An example of the co-creation process for online tools on SacPAS

Online tools for the San Joaquin River Restoration Program

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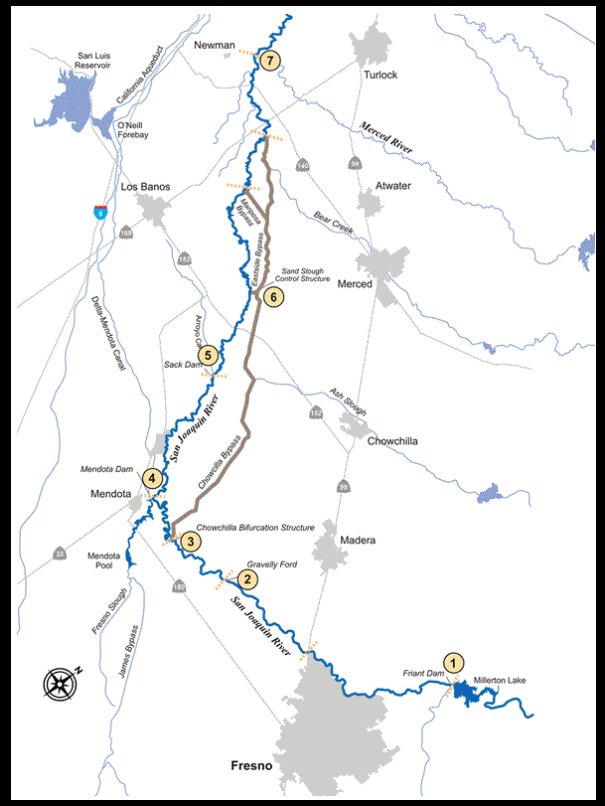
SacPAS workshop Dec. 6, 2023

Background on SJRRP

The **San Joaquin River Restoration Program (SJRRP)** is a comprehensive, long-term effort to release flows from Friant Dam to the confluence of Merced River, implement channel and structural improvements and restore a self-sustaining Chinook salmon population while reducing or avoiding adverse water supply impacts from Restoration Flows.



https://www.restoresjr.net/

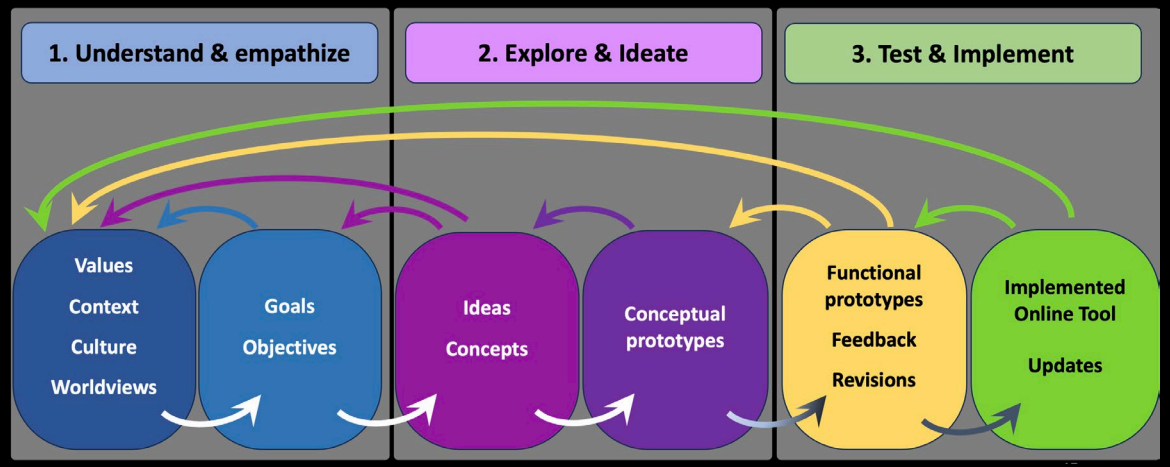
San Joaquin River Restoration Settlement

- The San Joaquin River Restoration Program is the direct result of the San Joaquin River Restoration Settlement reached in September 2006 by the U.S. Departments of the Interior and Commerce, the Natural Resources Defense Council (NRDC), and the Friant Water Users Authority (FWUA). The Settlement, which followed an 18-year lawsuit, received Federal court approval in October 2006.
- Federal legislation, the San Joaquin River Restoration Settlement Act, was passed in March 2009 authorizing Federal agencies to implement the Settlement.

