

CVSALTS P&O Study workplan (DRAFT)

Establishment of Appropriate Numeric Salt Management Targets

Targets to Protect AGR use

Introduction

As part of the P&O study, the Contractor shall develop numeric targets to protect the agricultural supply (AGR) beneficial use in the surface and groundwaters of the Central Valley region. In performing this task, the Contractor will work with agricultural stakeholders in different areas of the region to address the balance between setting targets that protect sensitive crops and setting targets that compromise the ability to comply with limitations on the discharge of agricultural return flows. The Contractor will also work with agricultural stakeholders to establish numeric targets that will be applied during extended dry periods when special salt management and irrigation practices are needed to maintain agricultural irrigation water supplies.

CVSALTS has developed a fundamental approach to the development of AGR numeric targets in surface waters that is documented in Larry Walker Associates (2014) and PlanTierra (2014). This methodology was used in the development of water quality objectives for Electrical Conductivity (EC) in the Lower San Joaquin River which were adopted in a basin plan amendment approved by the Central Valley Water Board in June, 2017. The approach started with the development of baseline information regarding (a) existing cropping patterns in the study area and (b) agricultural water supply information. That information was used to identify important salt sensitive crops and to assign numeric salinity targets to those water bodies used as irrigation supply to those crops. The salinity targets were developed with available modeling tools that took into account the crop, cropping pattern, root-zone hydrology (i.e. balance among rainfall, irrigation, crop consumptive use, and leaching fraction), and salinity of irrigation supply, and which produced soil salinity and crop yield impact outputs. That information was combined with irrigator stakeholder input to select AGR numeric targets, which were then adopted as water quality objectives.

The Contractor shall use the above described methods in several selected study areas that are chosen, with input from CVSALTS stakeholders, to provide a proof of concept (archetype) and representative information that will be used in a process to establish AGR target values for surface waters and groundwater in the Central Valley region. Using the information from the archetype studies, the Contractor will develop and apply a process/method for determining AGR target values for normal and drought/extended dry period conditions for the Central Valley to protect salt sensitive crops. At the option of the CVSALTS Executive Committee, the Contractor may be asked to provide services to support adoption of the AGR targets by the Central Valley Water Board in a Basin Plan amendment.

Tasks

The Contractor shall perform the following tasks:

Task 1 – Identify candidate archetype study areas in coordination with CVSALTS stakeholders using best available information on existing agricultural land use (cropping patterns) in the Central Valley region. Coordinate with CVSALTS and local stakeholders in the selection of archetype areas to be studied in detail.

Task 2 – Using best available cropping information, rank crop acreage and determine common salt sensitive crops in selected study areas.

Task 3 – Identify irrigation supply sources (surface waters and groundwater) to common salt sensitive crops in study areas determined in Task 2. Characterize and, to the extent possible, quantify salinity of agricultural supply waters, during normal and dry years.

Task 4 – Use modeling tools to determine relationships between irrigation supply salinity and crop yields for salt sensitive crops.

Task 5 – In coordination with local irrigators, using information from Tasks 2, 3 and 4, develop a range of target EC values for (a) normal water years and (b) drought/extended dry period conditions. This step shall include consideration of the existing quality of supply waters (from Task 3). Select target salinity values for (a) normal and (b) drought/extended dry years for the study areas. Target values for the two conditions need not be identical.

Task 6 – In coordination with CVSALTS stakeholders, develop a process using available cropping and water quality information and information and methodologies derived in the archetype studies to establish target salinity values for appropriate regional areas within the remainder of the Central Valley region to protect the AGR beneficial use of water. Use the above process, developed with input from the CVSALTS Executive Committee and stakeholders, to establish regional salinity targets throughout the Central Valley for normal and drought/extended dry period conditions.

Task 7 – Develop and describe a process which allows for site-specific refinement of regional salinity targets based on consideration of more refined regional data analysis, modeling outputs and enhanced stakeholder engagement.

Task 8 (optional) - Provide services to support adoption of the AGR targets by the Central Valley Water Board in a Basin Plan amendment, including development of technical information for the staff report prepared by Water Board staff, including CEQA, economic and anti-degradation analyses.

Deliverables

The Contractor shall provide the following deliverables:

- Technical memorandum identifying candidate study areas for archetype analysis.
- Technical report for each archetype area describing the methods, results and conclusions of the analysis performed to determine target salinity values.
- Technical report describing process, results and conclusions of analysis to set regional salinity targets protective of AGR use in the remainder of the Central Valley region.
- Technical memorandum describing process for site-specific refinement of regional salinity targets.

- [Optional, at request of CVSALTS Executive Committee] – Technical report providing technical information to support the staff report for a Basin Plan amendment, including CEQA, economic and anti-degradation analyses.

References

1. Larry Walker Associates, Inc. 2014. Geographic Information Systems (GIS) Technical Services, Task 5.1 and 5.2 – Develop Map Layers and Identify Crop Sensitivity Zones. Prepared by PlanTierra as member of LWA Team for submittal to San Joaquin Valley Drainage Authority. Prepared for Central Valley Salinity Alternatives for Long Term Sustainability (CVSALTS). April.
2. PlanTierra. 2014. Development of a Basin Plan Amendment for Salt and Boron in Lower San Joaquin River (LSJR) – Task 1: Finalize Draft Agricultural Supply (AGR) EC Objectives. Prepared as a technical memorandum for Larry Walker Associates Team. Submitted to Lower San Joaquin River Committee. June.
3. Central Valley Regional Water Quality Control Board. 2016. Revisions to the 2010 Salt Tolerance of Crops in the Lower San Joaquin River (Merced to Stanislaus River Reaches) and 2016 Addendum. Final Report. April.