

CALIFORNIA DEPARTMENT OF WATER RESOURCES

The Sustainable Groundwater Management Act and Climate Change

Napa Valley GSP Advisory Committee, November 12, 2020



Paul Wells, North Central Region Office

Overview of Presentation

- SGMA Overview.
- Incorporating climate change data into a GSP.
- SGMA climate change tools and resources.
- How are GSAs incorporating climate change data into GSPs?



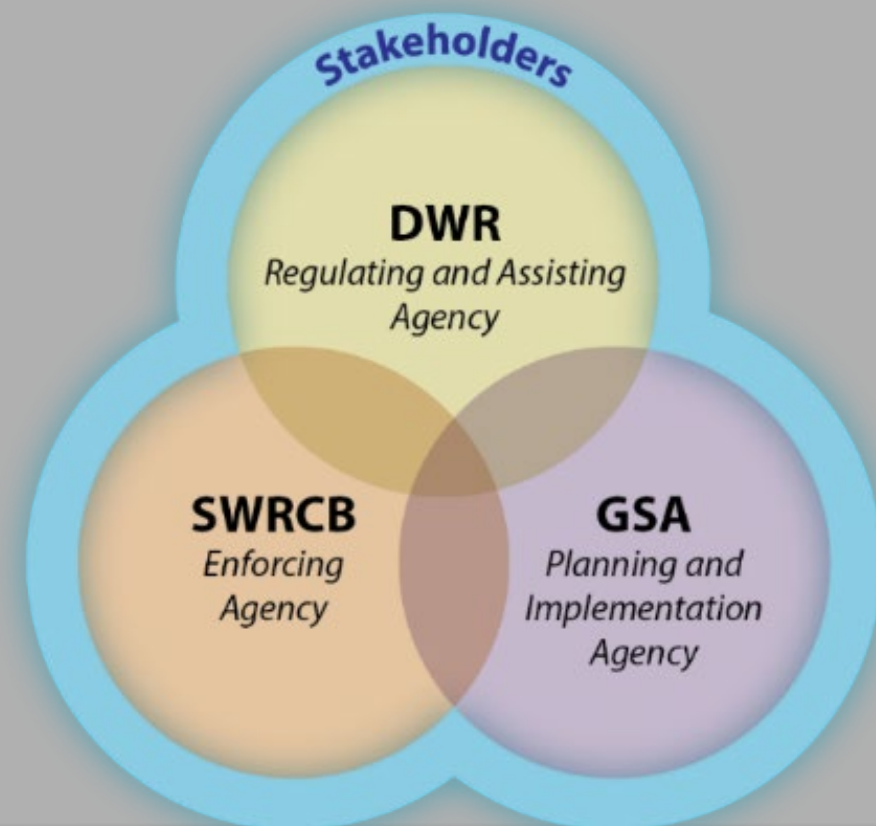
SGMA Overview

Local Control



“Groundwater management in California is best accomplished locally.”