Two Settlement Goals

- **Restoration:**
  To restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- **Water Management:**
  To reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

Design Thinking process of co-creating a SacPAS tool



- Initial meeting:
  - SacPAS to hear: What's needed
  - SJRRP to hear: What's possible
- SacPAS aims to meet needs of users
  - Data automation
  - Online tools
  - Schedule of development of tools
- In this presentation, we'll share the design thinking process thus far in tools for SJRRP…

Initial meeting with SacPAS

- Met December 2022
- Online Tools related to D-1641?
- Data and how to access?
  - Data sheet via email
  - Data from pdfs
  - Static url
- Can SacPAS handle the complex spreadsheets?

Follow-up meetings in July 2023 - present:

Request for Two Team Pages

- **Team Page #1: River Restoration Flows**
  - Identifies location and amount of environmental flows, Friant Dam – Delta
    - Restoration Year Flow Volumes (by month and year)
    - Restoration Year Flows (rates by day)
  - Volumes organized around Restoration Year (Mar-Feb); Flows organized around Water Year (Oct-Sep)
  - Data derived from SJRRP Operations spreadsheet

Currently focusing on co-creating Team Page #1

- **Team Page #2: Delta Water Quality (WQ)**
  - Identifies D-1641 compliance and trends;
    WQ objectives for:
    - Municipal & Industrial beneficial use
    - Agricultural beneficial use
    - Fish and Wildlife beneficial use
    - Salinity (X2)
  - Organized around Water Year and seasonal compliance
  - Data available on CDEC, CVO reports and DWR Delta operations summary

Request included prototype & context

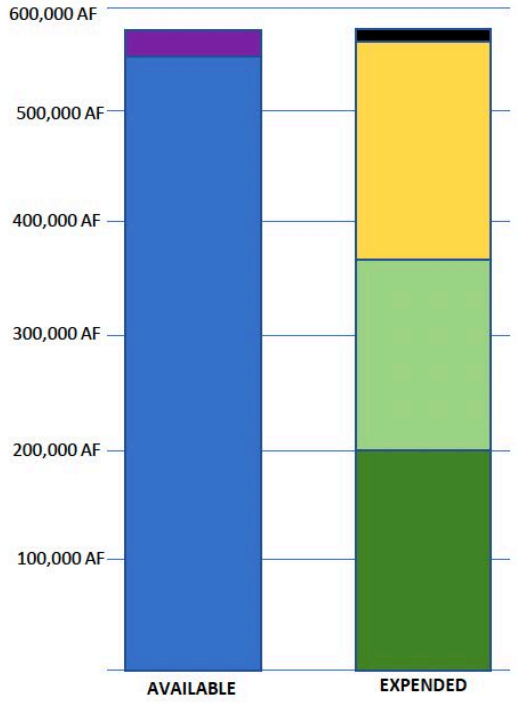
SJRRP Restoration Year Flow Volumes

Restoration Year: Pull down list

Allocation Inventory

Year

Water Year Type:	Text
Restoration Allocation:	Volume (AF)
Allocation Date:	MM/DD/YY
Acquired water added to Allocation:	Volume (AF)
Buffer Flows added to Allocation:	Volume (AF)
Unreleased Restoration Flows removed from Allocation:	Volume (AF)
Restoration Flows released from Friant Dam passing Gravelly Ford:	Volume (AF)
As of:	MM/DD/YY
Restoration Flows planned to be released from Friant Dam	Volume (AF)
After:	MM/DD/YY
Expected Net Balance end of February:	Volume (AF)

