

Agricultural Zone Map Project – Phase II Scope of Work Status Update

Project Purpose and Benefits – Current Status

In order to issue discharge permits or waivers the Central Valley Regional Water Quality Control Board (Central Valley Water Board) must ascertain the level of water quality required to protect designated beneficial uses and prevent unauthorized degradation of high quality receiving waters. Considerable data and analysis is often required to complete this evaluation. Specifically, the Central Valley Water Board will need to know:

- (1) The volume of discharge (site-specific);
- (2) The concentration of pollutants in the discharge (site-specific);
- (3) The concentration of pollutants in the receiving water (standardized);
- (4) The net effect of the discharge on pollutant concentrations in the receiving water (site-specific); and
- (5) The net effect, if any, on beneficial uses downstream/downgradient of the discharge (standardized).

For many pollutants, waste discharge requirements are usually determined by the applicable water quality objectives. When a numeric objective has already been established in the Basin Plan, the process for deriving appropriate discharge conditions relies on a relatively straight-forward mass-balance calculation. Implementing narrative water quality objectives is more complicated.

Narrative objectives generally prohibit discharges from causing “adverse effects” on beneficial uses without specifying the precise pollutant concentrations needed to assure this outcome. Narrative objectives provide the regulatory flexibility required to adjust waste discharge requirements and/or waiver conditions based on a wide array of site-specific factors. For example, Agricultural Supply (AGR) is an expected beneficial use for nearly all surface and ground waters in the Central Valley. And, the Basin Plan includes a narrative objective prohibiting the discharge of chemical constituents in volumes and concentrations that may adversely impact AGR (and other) uses. For this reason it is appropriate to regulate the discharge of total dissolved solids (TDS), but the specific TDS or electrical conductivity (EC) level required to prevent adverse effects from excess salinity on commercial agriculture varies.

The "safe" concentration of TDS in any given discharge depends on a number of site-specific factors including, but not limited to: Salt-sensitivity of crops below the discharge; timing of applied irrigation water; assumed leaching factors, available assimilative capacity, existing soil conditions, local precipitation patterns, etc. The purpose of the proposed project is to develop a comprehensive database and standardized tools to support the process of translating the current narrative objective for salinity into appropriate, site-specific waste discharge requirements or waiver conditions for protecting AGR beneficial uses.

The project is not expected to define the "safe" TDS concentration for any particular location or discharge. Rather, the project is intended to provide easy access to the technical resources needed to make such a determination. The project will rely on existing cropping patterns to describe zones of salt sensitivity and available well data to describe existing groundwater quality (TDS concentration). The project will also endeavor to determine the degree to which current crops are irrigated by local groundwater supplies (volume, timing, leaching, etc.).

When finished, the proposed project will provide the data and tools necessary to answer the key regulatory question: If permitted, will the discharge cause more than a 5% probability of more than a 5% reduction in

commercial crop yield in the zone-of-influence below the discharge? And, if so, what adjustments (e.g., increased leaching, more stringent discharge conditions, etc.) would be necessary to ensure any adverse effects on crop yields remain within acceptable levels?

Some site-specific analysis will always be necessary; however, the cost of such analyses can be better controlled by developing standardized materials/databases (e.g., comprehensive groundwater quality maps and salt sensitivity maps) and methods (e.g., how to evaluate potential to impact downstream beneficial use) in advance. By sharing the initial development expense across a larger base of affected entities, the final cost for data development to each individual stakeholder will be greatly reduced over the long-term.

Potential Next Steps

Completion of the AGR policy discussions does not depend on the completion of additional technical work. Instead, completion of the policy discussions will clarify where the opportunities or needs exist for additional technical work that would advance the purposes of CV-SALTS.

Any recommended technical work should necessarily focus on tasks that support dischargers collectively. Of the five information elements described above, two of them (Items 3 and 5) are sufficiently general that it may be appropriate to standardize data resources and methodologies collectively through CV-SALTS. The other three elements (Items 1, 2 and 4) are, for the most part, dependent on site-specific characteristics or conditions associated with a particular discharge. Collective work on these elements would only be appropriate to support development of examples or archetypes which provide proof-of-concept demonstrations for how the permit process would be conducted at any given location.

Given these facts, the following potential tasks may be recommended in the near future. With the exception of Task 4, these tasks could, for the most part, be implemented independently:

- Task 1 – Update/finalize existing databases/mapping (e.g., crop distribution, crop salt sensitivity, groundwater quality), or develop new databases/mapping that would serve as standardized data or mapping resources to support the permit process. *Potential Deliverable:* Common databases/mapping available for use by permittees and Central Valley Water Board staff.
- Task 2 – Develop written methodology for translating the current narrative objective into site-specific discharge requirements. . Include minimum data requirements (including appropriate methods for acquisition); data analysis/translation tools; methods to delineate the Zone of Influence (ZOI), methods for determining the net effect of a discharge on downstream/downgradient beneficial uses, etc. *Potential Deliverable:* Accepted narrative translation methodology for use by dischargers and Central Valley Water Board staff to protect AGR.
- Task 3 – Develop technical basis for establishing an averaging period for evaluating compliance with discharge requirements and protection of the AGR beneficial use. *Potential Deliverable:* Technical basis for application of averaging periods to permitted discharges, both point and nonpoint.
- Task 4 – Test application of site-specific methodology at selected locations, e.g., at least two areas that vary in size and nature of ZOI, e.g., one POTW and one agricultural area. *Potential Deliverable:* Proofs of concept that demonstrate application of the site-specific methodology.