Governor Jerry Brown, September 2014



Sustainability Indicators



Lowering
GW Levels



Reduction
of Storage



Seawater
Intrusion



Degraded
Quality

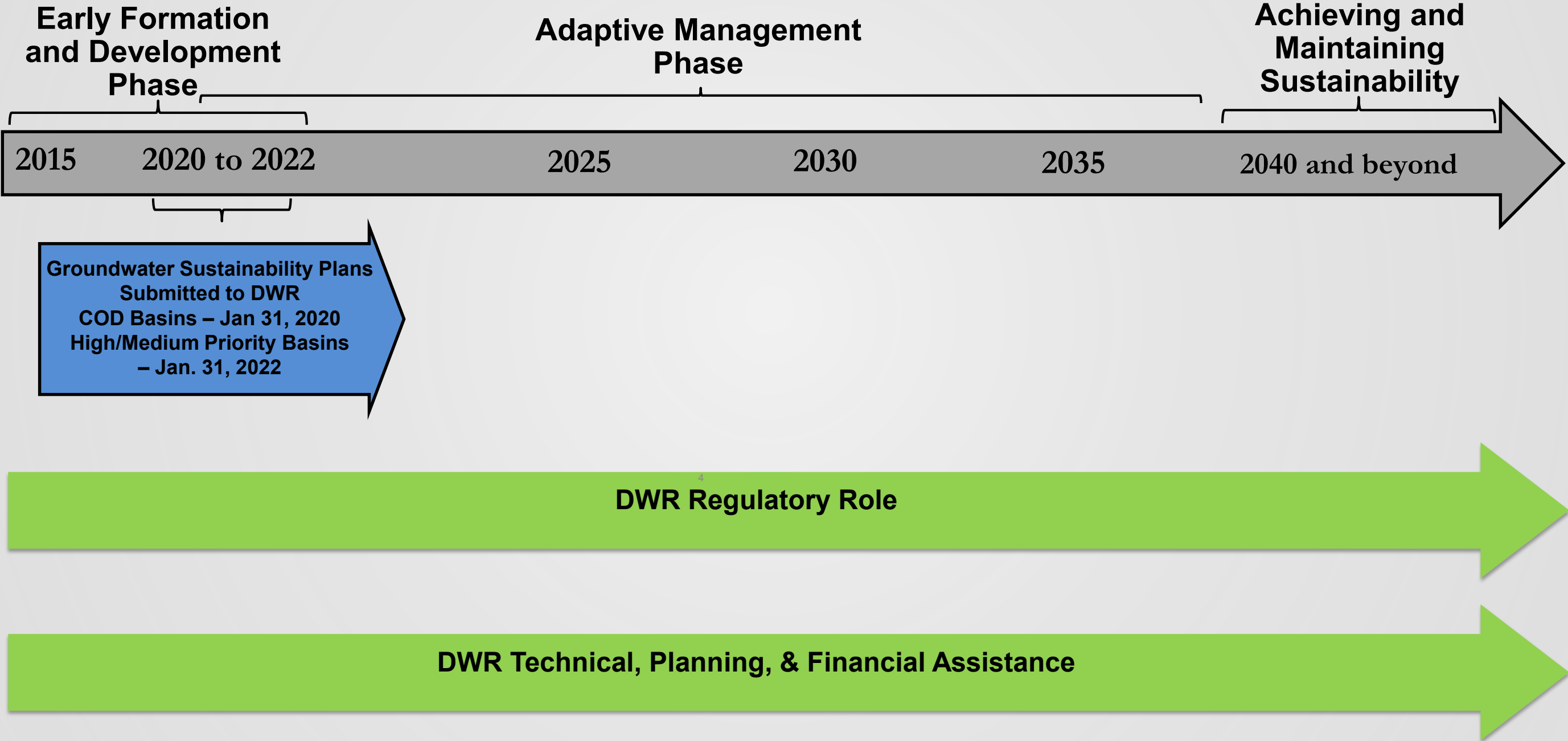


Land
Subsidence



Surface Water
Depletion

SGMA 20-Year Plan Horizon



Incorporating Climate Change into a GSP

1. Administrative Information

- General Information
- Agency Information
- Description of Plan Area
- Notice & Communication

2. Basin Setting

- Hydrogeologic Conceptual Model
- Groundwater Conditions
- Water Budget**
- Management Areas



3. **Sustainable Management Criteria**

- Sustainability Goal
- Undesirable Results
- Minimum Thresholds
- Measurable Objectives

4. Monitoring Networks

- Monitoring Network
- Representative Monitoring
- Assessment & Improvement
- Reporting Monitoring Data to the Department

5. **Projects and Management Actions**

- Projects & Management Actions



GSP Regulations – Climate Change

354.18 Water Budget

(c) (3) Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components.