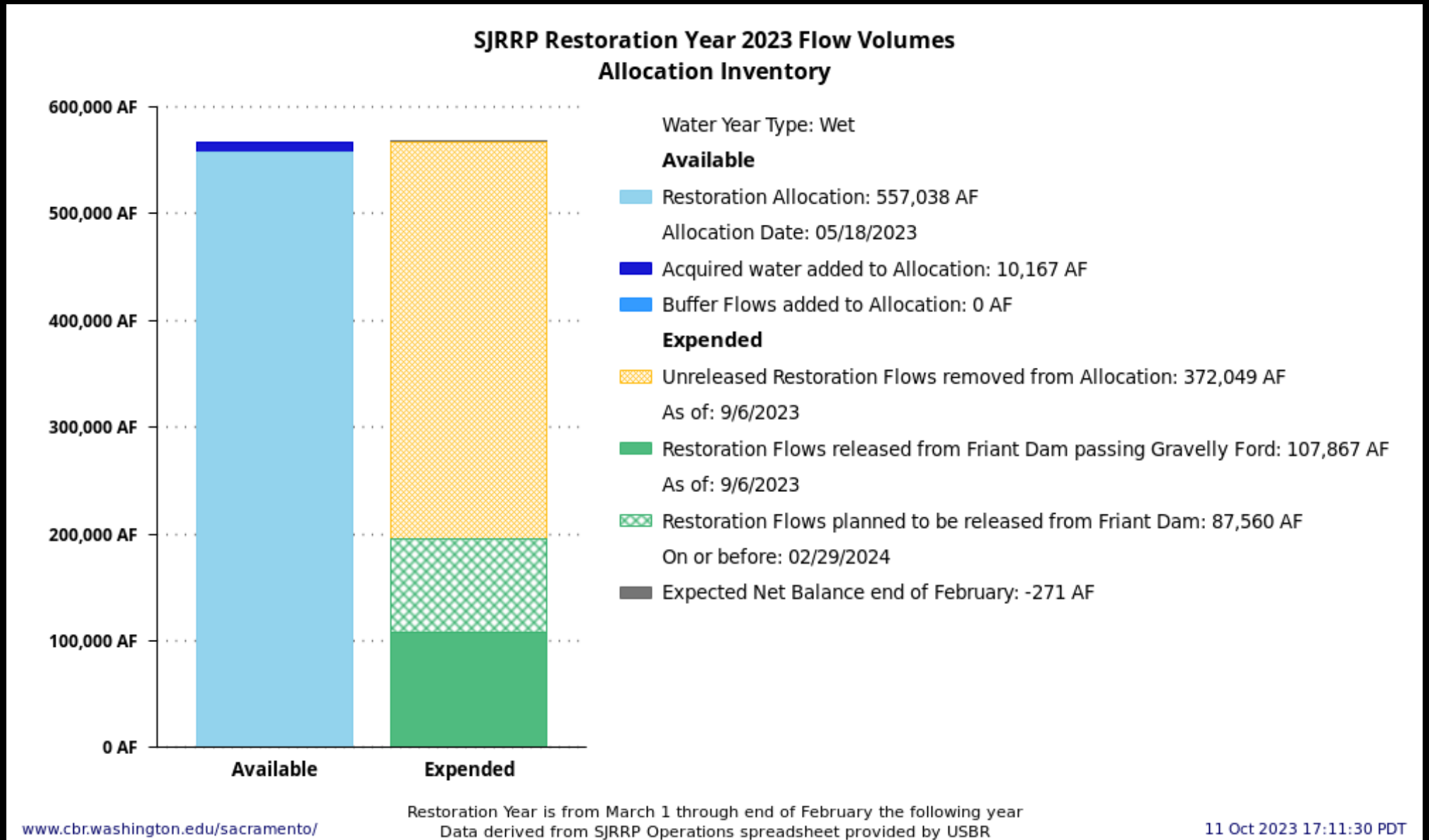


Key messages:

- Restoration Flows begin as a volume of water in Millerton Lake (behind Friant Dam). As they are released to the San Joaquin River, they become Restoration Flows
- Not all of the allocation volume can be released, with some becoming Unreleased Restoration Flows
- Reclamation can acquire more water if it needs, or draw upon an additional block of water called “Buffer Flows”
- As the year goes one, more and more volume is released as Restoration Flows, and less and less as planned Restoration Flows.
- Allocation ranges from 0 AF to 557,000 AF depending on the water year type and runoff.

