

**CV-SALTS Joint Economic and Social Cost and
Technical Advisory Committees Meeting
Thursday, January 21, 2009; 9:00 AM to 12:00 PM**

Attendees: See [Roster](#) for attendance.

Technical Committee Chair Nigel Quinn called the meeting shortly after 9:00 am followed by introductions of all present in-house and on teleconference.

- 1. Welcome, Introductions, Circulate Roster**
- 2. Review/Approve December 16th [Technical Committee Meeting Notes](#)**

Motion to approve by Parry Klassen and seconded by Joe DiGiorgio. The motion carried and the minutes were approved.

- 3. Final Salt Tolerance in So. SJ (Hoffman) Study Report [\(materials\)](#)**

Back in 2007 a technical committee hired Dr. Hoffman to complete this work. In July 2009, Dr. Hoffman issued a draft report and Dr. Hoffman presented the information of the draft report in August. Dr. Hoffman addressed the comments at another presentation to November. All the input was finalized early in January.

Conclusions and recommendations:

Dr. Hoffman confirmed by reviewing data from DWR that almonds, walnuts, dry beans and apricots were the most salt-sensitive crops. The current degree of salinity in the south delta appear to be suitable for all these crops. Neither sodicity nor toxicity should be a concern for the crops. There was the possibly that boron would present some toxicity problems for certain crops based on some of the water quality data.

Dr. Hoffman felt that the depth of the ground water was deep enough so that it didn't have an impact and wasn't being taken up by crops. There may be some isolated areas in the south delta where there are shelf ground water issues. He found that there were relatively high-reaching fractions in the south delta based on drainage data particularly in the southwestern and western areas probably associated with the irrigation methods used and these tend to be low-efficiency methods – that is, they apply more water than is needed for the crop and therefore there is more leaching and flushing of salt.

He found that leaching fractions averaged .21-.27 with minimums of .11 to .22.

Salt tolerance data was quite sparse and old and may or may not be applicable to the south delta. There was also not salt sensitivity data for crops in the early growth stages.

After several city/state comparisons, he concluded that he felt the standard could be in the range of .09 to .11 decisiemens per meter and that would protect all crops. This could in low-rain fall years lead to a yield loss of 5% under certain conditions due to the fact that there is not as much clean rainfall to wash away the salt and where there leaching is easily achieved there could be problems.

He did feel that based on the analysis that salt solution from the profile could contribute additional salinity to the soil over and above what he calculated in this city/state model. Under certain conditions salt can be dissolved from the soil matrix into the soil water adding to the salinity level in the soil.

He recommended that field studies on the salt tolerance be performed under local conditions among the most commonly planted varieties. He also recommended salt tolerance studies be performed for beans and other crops during different growth stages, particularly the seedling stage. He recommended that the city/state model not only be performed with the exponential crop water uptake instead of the 40:30:20:10 model that was used when the objectives were established in 1978. This refers to calculating the depth at which plants take up water from the soil, which has an effect on what the average soil water/salinity use would be.

He recommended that support be given to the testing of one or more of the transient soil water salinity models using data from the south delta. There are two ways to evaluate soil water salinity. One is a steady state model which looks at all of the precipitation for the year, all the crop ET for the year, all the applied irrigation models for the year and calculates soil water salinity on an annual basis. This method doesn't give the ability to evaluate soil water salinity at certain stages of crop growth throughout the year. It also doesn't account for soil water salinity conditions that carry over from one year to the next. Dr. Hoffman felt that this would be very useful for going to the next level of understanding in what a productive objective might look like.

He proposed that in some of the drainage data that there was a lot of uncertainty as to what exactly was in the drainage water. There was surface run-off and other things that might be affecting salinity concentrations in the drain water, which would skew the leaching fraction conclusions. Trying to understand that data better would be useful.

There was discussion related to what actions the State Board may take next and if EC management was sufficient? Mark indicated that the only existing BU sets protection levels and those were set for EV. It was stated that the State Board would look to CV-SALTS for guidance on this issue. In the future. He recommended a study to evaluate the need for a forum on water quality objectives.

