

**MEETING NOTES
CV-SALTS
Special Technical Workshop:
Lessons from the Santa Ana Watershed
Thursday, May 14, 2009**

Notes Courtesy Lisa Holm, USBR

1. Welcome and Introductions
2. Workshop Goals (see page 2 of the agenda)
- 3 and 4. Regulatory Perspective, Policy and Legal Issues – Tim Moore, Risk Sciences (no powerpoint)

Definitions come first, they are a powerful tool. Definitions on 2 parallel tracks: political and regulatory; and technical.

Actual example: Discharges to an impaired groundwater are in excess of the water quality objective but better than the ambient/existing water quality (N. Rancho Caballero case). Choices are: 1. to disapprove the discharge, 2. make discharge comply, or 3. change the objective (using the Anti-degradation Policy). Downstream parties objected that higher water quality objective was not protective: origin of Santa Ana situation. Original water quality objectives (WQOs) represented ambient quality, not beneficial use protection. Suddenly, technical basis for setting of WQOs came into question/under scrutiny. Original WQO setters were open to reevaluating them using today's tool – the discussion of how to do this got really esoteric. For example: setting TDS criteria for better than beneficial use protection. We know avocados/strawberries protection levels, but there is a wide variation for people. Soon becomes a value question – and have to know where you are, as under Anti-degradation Policy impairment and degradation are very different. Degradation is subjective and in the purview of the RWQCB. Santa Ana tackled on the front end. Also everyone agreed on data analysis methodology before analyzing.

Two Big Rules: 68-16 at the state level, Federal Anti-degradation Policy (lowering water quality; economic, social development of region). Have to translate “water quality” into a number. Administrative Process Update 90-004 described how you determine degradation in temporal and spatial terms. From when? (68-16): from when act/policy adopted (1968). In Santa Ana, we convinced everyone to treat the process like a settlement conference. Appliance lifetime effects, for example, could to be examined in terms of shorter life due to lower water quality, but overall longer life due to technological improvements. 10 % in Santa Ana (cumulative 20 %) [percent of what?] was put into the Recycled Water Policy without their supporting definitions. Federal Standard states “region” (meaning?). Definition of region

influences determination of maximum benefit. 90-004 states “any activity that lowers water quality.” After legal definitions, still have a lot of technical definitions. Basins are influenced by widely varying sources (e.g. groundwater basin where one side by ocean water, the other by Sierra snowmelt).

What is acceptable data? 1986 data is not SWAMP compliant. How many data points are needed for significance? Geographic shifting of data collection over time. Do you want certainty about safety or certainty about actual value? Consideration of averaging schemes (spatial, temporal) and how variability is accounted for (and over what representative period of time.”

Mikasuki case in Florida: Anti-degradation analysis is required when moving water from one source to another water body. (SWP/CVP) 250-300 mg/L State Water Project water into 200 mg/L WQO groundwater. Legal issue. Anti-degradation now means: new source water quality is lower than receiving WQO, rather than having to prove actual harm to receiving water. This has already been adjudicated in 2 states on the East Coast. State Board got an intent to sue letter from NGOs saying SB was rubber stamping Anti-degradation analyses – led to Recycled Water Policy. Example: A groundwater basin with an average of 700 mg/L TDS has a WQO of 600 mg/L TDS. A project is pulling out groundwater and stripping out TCE, but the stripping concentrates the salts to 730 mg/L TDS. So now the groundwater clean-up project has to a) mitigate, b) desalt before discharging, or c) RB has to change the objective. But this is the same mass of salt only less water. Important is to whether a concentration or a mass definition is used.

Question: You could take water out and putting it back in would cause a violation? Answer: Argued both ways. Question: What does that do to irrigation and Consumptive Use? Answer: Example: Groundwater basin WQO is 550. Gradient in basin is from 600 to 500. Discharging recycled water at 550. Municipal well field 1 mile downgradient is pulling water at 450. Permit? Yes. Is it CEQA compliant? Is the incremental increase significant? Who is responsible for compliance? (Jurupa Hills case).