Data Source: SJRRP Operations Spreadsheet/SacPAS Volumes worksheet/T24:T35

SacPAS recreates prototype with data

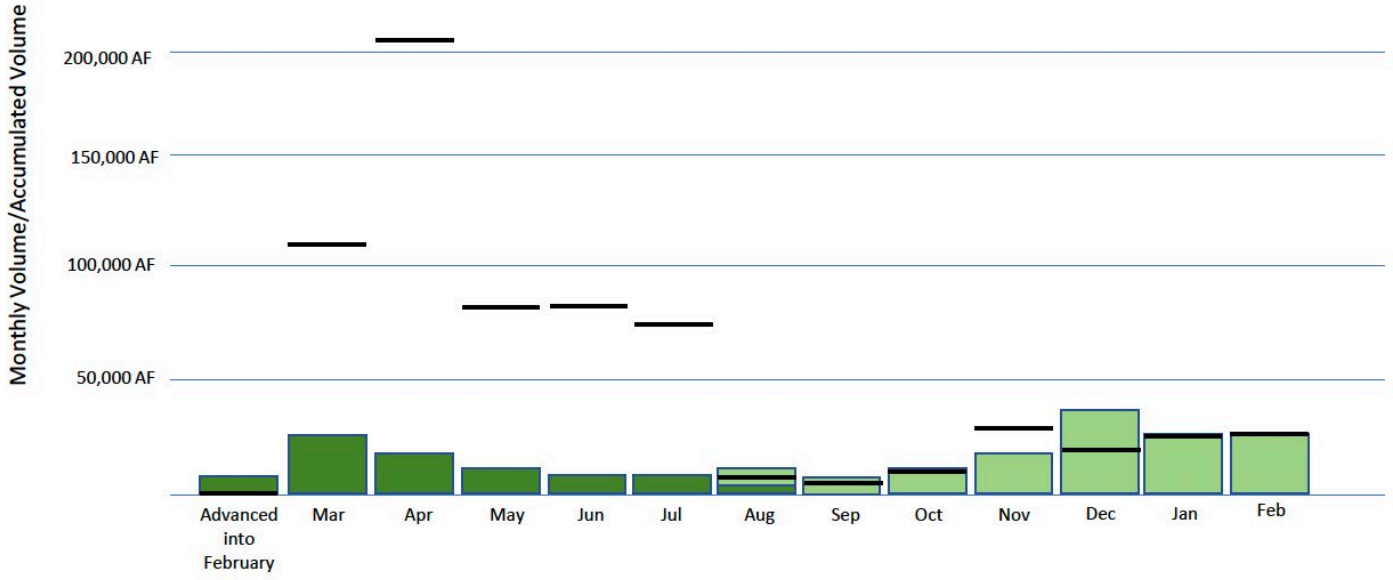


Another example of prototype in request

SJRRP Restoration Year Flow Volumes

Restoration Year: Pull down list

Restoration Flow volume released to San Joaquin River



Display: Accumulated or Monthly

Station: Pull down list

- [X] Restoration Flows Released to Date
- [X] Planned Restoration Flows
- [X] Settlement Exhibit B Restoration Flows

Restoration Flows shown include Buffer Flows and Acquired Water

- [ ] Other Flows (Only available at Friant Dam and Gravelly Ford)