4. Salt/Nitrate [Source Pilot Implementation Draft Report](#) Comment Review

All the comments that were submitted are included. There are a couple of comments still anticipated. The project team spent a couple of hours going through all the comments and how they would address the issues and how the information would be put together. There were 12 policy issues and those will be discussed in this committee and possibly referred to the executive committee later. The others are questions about how the information gathered will be presented in a cohesive package and seeing how these things apply to the three pilot areas and possibly in other areas. Many of the answers are answered in the appendix.

Bob Smith says there are still some comments to come in. They will probably not meet the January 30th deadline, but everything will be together for the 11th of February.

Discussion deferred until after Item #3 presentation (notes above and resumed but is shown here as continuous)

The executive summary will be the most extensively revised to work in some of the information that is included in the appendices. Daniel has recommended that there be a final presentation of the report in March because there have been so many changes to the report since the draft was presented.

This is a pilot implementation study and may not necessarily require peer review. Some of the peer review has already been done through the technical committee and executive committee.

Question about how the discussion on this information would happen in the future. Daniel suggested that a section be added to address where the technical committee should do from here and how this applies to the beneficial uses study. What did we learn? Is it applicable to us and to others?

Joe Di Giorgio mentioned the issue of under-sampling in the report and asked about what an appropriate density of sampling and critical locations might be for groundwater. He wondered if that would be answered through the report or another process.

Daniel recommended more discussion follow after the final report is presented on February 10 and that a conference call be scheduled between February meeting and March meeting.

5. Coordination Programs Items

a. Irrigated Lands Programs – Joe Karkoski ([materials](#))

Central Valley has about 7 million acres of irrigated agriculture (approximately 80% of irrigated land). The Irrigated Lands Programs regulate discharge surface water. Most of the coalitions are geographically based. It includes not just property, but also wetlands and nurseries. The coalitions do much of the monitoring themselves. All the data is on the website.

One important aspect is anytime there are two exceedances water quality objectives in a three-year period the coalition needs to develop a regulation plan. The ILRP works within certain parameters with the coalitions. Some issues may not be completely agriculture so their focus is on those issues that are attributable to agriculture (eg: the use of certain pesticides).

Regarding salinity, the ILRP defers to CV-SALTS and refers those coalitions that want to deal with salinity issues to CV-SALTS.

Over the long-term, ILRP is working on an EIR discharge to groundwater issues. They also formed an advisory group to help develop a programmatic alternative and managed to come to an agreement on five programmatic alternatives: 1) keep the program the way it is; 2) keep the basic structure with the coalitions, but add a discharge to groundwater component – through local agencies that have groundwater management plans which also address groundwater qualities and could serve to meet the needs – in those areas that have not developed groundwater management plans, ILRP would go through a process of identifying where groundwater is potentially affected by agriculture and then the coalition would come up with a groundwater management plan; 3) focused on individual groundwater quality management plans; 4) Training on water quality protection or farm management or development specific management plans depending on identified impacts; 5) Regional board working directly with growers and providing education and outreach and assistance to dairy operators and owners, would also include individual monitoring, nutrient management plans.

There is no data yet on the results of the ILRP working with these coalitions on water quality.

The ILRP is working with small work groups that are part of the advisory work. The program is working towards completing a draft EIR this summer and something final by spring 2011. The ILRP is wrestling with the issue of how they should handle discharges to groundwater.

Daniel requested that ILRP put together a couple of paragraphs as to what CV-SALTS can provide for the program. Joe Karkoski suggested that CV-SALTS determine water quality objectives, beneficial uses especially making a distinction between what beneficial uses are appropriate for natural streams versus water supply or drainage. Different kinds of uses for water bodies and what are the various objectives to protecting those water bodies. The group would also need to look at what technologies are available to monitor those uses and objectives. The group should also consider what information the ILRP is not currently providing that they should be. Is there a more effective way to present the material that would benefit CV-SALTS?

ED - After the meeting Joe followed up to provide some clarification on the Groundwater Map. Joe's additional comments are shown below verbatim from his email.