Example: Groundwater basin has ambient water quality of 400. Water conservation district recharges basin and the water quality is now 350 (50 units of assimilative capacity created). New discharger wants to discharge at 500. Regional Board can permit (not impaired), but Water Conservation District says they own the assimilative capacity and if new discharge is permitted they will stop recharging. Who owns the assimilative capacity and who can give it away and when?

Example: 3 discharges at quality of 500, 600, and 700. Quality of river is 600, same as its WQO. But the 500 discharge is cut in half and now river is at 620. Can Regional Board stop the discharger from reducing discharge? Can

the Regional Board require mitigation? Do the other dischargers have a right to the assimilative capacity? (Middle Santa Ana River)

Example: Nitrogen objective in basin is 4. Ambient is 3. New discharger wants to add at 5, raise ambient to 3.5. Can Regional Board permit? Yes. Have to allocate the assimilative capacity. What if the discharge of 5 at surface level is only 2.5 when it reaches the groundwater table? What is the point of compliance and when?

Question: Is there a standard definition of Assimilative Capacity? Answer: There are many definitions.

Example: Groundwater basin objective is 600. POTW wants to discharge 700. No assimilative capacity in system. POTW proposes to offset through recharge with storm water but in a different location in the basin (resulting in localized degradation/impairment). Effects of harvesting storm water on the area where it would have recharged. In Colorado fighting over who owns the rain. (i.e. your rainfall is owned by someone else).

Question: Did you define ambient? Answer: No. Question: Basin plan has "background" – where do we find untouched? Answer: Oregon defines ambient, not untouched to get around this.

Example. GW basin has 500 WQO. 3 discharge points (600, 500, 400) want a permit as a group (internal pollutant trading). Can you permit all 3 as one, or is this a black letter (strict regulatory interpretation of "no new discharge to impaired unless TMDL adopted") situation because of the 600 discharge?

Hypothetical examples: 1. Surface WQO is 500. Ambient is 510, so no assimilative capacity available. A discharger wants to put 450 in groundwater and expects surface water to go to 490 as a result. 40 CFR 12.2.4(i): cannot issue permit to new discharge for impaired body until TMDL adopted and load allocated. Example of where we may be headed. 2. WQO is 500, ambient is 600, discharge is 450 but full of estrogen. How does anti-degradation policy apply? Does one molecule rule apply?

Question: Have example cases been resolved? Answer: Santa Ana created de facto rules for maximizing public benefit (trading degradation for elimination of impairment, recharge with SWP, etc.) and set high burden of proof to disprove the benefits of project. Didn't have to resolve concentration versus mass question or anti-degradation issues. Some folks define a de minimus. We took the easy way out. Question: Used Basin Plan to handle anti-degradation and to set up offsets and trading policy? Answer: We embraced the Anti-degradation Policy and set up rules to allow the projects we want to facilitate (that benefit the area). Many water users didn't want to touch or agree to Anti-degradation application – so they did everything they needed to do without being issued any paper.

So this (salinity and nutrient management) plan will be done with or without you, you can act early to deflect catastrophe (“Deep Impact” movie analogy), it is best to engage and deflect future impacts to minimize future damage. It may have also helped that Regional Board was open to the approach. Some parties need WDRs for new projects. Some want to prevent projects. Some are forced to be there (threat of enforcement actions) – and now they are the most progressive implementers. It went from being a disposal problem to a long-term water supply management program (allowing self-determinism by turning wastewater into a resource.) Bond/grant money also helped. Paradigm shift from obligation to opportunity. The most opposed gained the most. Can always take the standard route, where Regional Board develops the plan, parties go to court, parties end up in this same place in 20 years in settlement discussions.

Task forces humanize everybody. Get cheaper, friendlier solutions. Created a process to let people argue on paper, anonymously. Puts arguments in a flow chart design which allows for easy determination of areas of agreement. Not the psychologist approach (how do you feel about...) Encourage professional and respectful arguing – allows full exploration of the details. Santa Ana Basin Plan rewrote every basin definition and WQO with zero comments at Regional Board adoption.

