California Water Plan Sustainability Indicators Framework

I. Executive Summary

Measuring environmental, social, and economic conditions and influences on these conditions are an important part of knowledge-building and adaptive management. The California Water Sustainability Indicators Framework (hereafter "Framework"), being developed as part of the California Water Plan (CWP) Update 2013, brings together water sustainability indicators that will inform us about water system conditions and their relationships to ecosystems, social systems, and economic systems. The evaluation of the selected sustainability indicators is anticipated to reveal how our actions or inaction can degrade or improve conditions that lead to water sustainability. The Framework is built around both statements of intent (e.g., objectives) and themes (e.g., water quality). Reporting indicator condition is based upon the principle of measuring how far a current condition is from a desired condition. The Framework is intended to support reporting of indicators to a wide array of water and environmental stakeholders, the public, and decision makers to build knowledge and to enhance adaptive decision-making and policy change. The Framework is published at: http://indicators.ucdavis.edu.

The basis of the Framework is an overall vision for water-related sustainability indicators for California, including an understanding of sustainability, indicators, and related terms. Based on a generally agreed-upon vision among stakeholders in a given region, in the whole state, the proposed Framework operates through a series of inter-related steps, beginning with defining objectives and ending with reporting conditions relative to sustainability targets. Each step generally follows the previous step and completing all steps is necessary for a full evaluation of water resources sustainability. The Framework is designed to be scale-independent, so it can be applied from local to global scales. Ultimately, the Framework informs us how well we are sustaining the natural, social, and economic systems that we depend upon, at least in terms of water, and based on what we know about stresses to these systems, how we can improve degraded conditions.

Phase I consisted of describing the Framework, including the approach and potential indicators. Phase II of the project consisted of using the process and a set of indicators at the state and regional scales as a proof-of-concept for the Framework. The partner region and entity chosen was the Santa Ana Watershed Project Authority's and the Santa Ana River watershed. In partnership with the Council for Watershed Health, goals, objectives, and indicators were chosen and defined as part of the SAWPA OWOW 2.0 process. Data were collected for a sub-set of indicators and corresponding conditions calculated. Similarly, members of state agencies that

are partners in the Water plan Update 2013 were asked for their suggestions of indicators that could help assess progress toward the sustainability objectives in the Sustainability Indicators Framework. Data were collected for a sub-set of indicators relevant at the state scale and condition calculated. For both the region and state scales, conditions were normalized relative to desired and un-desired conditions. This normalization results in indicators being comparable with each other and available for aggregation.

I.A. Integration with Water Plan

The sustainability indicators framework was designed to be used in conjunction with other aspects of the Water Plan: Progress Reports, Regional Reports, Resource Management Strategies, Scenario Planning, and other components. Progress reporting under the Water Plan is intended to measure performance of management actions. The terms performance measures and indicators are closely related in that performance measures are indicators of management performance and performance measures tell us about performance of ecological, social, and economic systems. The Framework was designed to integrate sustainability indicators and performance measures into a single Water Plan reporting system. The indicators in the state pilot were reported at the hydrologic region, as well as finer scales. This allows reporting of conditions within Regional Reports according to state or regional targets for condition. One of the selection criteria for candidate indicators was their relationship with Resource Management (RMS) Strategies. As one of the main vehicles for implementation of the Water Plan, RMS are important tools in implementing sustainable practices. Indicators measuring effectiveness of RMS will be a critical knowledge-gaining and decision-support tool. Scenario planning has involved projecting future water use, supply, and management responses. Many of the input data and model outputs are indicators in their own right and thus can be used to link measuring sustainability with planning for future sustainability.

I.B. Integration with California Indicator Efforts

California is on the verge of adopting a full suite of indicator systems to cover many aspects of social, economic, and environmental conditions. These systems are within statewide plans and include the California Transportation Performance Reports (Caltrans), the California Wildlife Action Plan (California Department of Fish and Wildlife), California Health Communities Indicators (CDPH) Strategic Growth Council Regional Reports (SGC), Marine Protected Area monitoring (Ocean Protection Council), MyWaterQuality reporting web site (SWRCB), and the California School Accountability Report Card (CDE). The Water Plan Update is a collaborative plan developed among over two dozen California agencies and Departments. Because of how it is built, the indicator system described here could be used within any of the other state planning processes. Assembling indicators from the state's plans and efforts by others in the state into one coordinate system could reduce duplication and improve prioritization of policy development and resource allocation.