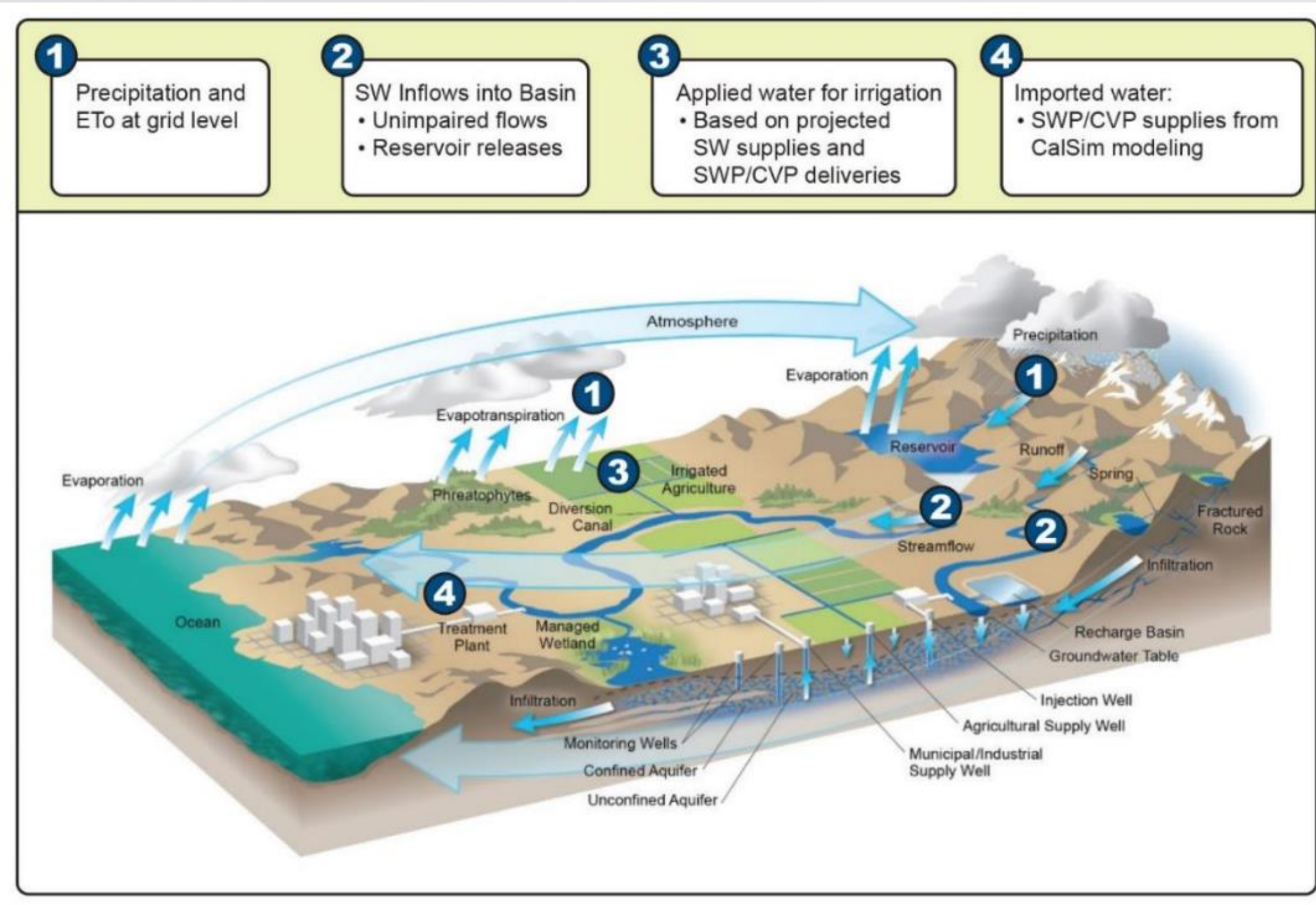
(A) Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise.

354.18 (e) Modeling

Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify and describe an equally effective method, tool, or analytical model to evaluate projected water budget conditions.



Water Budget



Historical Water Budget

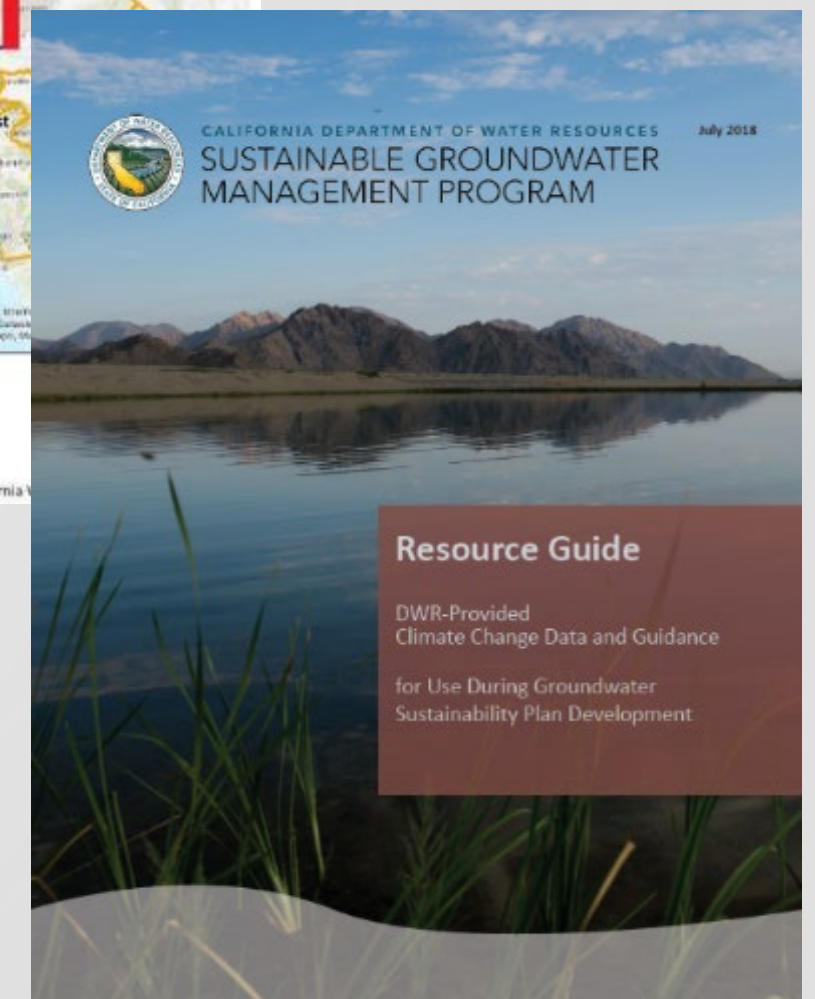
Incorporate Climate Change and Other Components