What does this mean to/for the Regional Board? 1) Have to give it time. 2) Need a senior management commitment. 3) Adopt the process as the Regional Board Process. In doing so: if you have a beef you have to be in the process, or you’ll have no credibility to challenge it in the end (because you aren’t willing to test your challenge in the arena of ideas). You need rules/axioms. Santa Ana’s were: 1) not there to argue the existing laws – focus on discretionary pieces, 2) do the methods and definitions before you do the analysis (doesn’t mean you can’t revisit after the analysis), and 3) everybody agrees to live with the outcome. Last thing: Regional Board agreed to put all existing WQOs on hold while new ones were being developed. Participation in process was an alternative compliance method. Single most significant advantage isn’t regulatory outcome, but the relational trust developed among participants.

Question: Underlying assumption is export from basin? Answer: No.
Question: How do you deal with the salt? Answer: Depends on amount of salt and impact of overage. Southeast example (north Georgia), they have a lot of land, so they sequester salt on some dry lands. Also recycling it in cement, bricks – folks willing to accept it if not to pay for it. The other stuff becomes more of a problem (competition may try to use added load of other constituents against them.) Question: Who laid out the process? Answer: Started out as a triennial review analysis. Regional Board was gearing up for load allocation, parties offered to pay to reevaluate WQOs. Started scoping: in the first meetings developed a logic structure – what questions to ask and

in what order. Regional Board regulatory questions were a great start. The logic structure still holds up. Almost blew up several times (stakeholders wanted to know why they were doing Regional Board's job), teetered on abyss every 18 months (hold hands, back away slowly). Took a year to get everyone to commit. Regional Board went to Boards of participants and committed to the process.

Issues: Started with white paper: science, controversies, what we knew, what we agreed to, what we still had to define. In parallel, data gathering with questions raised. Group would meet and decide. Didn't want to see numbers right away. Drove the SAWPA Board nuts. Once we had numbers, we moved to how do we allocate, implement. Eight hours once a month, then 16 hours a month. Group laid out the process.

Question: Who paid? Answer: All of them. Problem was convincing them that they all have a stake. Every 2 months we briefed the Regional Board on the process (1 hour presentation) and encouraged dissent to be expressed in front of Board. Question: Was settlement conference concept between whom? Answer: POTWs and Regional Board, since POTWs would sue. Then downstream parties enter as interveners. Water agencies peripherally involved until Miyasuki case, and suddenly they has a stake in the process (essentially became dischargers). Question: What was the role of Regional Board staff? Answer: Just another player. Thibeault (Region 8) understood that sharing power magnifies power (increased respect for him in the community). It takes a strong ego to take chiding in public. Task Force also paid for the Regional Board staff time. Made a huge difference for all involved. You have to genuinely believe it won't be sued. Pamela Creedon: My argument is that this process would make a better case in front of a judge.

5. Break

6. Stakeholder Process – Mark Norton (notes supplement slides)

Effort evolved from an irritant to a statewide template which is a huge compliment to stakeholders. Tim Moore's facilitation and ability to put things into layman terms was invaluable. Also had really good technical consultants.

Stakeholder Involvement format. SAWPA boundaries match Regional Board boundaries. Shared funding, Regional Board involvement. Compliments from Regional Board (resolution), Little Hoover Commission, State Board.

Mechanics of process: Regional Board issue arises. Need administrative body to hire consultants. SAWPA is small, can hire quickly. Workplan development. Cost estimate. Cost allocation to stakeholders on Task Forces. Signed Task Force agreement (includes Regional Board). Reduces costs over long-term. Especially important with current economic crisis. Minimizes legal challenges. Task Forces can take a long time – not planned that way,

but it can become necessary. Good/best science, not the regulatory outcome, is the driver. Challenge to process: May not reach consensus, equitable distributing cost to benefit may not occur.

In Santa Ana – TDS/N. Concern with accuracy of WQOs, permit limits too stringent, limiting reclamation opportunities. Envisioned 3 – 4 years (see slides).

Funding distributed among regional organizations and others (43-43-14). State Board overruled the use of process as alternative compliance with WQOs.