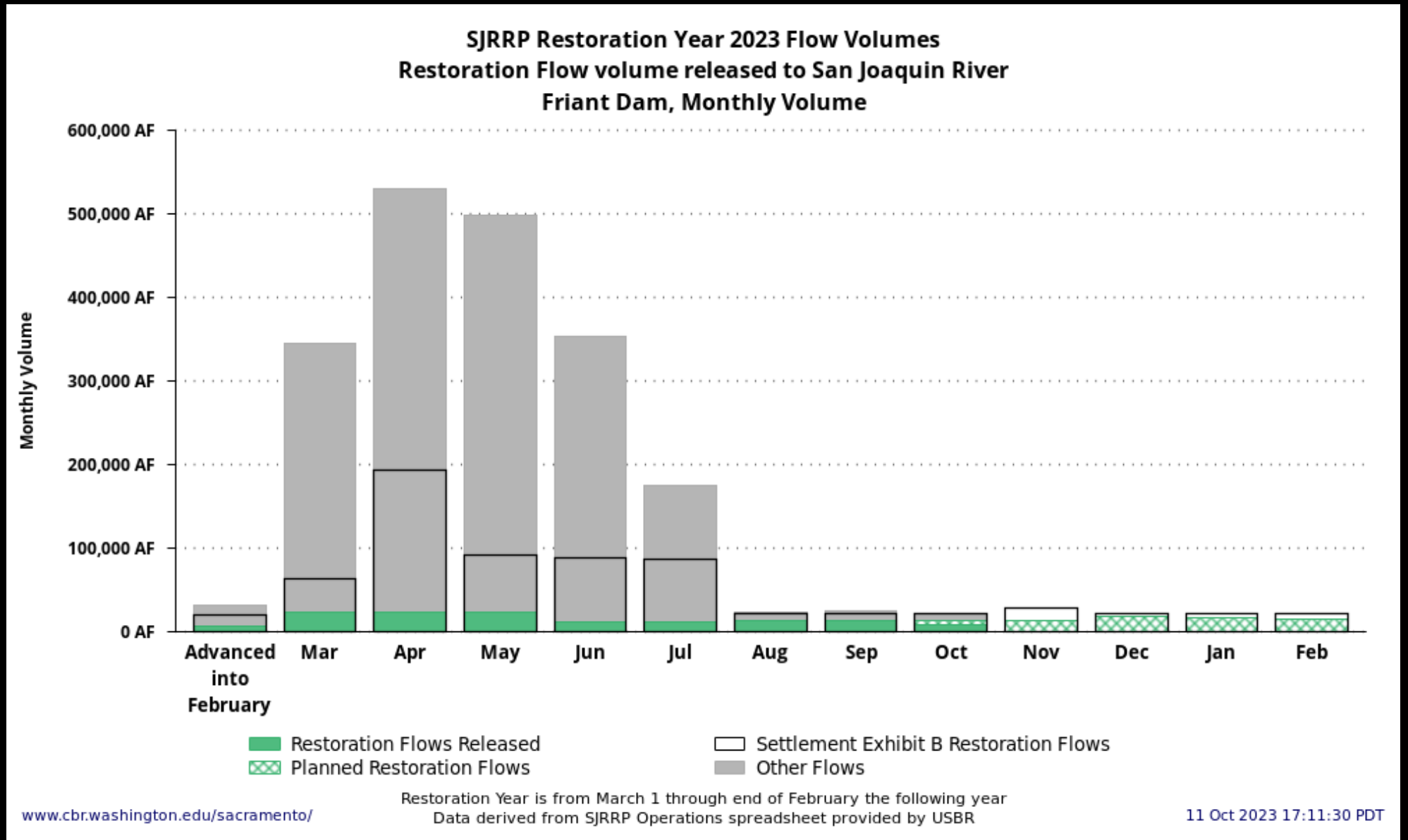
Key messages:

- Visualization of how the allocation is spent across the Restoration Year.
- Shows comparison with Exhibit B of the Settlement, which has ambitious release targets
- Differentiate planned and actual Restoration Flows, which will update as the year goes