Projected Water Budget



Climate Change Resource Guide

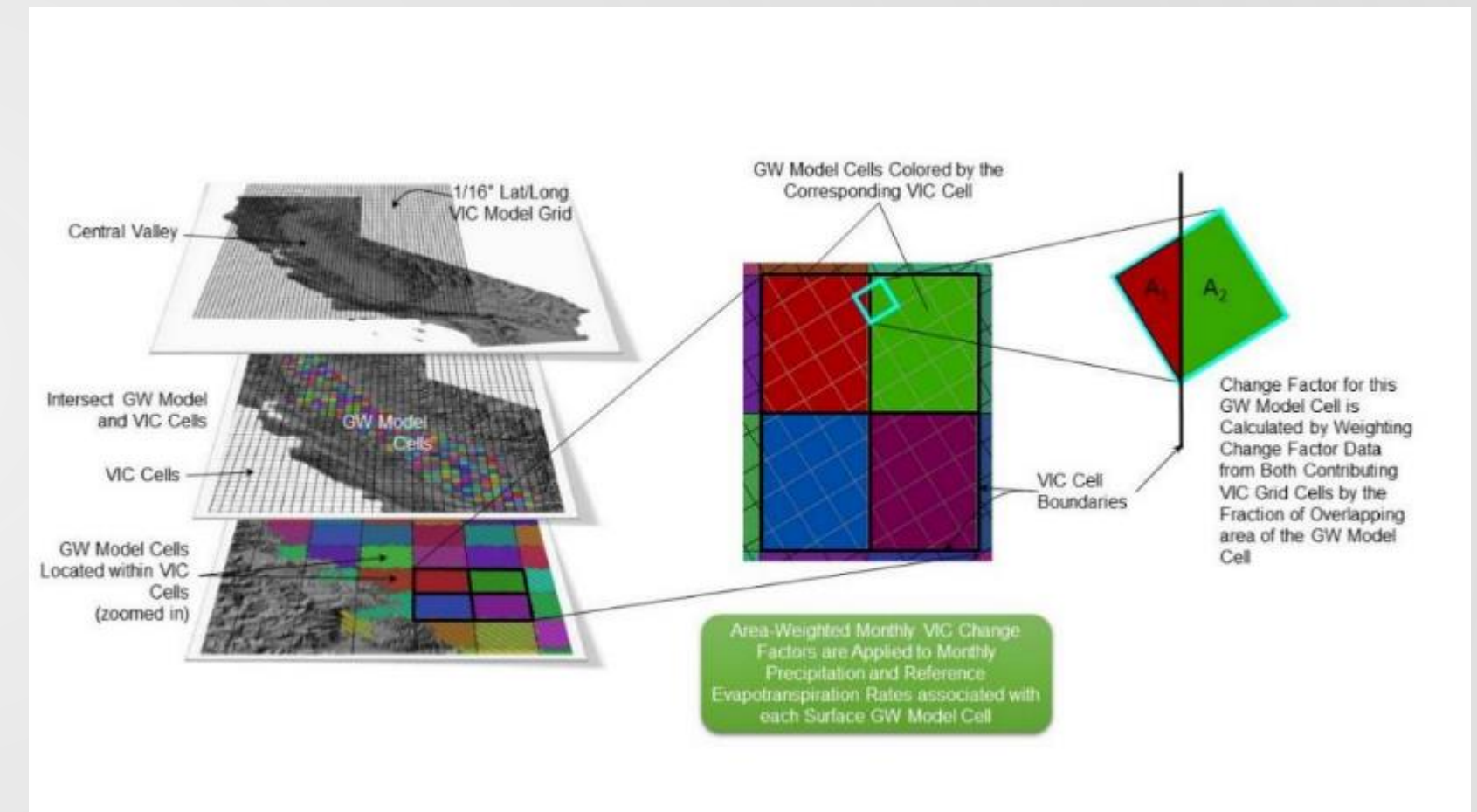
- The Resource Guide gives an overview of the climate change resources including:
 - Datasets provided by DWR.
 - Tools for working with the DWR-provided datasets.
 - Guidance for using DWR-provided data and tools in developing GSPs.
- The datasets and methods can provide technical assistance to GSAs for developing projected water budgets.



