



Water Supply and Demand Assessment Program

Manashi Paul¹, Aakash Prashar¹, Jacob Walker¹, Rehenuma Lazin¹,
Kyle Cappotto¹, Peter Houpt², Marshall Knox², Francisco Corella³, Payman Alemi⁴, Mohammad Sohrabi⁴,
Daron Pedroja⁵, Philip Dutton⁶

¹Water Resource Control Engineer, ²Environmental Scientist, ³Engineering Geologist, ⁴Supervising Water Resource Control
⁵Engineer, Senior Environmental Scientist Supervisor, ⁶Senior Water Resource Engineer,

Supply and Demand Assessment Program, State Water Resources Control Board



What are Water Rights?

- ☐ **Water Rights**
 - Legal permission to use a reasonable amount of water for a beneficial purpose such as domestic use, irrigation, recreation, fish and wildlife protection, etc.
- ☐ **Most Common Types of Water Rights**
 - Riparian**
 - ✓ Only applies to natural flow, water must be used on the riparian land, no seasonal storage
 - ✓ Priority System: “Correlative Sharing”
 - Appropriative (pre-1914 or post-1914)**
 - ✓ Applies to natural & foreign flow, water can be exported, allows for seasonal storage
 - ✓ Priority System: “First in Time, First in Right”

Supply & Demand Assessment Program

- ☐ Authorized in 2022 to build upon the State Water Board’s Russian River drought response
- ☐ \$15M Modeling Contract with Paradigm Environmental, Inc.
- ☐ **Goal:** Provide data and tools to inform better planning and decision-making during times of water shortage
- ☐ **Objective:** Develop hydrologic models and tools to assess supply and demand in select watersheds throughout California
- ☐ Intend to develop accessible, open-source tools (including supply models, demand datasets, and water allocation tools) for additional watersheds to support local and Board efforts
- ☐ Continued work on the models and tools developed to monitor conditions in the Russian River watershed

Watershed Selection

- ☐ **Surface water demand:** Emphasized watersheds driven by surface water demand where a water rights analysis would likely be successful. The amount of surface water diverted from a waterbody highly influences the streamflow in the system. Developing tools similar to those used in the Russian River watershed (water supply modeling and demand analyses) will help inform management of limited water supplies and/or protection of species and habitats.
- ☐ **Ecological significance:** Watersheds that contained areas of salmonid habitat or other important fisheries, especially areas where water quantity concerns impact those fisheries.
- ☐ **Location:** The North Coast, San Francisco Bay and Central Coast are geographic regions of specific interest due to lack of previous investments and engagement and the presence of critical salmonid habitat and refugia. Watersheds were not required to be located in these regions and staff considered other geographic locations on a case-by-case basis.
- ☐ **Existing efforts:** Prioritized regions where staff were not already engaged in other drought or flow assessment work with modeling efforts, unless at a sub-watershed level would accelerate or compliment efforts in watershed of interest.



The map shows all the selected program watersheds and different colors indicates different stages of the progress. The light grey areas show all the evaluated watersheds.

Watershed Name	Work Plan	Demand Data QAQC	Model Development	Supply Demand Analysis
Big Creek				
Butte Creek				
Gualala River				
Napa River				
Navarro River				
Mattole River				
Pescadero Creek				
Petaluma River				
Pismo and San Luis Obispo Creeks				
Putah Creek				
Russian River				
Salmon Creek				
San Gregorio Creek				
San Lorenzo River				
Santa Maria River				
Sonoma Creek				
Tomales-Drake Bays				
Trinity River				