- Depicts discrete months or cumulative
- Planned Restoration Flows are only available at Gravelly Ford, Below Sack Dam, and Vernalis stations

Option for Table vs Graph?

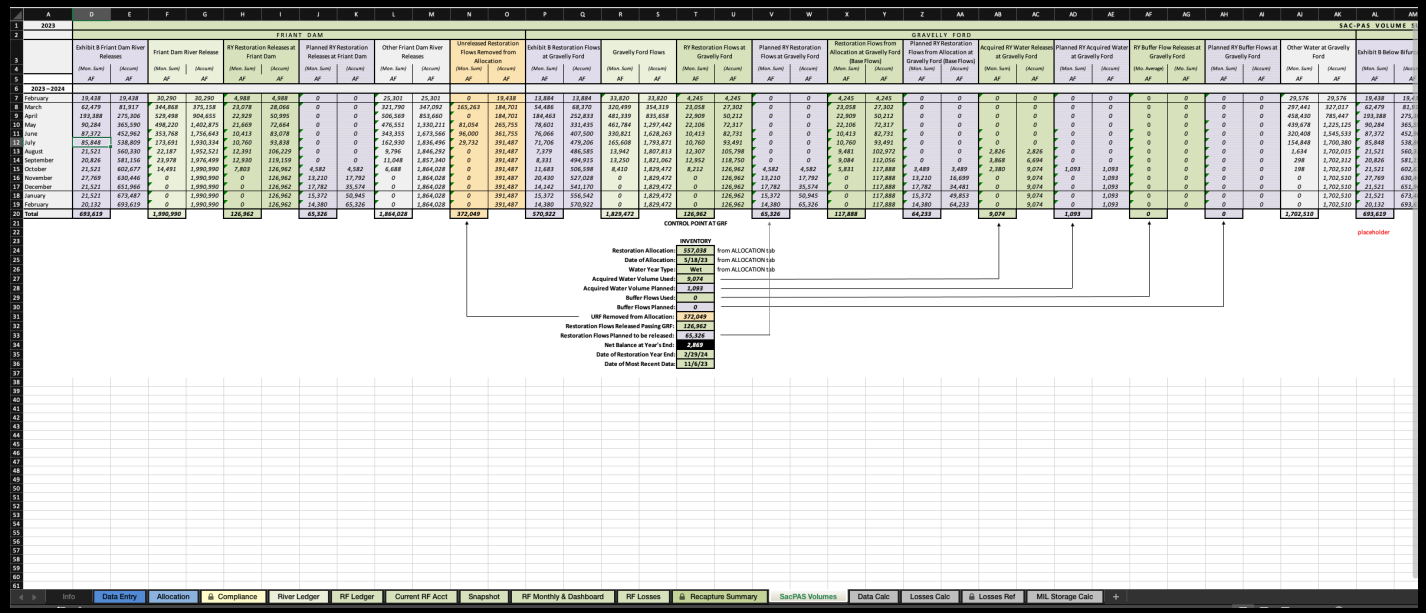
Data Source: SJRRP Operations Spreadsheet/SacPAS Volumes worksheet/Friant (H7:I19, J7:K19, L7:M19, P7:Q19), Gravelly Ford…

