



EXECUTIVE OFFICER'S REPORT • March 2018 Covers January 16, 2018 – February 15, 2018

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State and Regional

1. Personnel Report – *Eric Shay*

New Hires

- Abby Cazier, Water Resource Control Engineer, Cleanup/Site Investigation & Enforcement Unit, South Lake Tahoe. This position drafts permits, reviews and comments on technical reports and work plans, prepares technical reports and enforcement documents and orders, inspects sites for planning and compliance, coordinates with federal, state, and local agencies, conducts engineering and hydrologic/hydrogeologic analyses regarding water quality impacts, and conducts investigations into environmental complaints. The previous incumbent was Eric Taxer.

Promotions

- Rob Tucker, Senior Water Resource Control Engineer, North Basin Regulatory Unit, South Lake Tahoe. This position oversees staff work on waste discharge requirements, National Pollutant Discharge Elimination System permits, and Clean Water Act certifications for municipal and industrial wastes, storm water, stream and wetland restoration projects, and other dredge and fill activities. The current incumbent, Alan Miller, will be retiring in June 2018.

Vacancies – We are currently recruiting for the following positions:

- Scientific Aid, Department of Defense / Site Cleanup Program Unit, Victorville. This position reviews, compiles, and organizes scientific data from water quality investigations, dischargers' self-monitoring reports, quarterly monitoring reports, and groundwater sampling information collected by Water Board staff; and assists technical staff with the collection of groundwater samples, data entry, and data presentation. The previous incumbent was Sandra Lopez. (The position was reclassified from Seasonal Clerk.)
- Supervising Engineering Geologist, South Lake Tahoe. This position serves as the Division Manager for the North Lahontan Regulatory Division, overseeing the North Basin Regulatory Unit, Cannabis Regulatory Unit, and Non-Point Source Unit. The previous incumbent was Doug Smith.
- Water Resource Control Engineer, Waste Water & Agricultural Operations Unit, Victorville. This position provides regulatory oversight of projects involving discharges to groundwater or surface waters and projects intended to restore and/or enhance water quality in the Waste Discharge Requirements (WDRs), National Pollutant Discharge Elimination System (NPDES), and Site Cleanup Programs. The previous incumbent was Cephas Hurr.
- Water Resource Control Engineer, North Basin Regulatory Unit, South Lake Tahoe. This position is the office's primary contact for domestic wastewater treatment facilities and domestic wastewater issues north of Conway summit, in addition to being responsible for several industrial discharges. The position involves conducting field inspections, interacting with County health offices, reviewing design reports, determining compliance permits, and writing Waste Discharge Requirements and National Pollutant Discharge Elimination System Permits. The previous incumbent was Rob Tucker. Vacancy announcement has not yet posted.

Departures – None

2. UC Davis Extension Groundwater Law and Hydrology Course – Jennifer Watts

A Water Board staff member, Jennifer Watts, attended the UC Davis Extension Groundwater Law and Hydrology course held in Sacramento on January 31, 2018, that was taught by Kevin O'Brien of Downey Brand law firm and Tom Elson and Will Halligan of Luhdorff & Scalmanini Consulting Engineers. The course covered technical topics such as basic hydrogeology concepts, interactions between surface water and groundwater, the use and design of water production and monitoring wells and factors to consider related to well spacing and potential interference. It also addressed, among other topics, the components of a conceptual water budget and reviewed negative impacts of basin overdraft, such as subsidence, seawater intrusion and surface water depletions. Additionally, the course covered groundwater law, including types of groundwater rights, groundwater basin adjudications, a review of pertinent court cases and the significance and requirements of the Sustainable Groundwater Management Act of 2014 (SGMA). The impetus for having staff attend the course is the current effort

underway to address topics related to the Mojave River identified in the 2015 Triennial Review of the Lahontan Region Basin Plan. Since the Mojave River is strongly influenced by groundwater conditions in the Mojave watershed, it is important that staff working on these issues possess an understanding of groundwater hydrology and current groundwater management practices. Incidentally, the Mojave Basin, as an adjudicated groundwater basin, is not subject to most of the provisions of SGMA, however there are reporting requirements for adjudicated basins pursuant to SGMA that do apply.