I mis-spoke regarding the data sources for the ground water nitrate map, when I gave my presentation to the CV-SALTS committee last week. Our evaluation of available ground water nitrate data has been rather dynamic as we learn about new data sources and some of the limitations of the data sources we thought we would rely upon. The map I provided actually came directly from data prepared by State Board GAMA staff - "Erik J. Ekdahl, Maria de la Paz Carpio-Obeso, and John Borkovich, Using GeoTracker GAMA to Investigate Nitrate Concentrations in California Groundwater, 1980-2008. California State Water Resources Control Board, 2009; in: Harter, T., 2009. Agricultural impacts on groundwater nitrate, Southwest Hydrology, July/August 2009, p.23-25." We have also prepared other maps that have more shallow wells represented, but we have identified some data quality concerns.

My lead staff on the long-term program, provided me with the following summary regarding the mapped data I distributed to the group: The map included monitoring wells, domestic wells, and municipal wells. It also included a limited number (about 200) DWR wells. Relatively few were domestic wells (about 600 or so -- but this is approximate). The vast majority are municipal wells (>80%). DPH - Dept of Public Health; DWR - Dept of Water Resources EDF - Electronic Deliverable Format - it's the format required for cleanup sites and to electronically submit data onto "regular" GeoTracker. EDF data represents monitoring well data from cleanup sites, land disposal sites, and Department of Defense. You could probably say "EDF (Monitoring Wells)".

6. [DWR Local Groundwater Assistance Grants](#) available – Emily

Department of Water Resources released Local Groundwater Assistance Grant guidelines and proposals. The comment period ended January 12. The final guidelines will be released next month. Proposal applications will be accepted until April. The Local Groundwater Assistance Grant Program will provide public agencies up to \$250,000 for groundwater studies or to carry out groundwater monitoring and management activities. Priority will be given to agencies who already have a groundwater management plan, demonstrated collaboration with other agencies and management of a groundwater basin.

Daniel commented that it might be a good fit for groups to include CV-SALTS efforts in their groundwater program. Emily will forward information on a funding fair.

7. Best Management Practice [Questions](#), [Winery Ops](#), [Land Application](#)

General agreement on taking Wine-Ops up on their offer to be a test case for BMP efforts. Daniel suggested that the best thing would be to have the Wine Ops make a presentation that would cover all their efforts. They can discuss what they've already done and then where does the committee want to go.

Chris Savage provided introduction from the Wine Institute. This particular project was done by the Environmental Protection Group. This objective of this project was to take a hard look at land application practices for winery lands discharge. Previous guidelines were focused on odor control. Project and field trials were done in consultation with Kennedy Jakes. From that work followed a second year of development of new land application guidelines, which have since been formalized and presented to the Regional Water Board.

Bob Chrobak from Kennedy Jenks made a section of the presentation. In 2000, there was a lot of emphasis in the wine industry on water sustainability issues and that led to looking at the last guidelines from 1980 and improve the operations. Studies were conducted in 2002 and the group turned that into best management practices and guidelines for better operations and develop tools for the industry to move along the sustainability goals as a whole.

The group looked at the various operations within the winery, characterization work, came up with best management practices, looking at the concepts of source control to establish best management practices. The group developed a guidebook on sustainable winery water management that also looked at energy and the impacts of reducing energy usage, water usage and decreasing carbon footprint.

Stewart Childs from Kennedy Jenks presented the majority of the PowerPoint. The study was scientific in nature, but the goal was to get to setting guidelines. Most of the study was done on spreading basins. In 1980, for site characterization the only criterion was that the permeability of the soil be high because the water needed to disappear, but there were no water quality questions at all. In 2003, the focus changed to groundwater impacts and chemical properties of the water.

In 1980, the amount of water one could put on at one time was based on general industry standards for processed water strength. By 2003, pH and total nitrogen and oxygen demand, and fixed dissolved solids were included in evaluating soil water quality. The group added the criterion that the water needed to be added to the soil in such a way so that the soil doesn't percolate right away. The application rate has to be less than water storage, which limits how much percolation there is and is crucial to the operation of most industrial processed waste waters. They all need to be in the soil profile so they can be treated before they percolate.

The group used a 5-foot soil depth for their calculations.