SacPAS recreates prototype with data

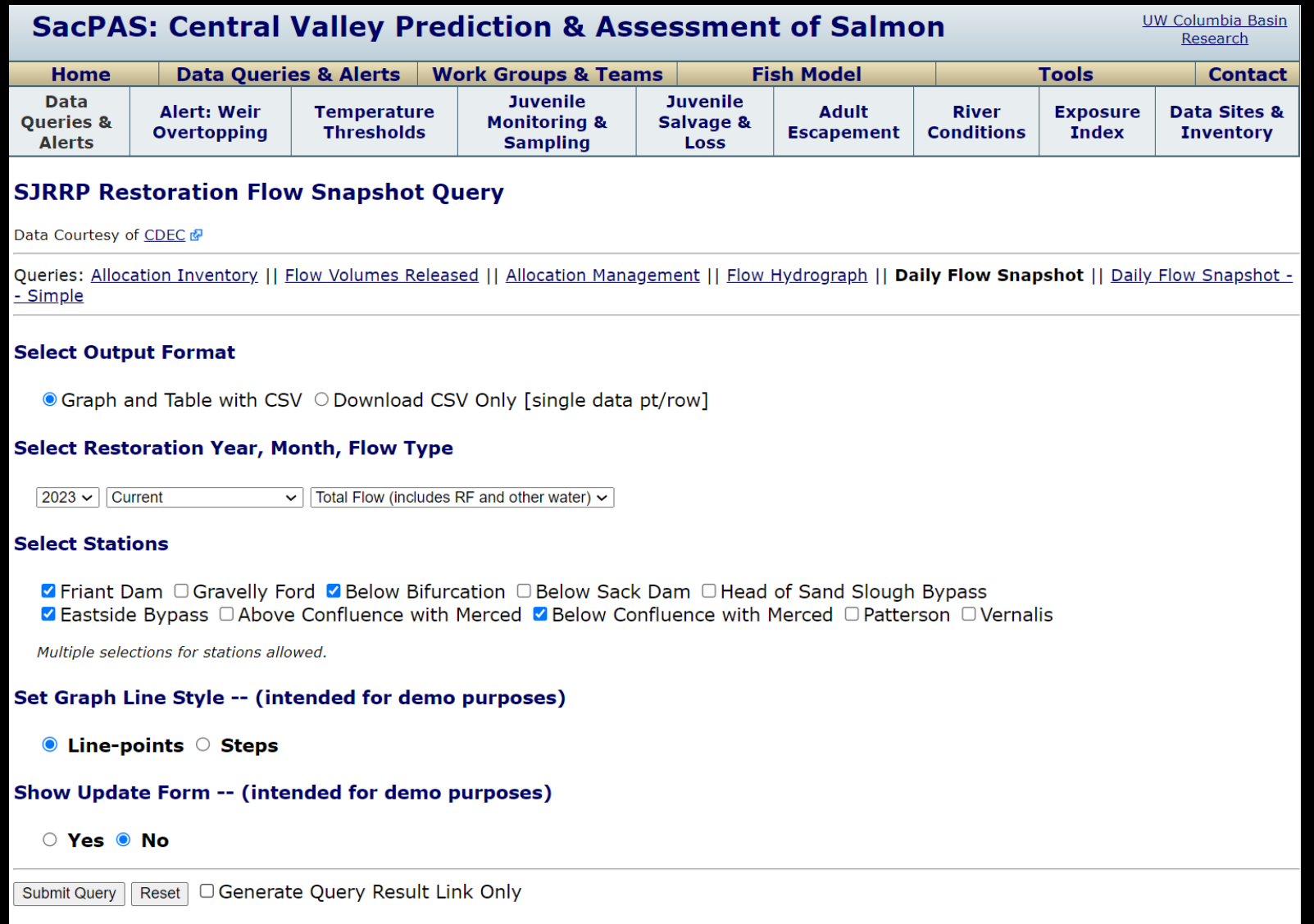


Data from spreadsheet downloaded from SJRRP website

- **Operations spreadsheet**
  - SacPAS worksheet, introduced into a process that already exists



Initial prototyping on the web – Query interface and sample outputs



SacPAS: Central Valley Prediction & Assessment of Salmon

UW Columbia Basin Research

Home | Data Queries & Alerts | Work Groups & Teams | Fish Model | Tools | Contact

Data Queries & Alerts | Alert: Weir Overtopping | Temperature Thresholds | Juvenile Monitoring & Sampling | Juvenile Salvage & Loss | Adult Escapement | River Conditions | Exposure Index | Data Sites & Inventory

SJRRP Restoration Flow Snapshot Query

Data Courtesy of CDEC

Queries: Allocation Inventory || Flow Volumes Released || Allocation Management || Flow Hydrograph || **Daily Flow Snapshot** || Daily Flow Snapshot -- Simple

Select Output Format

◉ Graph and Table with CSV ○ Download CSV Only [single data pt/row]

Select Restoration Year, Month, Flow Type

2023 | Current | Total Flow (includes RF and other water)

Select Stations

☑ Friant Dam ☐ Gravelly Ford ☑ Below Bifurcation ☐ Below Sack Dam ☐ Head of Sand Slough Bypass
☑ Eastside Bypass ☐ Above Confluence with Merced ☑ Below Confluence with Merced ☐ Patterson ☐ Vernalis

Multiple selections for stations allowed.

Set Graph Line Style -- (intended for demo purposes)

◉ **Line-points** ○ **Steps**

Show Update Form -- (intended for demo purposes)