“Delphi process” (described by Tim) -> Tim prepared questions, sent to Task Force participants. SAWPA got responses (released in anonymous format), released to task Force for review, further responses, etc. Developed a consensus document based on this work. Had 20 years of data. First through “maximum benefit” route would be a dead end, but some parties attempted to demonstrate that it wasn’t. First in state to do this process. Not easy. Need a great deal of agency commitment.

Often involve monitoring, desalters, reclamation, stormwater management. Comprehensive watershed management approach. Assumed they’d need a big numerical salt-flux model (2-3 million cost). Had a blue-ribbon panel to evaluate and went another way (monitoring to determine compliance). Monitoring costs equally shared at first, then evaluated work/cost and confirmed equal share equitable. Helped write the Regional Board staff report.

Question: What would you do differently? Answer: Worked more to explain value of process to SAWPA Board, and explain length of process. We also did a lot of very detailed minutes. Helped to recollect conversations/agreements without having to re-have them. Question: How often were SAWPA/SARDA boards briefed? Answer: Once every 6 months. Always came up during budget cycle. Didn’t go to member agencies’ boards much, but might have been better to brief them periodically. Their staff participated, but didn’t mean Boards were informed and up to speed. Question: Where is the collection of written materials we might exploit for this process? Answer: Had on web, but transitioning website. Reclamation Guidance Document might be the most helpful. Informal workgroup when Regional Board decided to regulate Imported Water Recharge, developed Cooperative Agreement (instead of a regulation) to look at it. Regional Board didn’t stop doing their job, Board attention on issue happened much sooner than expected. Reclamation Guidance Document is on the CVSALTS coalition website (in background section). Question: How did you convince agencies of their interest? Answer: Change in WQOs was the nexus – either interest in changing WQOs or just protecting interests. Strongly emphasized science as basis. But could also emphasize the relationship building

(SAWPA doing this in the IRWM process). Especially engage potential parties that may litigate. Groundwater so not same environmental concerns as surface water. The Stormwater Task Force is different.

8. Executing Technical Work in the Regulatory and Policy Framework (Wildermuth Environmental) (notes supplement presentation slides)

Wildermuth came in after scope was developed. Santa Ana is the size of a pilot study in the Central Valley. Importation of salt a big part of Santa Ana salt management, so Santa Ana probably interested in Central Valley plan. Colorado River is too salty for groundwater recharge. Population of the two regions are about the same. Santa Ana River is the main surface water body. Prado Dam protects Orange County from flooding. Orange County uses the Santa Ana River for recharge. River has 6 regulated reaches that are “mostly unlined” – one of the Beneficial Use designations is recharge of groundwater. Groundwater basins are separated by earthquake faults and consolidated bedrock. For much of the year the river is entirely effluent. Several groundwater desalters exist and feed waste into the SARI brine line through the Orange County WWTP. Plan calls for additional desalters (based on groundwater TDS trigger). GWRS reclaims wastewater (RO) and recharges to Orange County groundwater basin. Storm flow capture and recharge at the base of hills. Forecasted groundwater quality over 100 years as part of the maximum benefits study. In Chino Basin there is very little outflow. Curve presented incorporates implemented activities, shows activities “manage” the degradation. Land use and water use salts up the groundwater. Initial Conditions identified through monitoring. Salt flux model (whirred blender) on spreadsheet (Volume weighted blended average.) Are employing more complete models now. Aquifer is 1000’ deep.

Question: Climate conditions? Answer: 50 year hydrology over constant land use. Question: This morning I asked if the Plan is heavily dependent on export and was told no... Answer: Desalter is in, without it the curve would be higher. Question: So managed degradation? And who decided to manage to this level? Answer: Diagram is the end of the process (start with nothing in place and layer on implementation). Regional Board made a call on acceptability. Also cost consideration. Curves help Regional Board determine that Beneficial Use continues to be protected. Had a lot of salt information (sources) but lacked regulatory certainty (boundaries. WQOs.) and business reasons to deal with salt (\$3-\$5 billion cost for no action. Export water along with salt, yet SWP water scarcer. Basin Plan would have limited recycling opportunities). Regional Board agreed to review WQOs, but lacked money, so the Task Force concept was employed.

