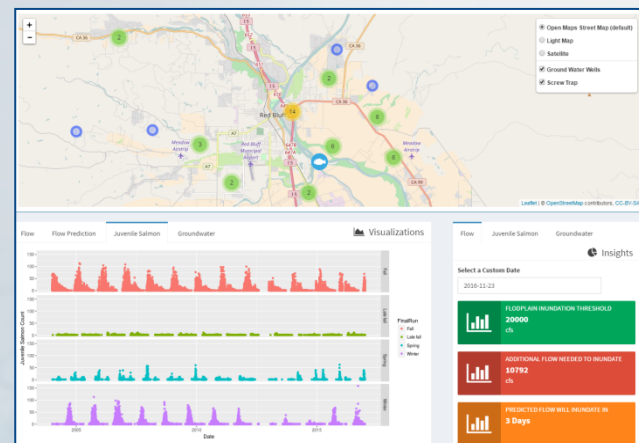


Water Board Partners with Obama White House to Advance Data-Driven Water Management

by David Altare (david.altare@waterboards.ca.gov)

One of our nation's biggest challenges is ensuring that all Americans have access to clean and safe water. Our water resources are critical for supporting healthy communities, maintaining our nation's agriculture, sustaining fish populations, generating power, and providing outdoor recreation opportunities for all Americans to enjoy. However, recent events in California—where a five-year drought has forced new strategies and increased cooperation to manage the effects of low river flows, depleted reservoirs, and water shortages—have shown that we must revisit how we manage our nation's water resources, and find new and innovative ways to build a sustainable water future. California's experience serves as a reminder that unless we take action to increase efficiency, reduce water use, and maintain water supplies, the future of our nation's water—and, by extension, the future of our environment and economy—is at risk.

As we consider the threats to our water resources, one of the best opportunities we have to strengthen drought-related decision-making, and to inform the American public about the significant challenges posed by drought is to make better use of existing information and data. The California Water Data Challenge was designed to address this need by bringing together developers, coders, companies, and universities whose creative capacity can help maximize the impact of existing Federal and State datasets



California Water Data Challenge winner FlowWest's Sustainable Floodplain Habitat Finder combines open-source data visualization and decision support tools to help water resources and fishery managers evaluate the relative potential for floodplain habitat creation at a given site with a real-time, data-driven approach.

questions that participants were asked to address were inspired by California Governor Jerry Brown's 2016 California Water Action Plan, and the White House Federal Action Plan of the National Drought Resilience Partnership.



through the development of applications and tools that transform how this information is accessed and used to inform water management decisions. Ultimately, the Challenge served as an example of what is possible across the nation: ensuring that all communities can effectively and efficiently access and understand the information they need in order to ensure a sustainable supply of water while maintaining and enhancing the health of our ecosystems.

The California Water Data Challenge was the result of a collaborative effort between the White House Council on Environmental Quality and multiple California state agencies, with technical and financial support from several non-profit organizations. Inspired by President Barack Obama's commitment to improving open data and government, the Challenge demonstrated the potential for collaboration, transparency, and innovation to address our water management issues. Staff from the State Water Board provided extensive support for the event and worked closely with staff from the White House, and other State Agencies, to frame issues addressed by the challenge, building on their experience hosting the Water Board's spring 2016 Data Innovation Challenge. The specific

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Based on the framework provided by these Action Plans, participants were asked to address how data might be used to help California make informed decisions about the following issues:

1. Reliability of water supply
2. Protection and restoration of important species and habitat
3. Resiliency and sustainability of water resource systems

To address these issues, participants were asked to create tools and applications that either (1) visualize and analyze water data to develop new insights that further our understanding of water in California, or (2) effectively disseminate information based on real-time or near- real-time data to water managers or the general public to support decision making and adaptive interventions. Participants were encouraged to use open-source software and data, and to make their code and products publicly available via GitHub or a similar collaboration site. Only entries that met these standards were eligible for awards and recognition. However, entries from all participants were accepted, including those utilizing proprietary tools or datasets.