When there is too much drainage there is not sufficient removal of nitrogen. To manage nitrate levels, the water should only be applied until the soil is "full."

Iron/Manganese mobilization into the water is a byproduct of removing the nitrate.

pH control was never an important factor. There has been concern that under excessive overloading of site you will get exit surface soils, but the instance the application rate is slowed to a reasonable agricultural amounts of applied water. Odor is also not a problem with proper management.

From this the group went on to develop guidelines as to suitable sites for samples, what constitutes limits, salt nitrogen, how do you manage processed water application and how do you manage an overall program.

Site selection guidelines: 1) good clearance of groundwater (15 feet); 2) Infiltration rate (6/10 of an inch); 3) available water capacity is crucial – the processed water has to stay there; 4) Chemical and physical properties – standard purposes

Constituent analysis – what limits an application? Salt? Nitrogen? It is almost always the case that you need to limit the application rate according to how much water is stored in the soil.

Land application management – make sure there's enough Biological Oxygen Demand (BOD) to denitrify the water, make sure that the water remains in the soil, and require measurements be taken when the soil gets aerated to about 2-feet depth. Water is not reapplied until then. This is key to establishing a processed water management plan.

Bob Chrobak finished the PowerPoint. The group went in the facility to look at all the different operations in a facility to evaluate flow, various limiting constituents and identify best management practices. The group took the science in the report and made it applicable to smaller wine-operations. Discussion with stakeholders clarified that the nitrogen BMP by itself will reduce nitrate via soil treatment. However Fixed Dissolved Solids must be controlled by source management as the amount applied is available to leach to groundwater. Relatively little is taken up by crops or converted in soil.

Discussion about how the Wine-op study applies to salt and CV-SALTS.

Question about how this is going to help develop a basin plan amendment. Best management practices were always a part of developing a basin plan amendment and in that basin plan CV-SALTS needs to identify what the implementation plans are. It's going to be the basin plan that sets the standards that these practices and other practices have to meet.

Daniel will draft recommendations and make arrangements for a conference call to discuss them.

8. Technical Committee Work Goals 2010 and Committee Efforts [materials](#)

Daniel has made all the changes that people had suggested and adjusted the draft budget as recommended with the understanding that the work plan will always be a draft until items are completed.

Daniel asked if there was more feedback or comments or recommendations for changes that should be made.

Since the committee was still waiting for Regional Board approval, Daniel recommended that the document be put on hold until such time as the Regional Board reported back.

9. Actions/Recommendations/Report to the Executive Committee

- a. Update on the status of the pilot report – how it's going to be finalized
- b. Winery-operations and grant support for lower salt cleaning solutions
- c. Advice on how the technical committee should construct a proposal

10. Anti-Degradation Technical issues – Joe DiGiorgio ([materials](#))

Joe began the presentation with an overview and then turned the presentation to Richard Stowell for the high speed presentation. TDS and EC though very appropriate for general fresh water, they are not good indicators of salinity in effluent. There is always the possibility of charged organics and dissolved organics that are not going to show up in TDS and EC testing. Salt mass is important, but it is not the critical issue. Concentration is the critical issue on its own. Salt deposition and air scouring of surface salt in and out of the basin also play a minor factor.

Following the lead set by the 2009 State Board water recycling policy, they wanted to use fully use the water resources of the state meaning over the long-term groundwater levels and salinity amounts will be affected and so this will need to be included in any sort of long term sustainable salt management plan. Regional Board indicates that all elements of this Policy are to be interpreted in a manner that fully implements state and federal water quality laws and regulations in order to enhance the environment and put the waters of the state to the fullest use of which they are capable.

If a land use is possible that would add salt a negative offset in a like amount would be required elsewhere in the basin.

11. [Salt Management Alternatives List](#)/Development meeting planning

Next effort would be to schedule a time to pick on Dennis' recommendation of a brainstorming opportunity. Daniel will follow-up with Dennis to see when he's available. Request that funding priorities be established.

12. Discuss Next Meeting February 10 and [2010 Calendar](#)

MSSC meeting February 17-19 Las Vegas
Some materials will not be posted or may be updated the week of the meeting

13. Meeting Adjourned (12:10 PM)