Question: What environmental groups participated? Answer: Not many, little interest. Question: No one was worried about storm water flow for fish? Answer: Concrete-lined river. But do have the Santa Ana sucker. Question: SJR is a gaining river. EJ issues. Answer: Used same methods to determine

WQOs, ambient water quality, and assimilative capacity. "Maximum benefit" WQOs plus salt management commitments (including monitoring) equals the regulation. POTWs are primary source of flow to the Santa Ana River. Question: Beneficial use was drinking water, not agriculture? Answer: Yes. Upper watershed was pretty fully adjudicated. Without the Regional Board process you would have to adjudicate water quality. Chino Basin, as part of adjudication, had a requirement to develop a Basin Optimization Plan. Main adjudication is through Prado Dam. Have a watermaster and program to ensure (SAWPA). Excess flow builds up credits. If no credit and can't meet, party can be forced to provide or obtain flow. Concentration based, not mass based, at the Dam, but WWTPs have WLAs (load) based more on groundwater objectives than the Prado Dam objective. For each management zone estimated mass (TDS, N) and volume flow for historic ambient condition (54-73) to set WQOs; current ambient conditions (78-97) as measure of compliance. Question: At same depth? Answer: Same approach, but wells can and do change over time (looking into this now). Development of statistics, plotted, and drew isolines. Data collection. Met with agencies, developed data protocols. Collected historical data. Process, check and upload data. Level of effort needed was underestimated.

Question: How did you go about collecting private well data? Answer: Regional Board required collection and monitoring. Data types needed: 1) for each well: owner, location, name/ID, perforated intervals, 2) water level: date, depth to water, stick-up, 3) water quality: date, chemical, form, result, units, qualifier, detection limit. Question: Did you use UN ontology? Answer: We collected the data we needed. In some cases we had to go the extra mile. Historical data was not in very good shape. Had a good ERD and data dictionary. Used USGS elevation datum to unify depth data. Difficulty with N and units of measurement. First tried to go straight to source. Negotiated with owners and labs so labs could send electronic data directly. GWRD had a great database. Cooperated with Regional Board (contamination sites, PRPs), USGS monitoring, CDPH, Counties, DWR. Prefer municipalities' data to state data. Hard copy reports. Different excel formats, database files (tables, RDMS). Multiple data source – leads to merging problems, duplications. Incomplete data; incorrect data (location, parameter name, units); Data Processing. Need good people to overcome these issues.

Keys to success: Database structure, upload templates, automated QA/QC checks: minimum required data, correct field formats, duplicate data. Look at time series before putting into database. Meet with primary data sources up front. Verify locations, detail descriptions of collection methods, etc. Developed queries to extract data. QA/QC: used time series (old v new data), standard methods test (anion-cation balanced, measured TDS v calculated TDS, measured EC v sum of ions, TDS:EC); statistical tests for normality and outliers. Reject data if it fails any test. Water Quality Point Statistic: Must have at least 3 data points over 20 years (each in a different year) statistic accounts for sampling error, analytical error,... Estimated

volume, water levels, specific yield, and TDS for each grid cell (400m x 400m cells) to calculate mass.

Question: Screen intervals? Doesn't that affect, how variable with depth? How confident in homogeneity and how representative is sample? Answer: Some areas had 3, 2, or 1 aquifer systems and we made best judgment of which for each management zone. Felt this was reasonable, if not perfect, approach. Question: Could also test assumptions of homogeneity with monitoring. Answer: We re-compute point statistics every 2 years and the reevaluate the assimilative capacity. Parties have to project 20 years of water quality with all planned (recharge) activities and request assimilative capacity from Regional Board. Assimilative Capacity goes to projects with the greatest benefit to region. (Groundwater clean-up a high priority, swapping supplies with recycled water may be lower). Assimilative capacity definition didn't precede our effort, we needed a stable definition. With this approach, some management zones had no assimilative capacity and low WQOs. So SWP import was a problem there (and recycled recharge) -> maximum benefit kicks in (68-16). Lessening dependence on SWP (a benefit) while protecting beneficial uses.

Meeting Sign-in

Meeting Technical Economic Comms. Date 5/14/09

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