SGMA Climate Change Data and Analysis for GSP Development

The climate data source is consistent with other State programs and leverages Water Storage Investment Program developed products.

- Data related to future projected climate conditions around 2030 and 2070.
- Statewide gridded datasets of change factors for precipitation and reference evapotranspiration (6km by 6km).
- Routed streamflow change factors for watersheds.



Monitoring

- Monitoring networks must include:
 - Monitoring objectives.
 - Monitoring protocols.
 - Data reporting requirements.
- Must promote the collection of data of sufficient quantity, frequency, and distribution to characterize groundwater and related surface water conditions.
- Monitoring network must be able to evaluate changing conditions in the basin.



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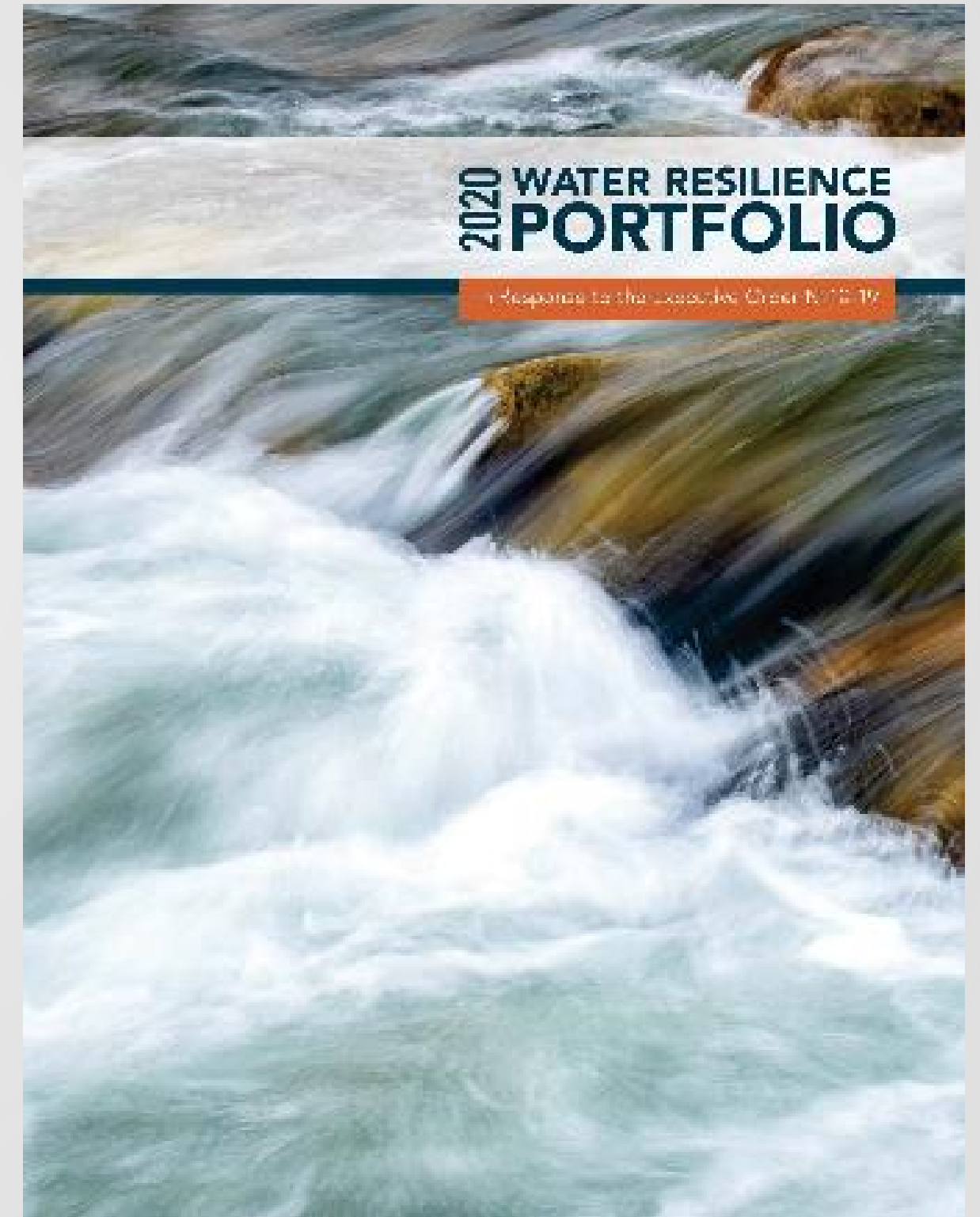
Seawater
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Water Resilience Portfolio

