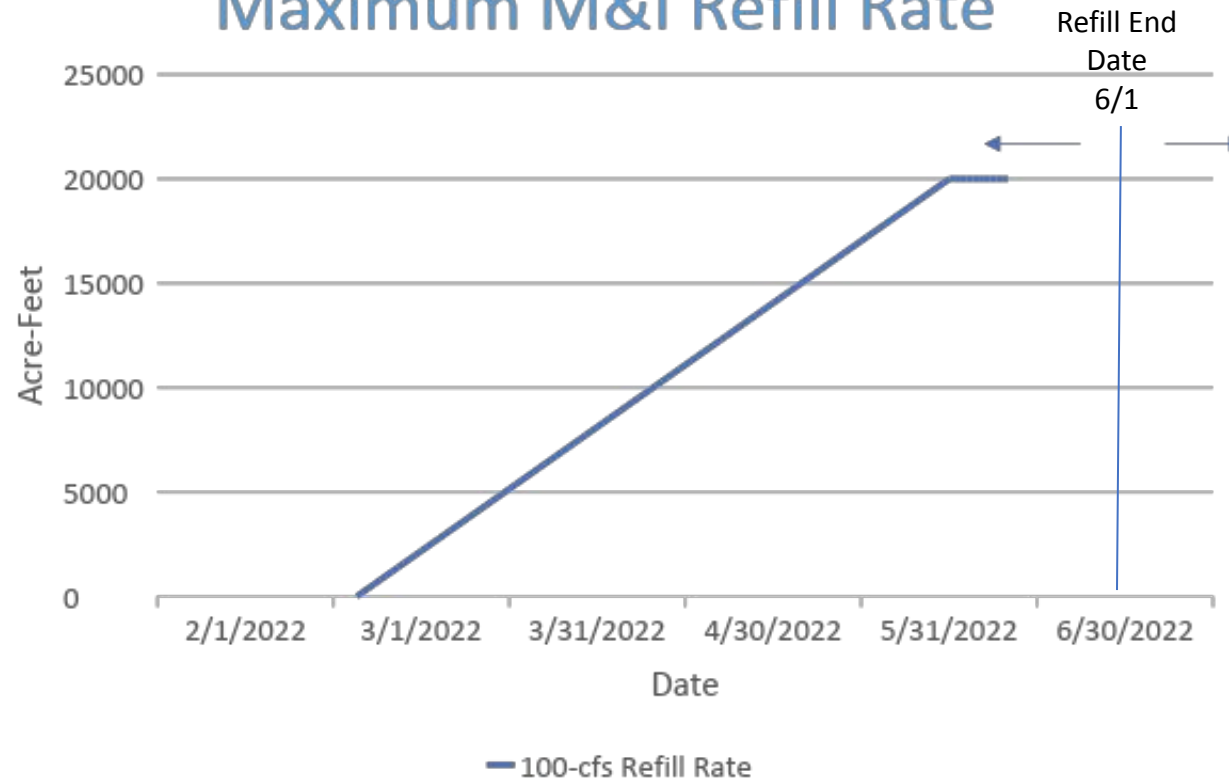
FEBRUARY 15 TO JULY 14



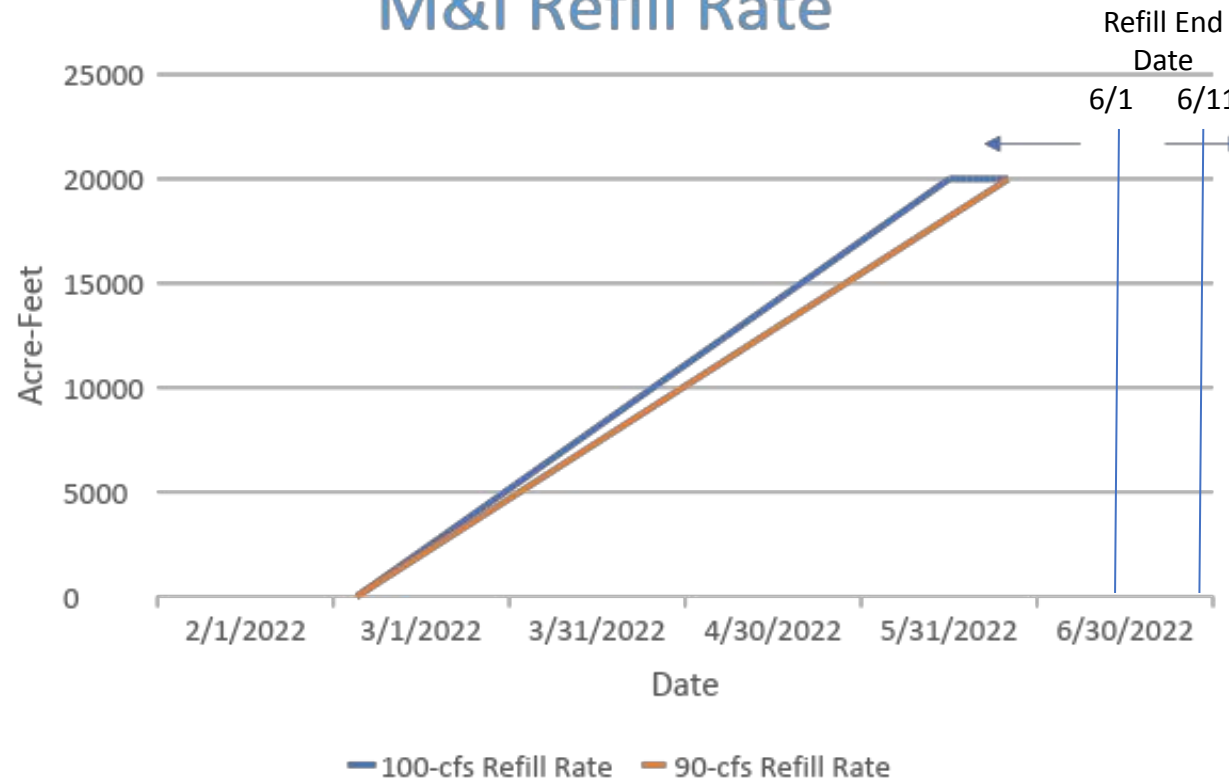
FDWR = First Diversion Water Right; SDWR = Second Diversion Water Right; cfs = cubic feet per second



## Maximum M&I Refill Rate



## M&I Refill Rate





# M&I Refill Performance