○ **Yes** ◉ **No**

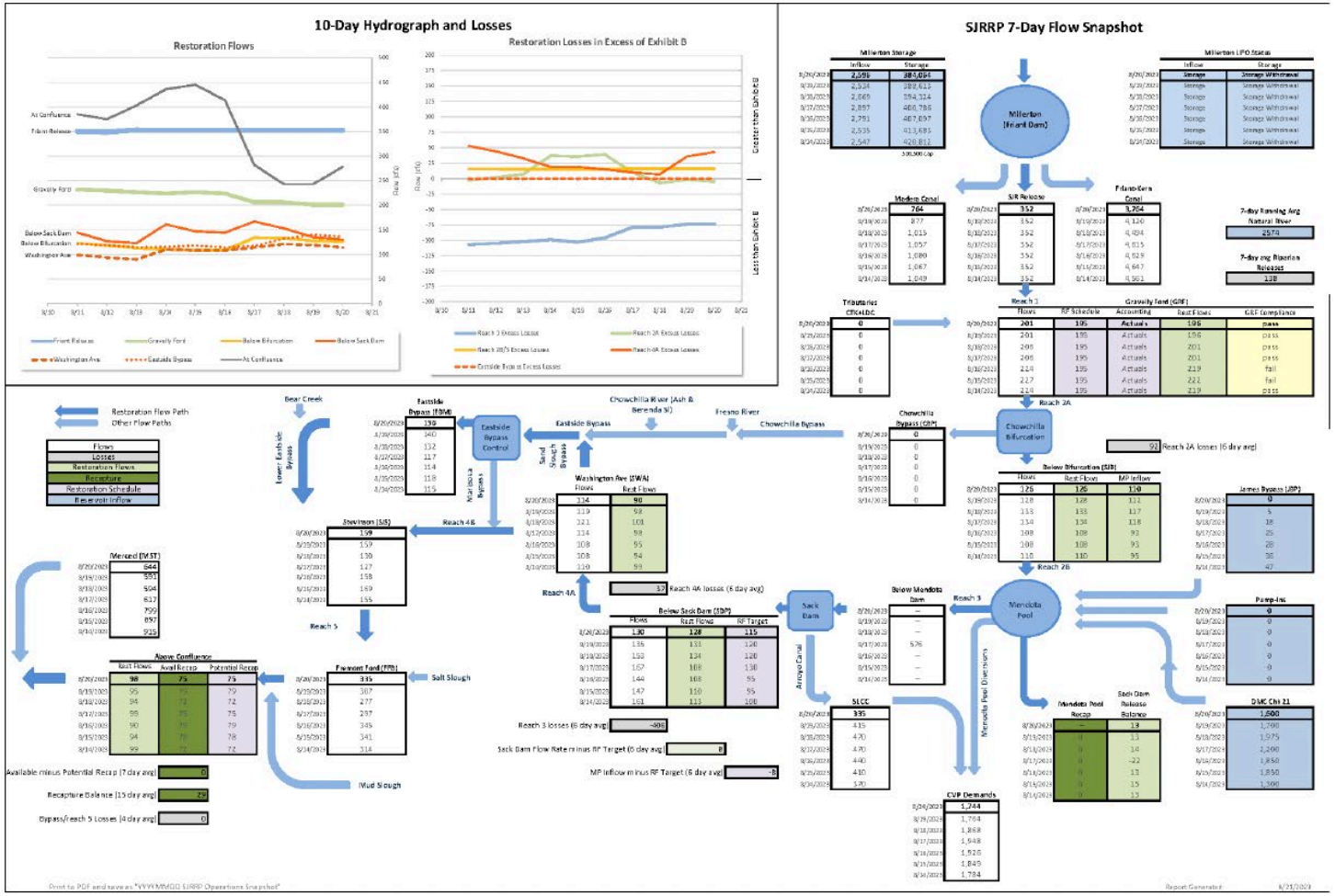
Submit Query | Reset | ☐ Generate Query Result Link Only

More products to come…

Snapshot

Key messages:

- Understand routing and magnitude of Restoration Flows.
- Potentially use a “Subway Diagram” like this to depict data and/or to call up more detailed data.

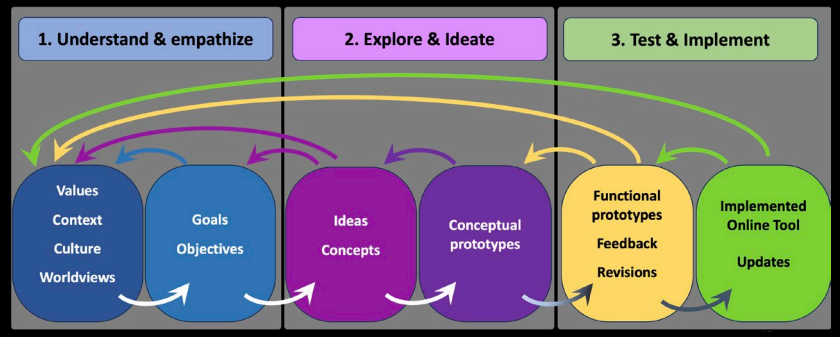


Design Thinking process of co-creating a SacPAS tool

- Initial meeting
  - Understand needs & SacPAS capabilities

- Given complexity of requests, monthly meetings to help keep the process going

- Aim to meet needs of users



- Accuracy of information
- Improved workflow for data management and automation

- Types of graphs
- Colors (vision deficiency options)
- User interface
- Interaction design

- Accessibility
- 508 compliance
- Debugging

- New ideas

Hearing from Chad and Erika about their experiences with SacPAS in this process thus far…

- SacPAS is an established source of information for Delta and fisheries management. It made much more sense to build upon SacPAS than to build a separate data product.
- The presentation of Restoration Flow data is critical to integrating SJRRP operations into Delta operations and protecting those flows.
- The SacPAS team has a good understanding of CA water while also having the expertise to artfully present the data. We think this combination is essential to this project.
- We immediately found a good synergy working with the SacPAS team