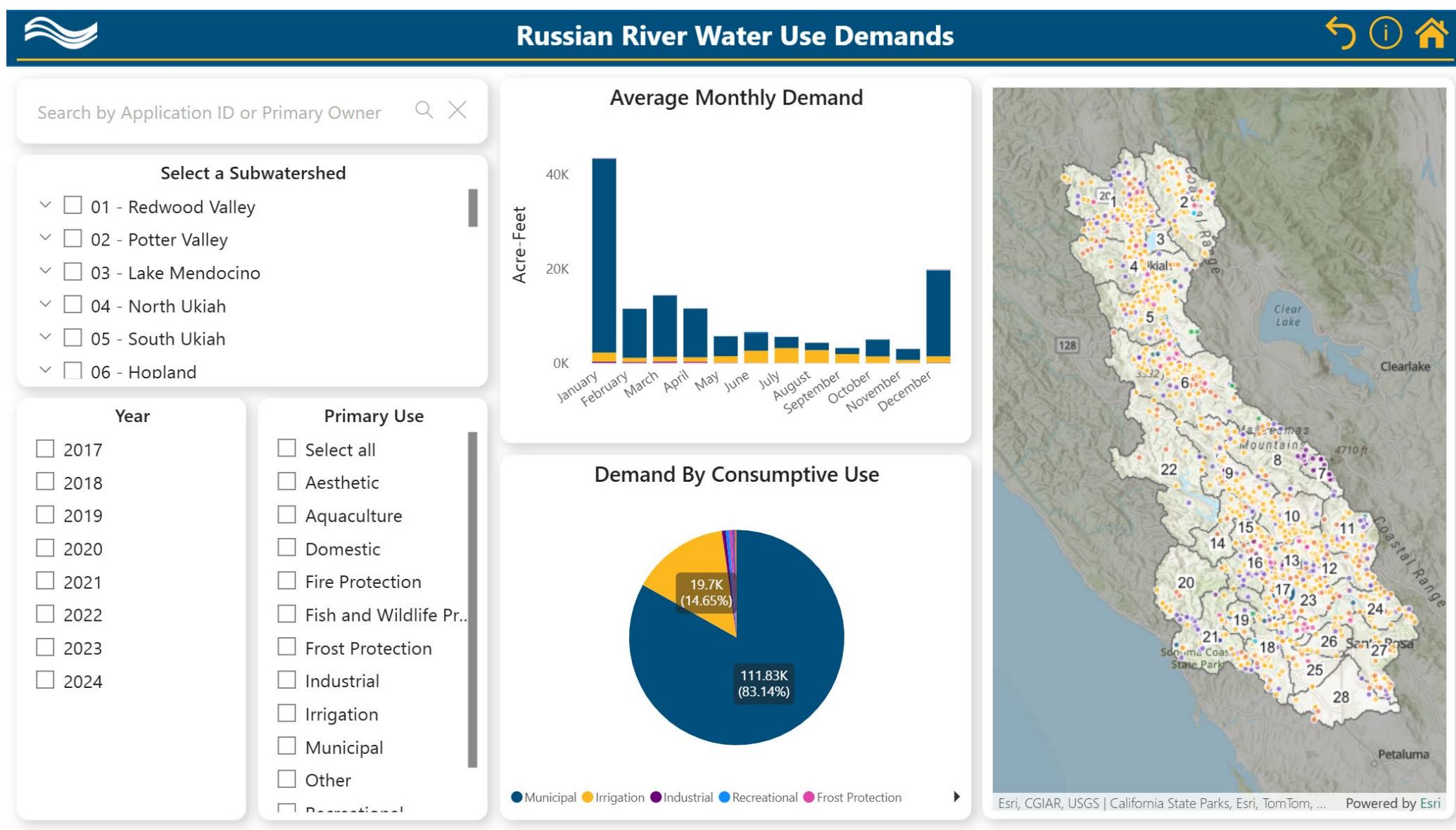
Completed **Work in Progress**

Contact Information

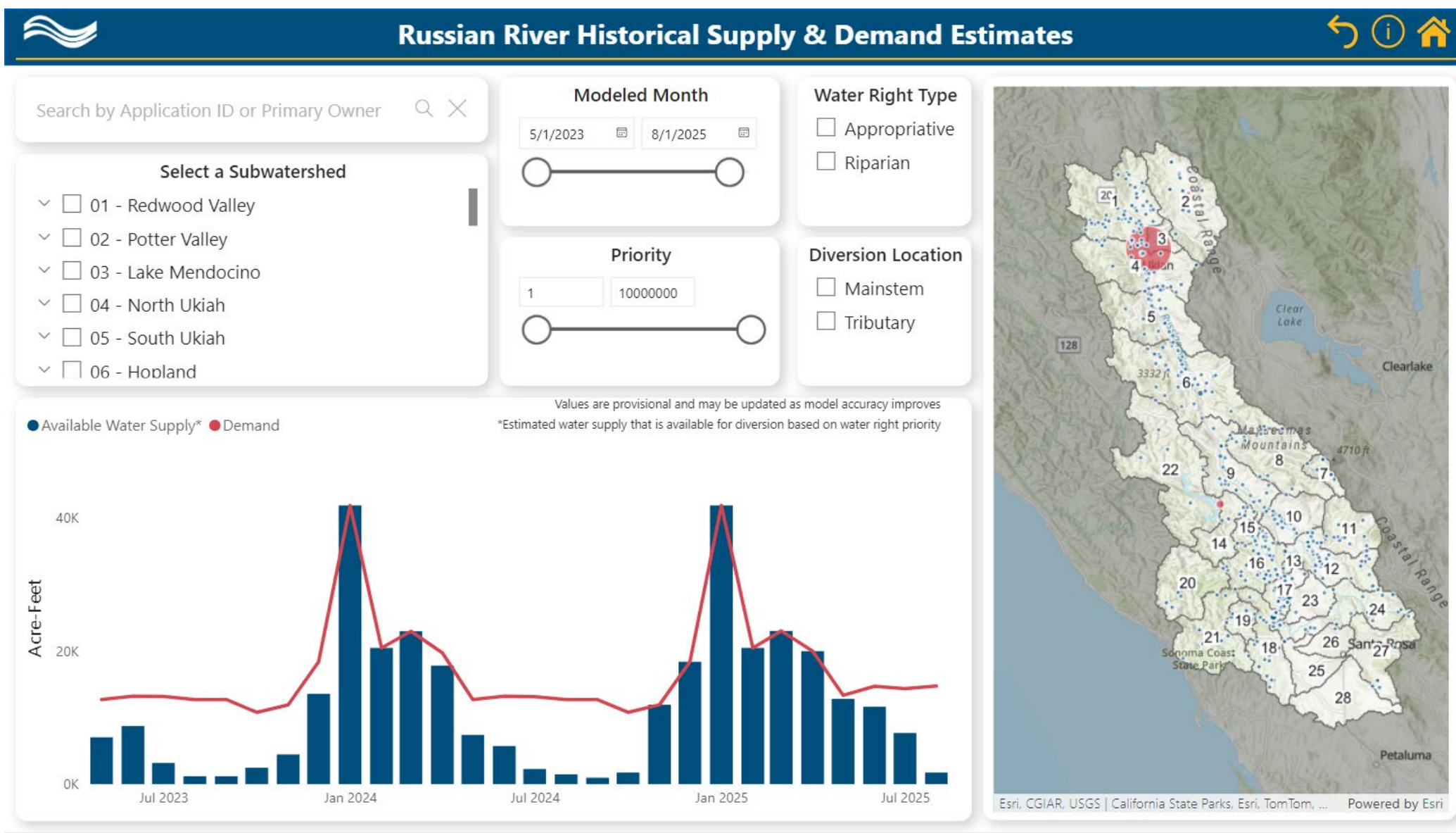
Email: DWR-SDA@waterboards.ca.gov
Website: <https://www.waterboards.ca.gov/sda/>

Russian River Drought Response

- ☐ **2021 & 2022 Emergency Regulations**
 - Board adopted emergency regulations to prevent the unreasonable use of water and to require curtailments to protect senior water rights
 - Regulations set specific exceptions to curtailment (Human Health & Safety Needs, Non-Consumptive Uses, etc.)
 - Established a water availability methodology for the Russian River watershed
- ☐ **Curtailment using Russian River specific water allocation tool**
 - Observed and forecasted climate data were used to run hydrologic models that represent the “water supply”
 - Division staff cleaned and processed the diversion data to develop a dataset that represent the “water demand”
 - Water was allocated on a month-by-month basis, based on the forecasted monthly water supply, water demand, and individual water right priority date
 - Voluntary Water Sharing Program was also developed with local stakeholders as an alternative to curtailment



Staff developed a Data Visualization dashboard for demand data in the Russian River watershed



Staff developed a Data Visualization dashboard publishing updated monthly water availability in the Russian River watershed

Next Steps

- ☐ **Data Gathering Stage**
- ☐ Staff intend to use the final model to evaluate scenarios:
 - Current hydrologic conditions
 - Water allocations
 - Changes in demand
 - Impact of extreme events.
- ☐ Continuing collaboration with local agencies and organizations