

From: [Billings, Bradford, EMNRD](#)
To: [Sam Enis](#)
Cc: [Patterson, Heather, EMNRD](#); [Bratcher, Mike, EMNRD](#)
Subject: RE: Candelario 24 #1 SWD Battery Closure Report
Date: Thursday, April 28, 2016 3:37:49 PM

Hello Sam,

Have had a short time to look at your report on the above site and your request for closure of 2RP-2400. Would like to talk with you next week, but I have generated some quick questions for discussion for next week. Some you may have easy answers too, others perhaps not. I have looked at and quickly reviewed the previous report by RECS as well. also, thanks for your email and phone call. Have been working out of office last few days.

- The work has been generated by a reported appx. 50 bbl release of produced water (PW), perhaps more volume, but this is the value we have.
- From RECS report, from about 24'-36' belowground surface (bgs) in Point #1 area a chloride (Cl) average of about 11, 000 ppm. And from Point #2 at about the same depths an average chloride value of 3800 ppm. Depths were attained at intervals over a 2-3 month period. Different drilling time frames. So, between July and Sept. 2014 this 50 (+or-) bbl release ventured this far down into the soil column? Does this seem reasonable to you?
- Did not see a TDS evaluation of ground water (nor major cation/anion discussion). Might be helpful.
- Did not see any soil Cl values from the soils at the monitor well locations. If we had them it might have proved helpful in terms of evaluating historical potential regarding releases, or in what might be naturally occurring. Without them it could be just conjecture to indicate them (other natural or historical oil and gas operations) as impactors to the ground water chemistry. Plus an evaluation from data sets to determine other oil and gas activities in the area would have helped this discussion.
- The statement made that "...impacts to groundwater are fairly limited in extent, and will dissipate with time." is not something I necessarily agree with. Such as having soil Cl levels noted above, at depths likely in contact with groundwater. Seems to me Cl could very well impact ground water for some extended period of time. While I do not disagree per se, that a 50 bbl release could not move to the reaches seen, it does not mean that the site (or other historical sites, if any) has only had this 50 bbl release.
- OCD generally requires that ground water impact with Cl above a 250 ppm value be remediated and/or monitored until eight (8) consecutive quarters of ground water values are at or below this 250 ppm maximum. This alone precludes closing 2RP-2400 at this time. Site would likely require, depending on remedial selection either an Abatement Plan or Discharge Permit Plan. Remedial requirements do take into account a verified background level to work towards in lieu of the 250 ppm.
- Logs of wells do not seem to indicate contact with a known salt bearing formation.
- It is conceivable that the Cl value reported in MW-3 groundwater is not connected with this or any historical release from the site in question. However, I am not completely sure the

value reported “connects” with your discussion regarding Cl levels found in the Pecos either. It is also conceivable to imagine a subsurface alluvial channel directing the Cl contamination towards MW-3 and “bypassing” MW-2 location. Also, the fairly in-line layout of the monitor well locations does not lend itself well to being highly confident in ground water movement/direction that has been evaluated. I am not disagreeing with your data as presented, nor the gradient as calculated. I just usually prefer the monitor wells to be off-set more than is the case here, especially with only three wells (the minimum) for said calculations.

- If this ground water is protectable (less than 10,000 ppm TDS) then the OCD cannot walk away from this site based on current Cl values reported. Lack of potential exposure is not a driver alone in decision process.

Anyway, in discussion next week we can talk about the above, and some of the thoughts may prove moot, and others not. Looking forward to a discussion. If you have any of the data sets mentioned above (ground water TDS, soils Cl at well locations) please forward to me as you can. If I am off base, or not clear on the above communication, I am sure we can work it out on the phone.

Thanks for your time and effort. Wednesday next week mid-morning or mid-afternoon New Mexico time would be fine. If you want a specific time (suggested) email me with it and I will be at my office phone.

Sincerely,

Brad Billings

505-476-3482