Climate Change Impacts

California's climate is warming and becoming even more variable, which reduces winter snowpack, intensifies drought and wildfire, and drives more intense storms that worsen flooding.



SGMA Data Viewer

This screenshot shows the SGMA Data Viewer interface with two main panels. The top panel, titled "Groundwater Levels", includes a "Data and Tools" section with checkboxes for "DWR Periodic GW Measurements", "DWR Continuous GW Measurements", and "USGS Periodic GW Measurements", along with a "Search & Download" button. Below this is a "Seasonal Reports" section with radio buttons for "Depth", "Elevation", and "Change", and dropdown menus for "Spring" and "2017". The bottom panel, titled "Land Use Datasets", features a legend for "Statewide Crop Mapping 2014" with categories: R | RICE, P | PASTURE, G | GRAIN AND HAY CROPS, T | TRUCK NURSERY AND BERRY CROPS, F | FIELD CROPS, C | CITRUS AND SUBTROPICAL, D | DECIDUOUS FRUITS AND NUTS, V | VINYARD, Y | YOUNG PERENNIAL, I | IDLE, NR | RIPARIAN VEGETATION, and U | URBAN. A "Download Layer Data" button and a "Clear All Layers" button are at the bottom left. The map in the background shows a detailed view of a region in California with various colored polygons representing land use.

This screenshot shows the "Water Budget" section of the SGMA Data Viewer. It includes a "Climate Change Datasets" section with checkboxes for "Gridded Precipitation and ET" and "Streamflow Change Factors". Below this is a "User Defined Selection" button and checkboxes for "Gridded Precipitation and ET by County" and "Gridded Precipitation and ET by Basin". The "Central Valley Flows and Diversions" section includes checkboxes for "Central Valley Inflow Data" and "Central Valley Output Data". At the bottom, there are "Full Dataset Download Links" for "Statewide Gridded Precipitation and ET", "Statewide Streamflow Change Factors", and "Central Valley Flows and Diversions". The map in the background shows a regional view of California with a grid overlay and various data points.

This screenshot shows a regional map of California in the SGMA Data Viewer. The map is overlaid with a grid and various data points, including blue circles and orange triangles. The interface includes a search bar at the top with the text "Find address or place" and a "SGMA Data Viewer" title. The map shows major cities like San Francisco, San Diego, and Las Vegas, and geographical features like the Great Basin and the Sonoran Desert. The map is zoomed out to show the entire state of California.

SGMA Assistance To Date

Since 2015 DWR has provided ~\$180M in assistance to support locals with SGMA implementation:

- Planning Assistance (~\$10M to date)
 - GSA Formation
 - Basin POCs
 - Facilitation Support
 - Written Translation Services
- Technical Assistance (~\$20M to Date)
 - Technical Support Services
 - Data and Tools
- Financial Assistance (~\$150M to Date)
 - Sustainable Groundwater Management (SGM) Planning Grant Program



Future Assistance

Another ~\$200M in assistance will be provided over the next four years which will be continually refined to respond to local needs:

- Planning Assistance (~\$8M over next four years)
 - Basin POCs
 - Facilitation Support
 - Written Translation Services
- Technical Assistance (~\$90M over next four years)
 - Technical Support Services
 - Data and Tools
- Financial Assistance (~\$100M over next four years)
 - SGM Implementation Grant Program