There were 34 submissions to the Challenge, including eight entries in the open-source category. The entries came from a wide range of groups, including consulting firms, student teams, non-governmental organizations, and unaffiliated citizen volunteers. The Challenge concluded with a closing ceremony in downtown Sacramento, CA on December 9, 2016, where teams in the open-source category presented their submissions to a panel of judges, and a selected group of teams from the proprietary category were invited to exhibit their entries to the general public. The panel of seven judges, who hailed from a diverse background with a mix of data science experts and water policy leaders, evaluated the open-source entries based on technical competence and capabilities; use of data to provide effective outcomes; creativity and innovation; and valuable data information and insights. Descriptions and links to all of the finalists and exhibition submissions can be found at:

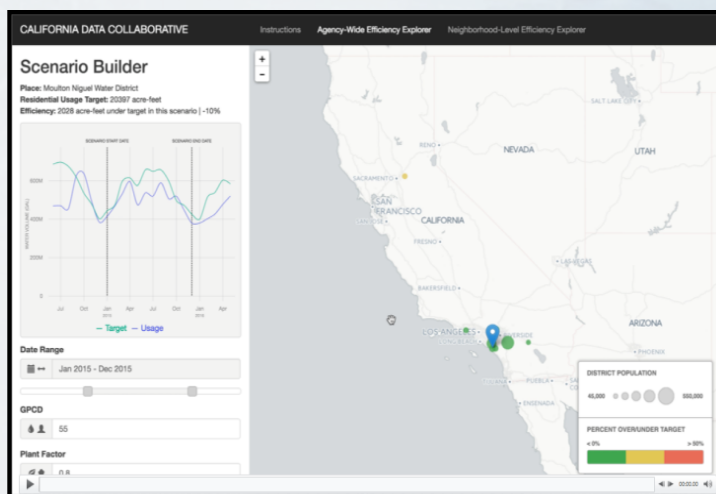
<https://goo.gl/pUYwWH>.

The winning submission was developed by FlowWest, a San Francisco based consulting firm whose [Sustainable Floodplain Habitat Finder](#) app uses six different datasets to provide insights into where and when to allocate water to support floodplain habitat for juvenile salmon. The judges were impressed by the team's ability to find a unique and important problem ripe for a data-driven solution, and develop a prototype of a tool with live data prototype of a tool with live data and important problem ripe for a data-driven solution, and develop a prototype of a tool with live data connections so quickly. Commenting on the winning entry, Mark Gold, an event judge and the Assistant Vice Chair for Sustainability at UCLA, said "It was nothing short of extraordinary to bring that level of thought, data, and effort to bear on an important problem in such a short timeframe."

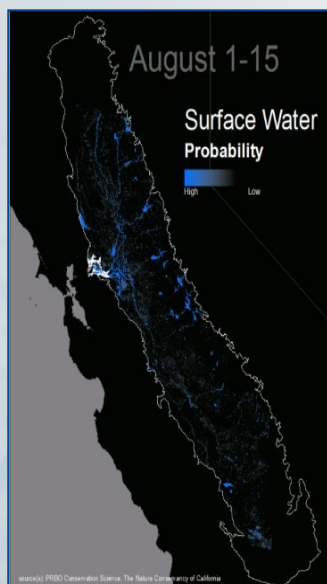
The judges also recognized four other finalists for special mention:

- The California Data Collaborative's [Water Efficiency Explorer](#) was given special mention in the Urban Water Supply category.
- Point Blue's [Automated Water Resources Tracking System](#) was given special mention in the Ecosystem Health Category.
- Two unaffiliated citizen volunteer teams, [Water Supply App](#) and [Providing Context to a Proposed Shasta Dam Expansion](#), were recognized as Rising Innovators.

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The California Data Collaborative's [Efficiency Explorer](#) is an interactive dashboard that supports analysis of the impact of new standards with a scenario explorer tool.



Point Blue's [Automated Water Resources Tracking System](#) uses satellites and bioinformatics to make water data available in near real-time, and is a foundation for coordinated data-driven decision support to optimize water management for biodiversity and ecosystem services.

The winning FlowWest team was invited to present at a State Water Board meeting in 2017; the special mentions and other selected entries will be invited to present at a brown bag seminar series in 2017; and the teams recognized as Rising Innovators will be given professional development time with each of the three participating California state agencies.

In addition, the challenges and opportunities surrounding data access and utilization that were highlighted by the Water Data Challenge will be at the forefront in 2017, when major steps to apply open data standards to California's water data will be taken as part of the implementation of the Open and Transparent Water Data Act (AB1755, Dodd). In anticipation and support of these efforts, the State Water Board and other California state agencies are continuing to make data available on the State's open data portal (at data.ca.gov). Additionally, the State Water Board plans to host more data challenge events in the near future.

To learn more about the State Water Board's open data efforts, follow the Board's open water data team on Twitter @CaWaterDataDive or using the hashtag #thirsty4data, and visit the Water Board Data and Databases website at http://waterboards.ca.gov/resources/data_databases/index.shtml.