The Mojave River is unusual because for most of its length, flow in the river typically occurs underground with only a few segments characterized by perennial surface flow. Increased groundwater pumping over the last century has reduced the spatial extent of perennial surface flow in the river. However, during very large storm events, the Mojave River does exhibit continuous surface flow from its headwaters along the north slope of the San Bernardino Mountains to its terminus at Soda Lake east of Barstow. The topics identified in the 2015 Triennial Review that are currently being addressed by staff include designating additional beneficial uses to portions of the Mojave River for the protection of wildlife and habitat, removal of a beneficial use that is not appropriate for Mojave River environmental conditions and an examination of the need to create new or revised water quality objectives for the segment of the Mojave River downstream of Victor Valley Wastewater Reclamation Authority's surface water discharge point. In addition, Lahontan Region Water Board staff are evaluating groundwater quality objectives in the Mojave River basin, which is the fourth Mojave River topic identified in the 2015 Triennial Review. Staff anticipates updating the Board regarding the surface water beneficial use changes in the fall of 2018.

North Lahontan Region

3. South Y PCE Public Meeting – Jeff Brooks and Brian Grey

Brian Grey, Jeff Brooks, and Scott Ferguson attended and participated in a February 7, 2018, public meeting at the City of South Lake Tahoe's Council Chambers to discuss the South "Y" tetrachloroethene (PCE) groundwater contamination. The meeting was organized by the three South Lake Tahoe water purveyors (South Tahoe Public Utility District, Lukins Brothers Water Company, and Tahoe Keys Water Company), was very well attended (75+, full room), and was broadcasted live on the internet and covered by the Tahoe Daily Tribune and Channel 2 (KTVN) from Reno (CBS affiliate). The meeting was Channel 2 News' lead story for its 11:00 p.m. newscast.

The purpose of the meeting was to provide the community (1) background information on the PCE groundwater contamination in the South "Y" area of South Lake Tahoe; (2) information related to current conditions, such as identifying the municipal water supply wells that have been affected by the contamination; and (3) actions being taken by the three water purveyors to continue providing their customers safe drinking water. The key message for the evening was that the water provided by the three water purveyors has been and continues to be safe, meeting all drinking water standards.

The first approximately 30 minutes of the meeting consisted of presentations from the three water purveyors. The presentations covered the causes of the contamination (i.e., properties/businesses where PCE-containing products were used), the properties of PCE and how the contamination has migrated, the contamination's impacts to the three water systems, the steps that have been taken to continue providing safe drinking water, and the actions that are being taken. State funding assistance was mentioned several times throughout the evening during both the presentations and Q&A sessions. Additional information was provided on the Proposition 1-funded Feasibility Study that the South Tahoe Public Utility District is implementing, with a focus on evaluating aquifer characteristics for purposes of identifying and

implementing a project that captures/intercepts some of the contamination before it can move further hydraulically downgradient and into the influence of municipal water supply wells.

During the presentations, index cards were handed out to the audience for the purpose of submitting questions to the water purveyors and Water Board staff. Questions answered by Water Board staff focused on PCE contamination source/responsible party identification, insurance company responsibilities, and publication of information used in developing the PCE drinking water standard. The questions allowed Water Board staff to explain that:

- there is currently one set of responsible parties associated with the Lake Tahoe Laundry Works site that the Water Board has identified as a source of PCE, and has issued a Cleanup and Abatement Order for the initial purposes of identifying the lateral and vertical extent of contamination originating from the site, and subsequently developing a Corrective Action Plan to address such contamination;
- Water Board staff is re-evaluating existing information and developing screening criteria for purposes of identifying other potential PCE sources;
- the Water Board is initiating an additional field investigation for purposes of identifying other potential PCE sources; and
- if additional PCE sources are identified, they will be brought into the program.

The water purveyors' next public meeting on this matter is currently scheduled for June 2018, following completion of field work associated with the South Tahoe Public Utility District's Feasibility Study Project. Water Board staff will attend future public meetings to answer the public's questions, and to provide updates regarding the Water Board's efforts to address the PCE contamination in the South "Y" area.

4. **Tioga Lodge at Mono Lake – Update Regarding Post Office Creek Diversion Cleanup and Abatement Order – Lisa Scorable**

In October 2016, Gloria Ma, owner of the Tioga Lodge at Mono Lake, engaged a contractor to clear and stockpile woody and other debris, and to divert Post Office Creek's perennial flows into an old, historically-constructed channel and pond on the property. In addition to the land-clearing/disturbing and creek diversion activities on the Ma property, the contractor conducted similar work on

adjacent, state-owned relict lakebed lands managed by the California Department of Parks and Recreation (California State Parks), further disturbing creek channels, soils, and wetland habitat on the relict lakebed. This work was completed without obtaining the required authorizations to do so from local (Mono County), state (Water Board, Department of Fish and Wildlife, and California State Parks), and federal (U.S. Army Corps of Engineers) agencies.

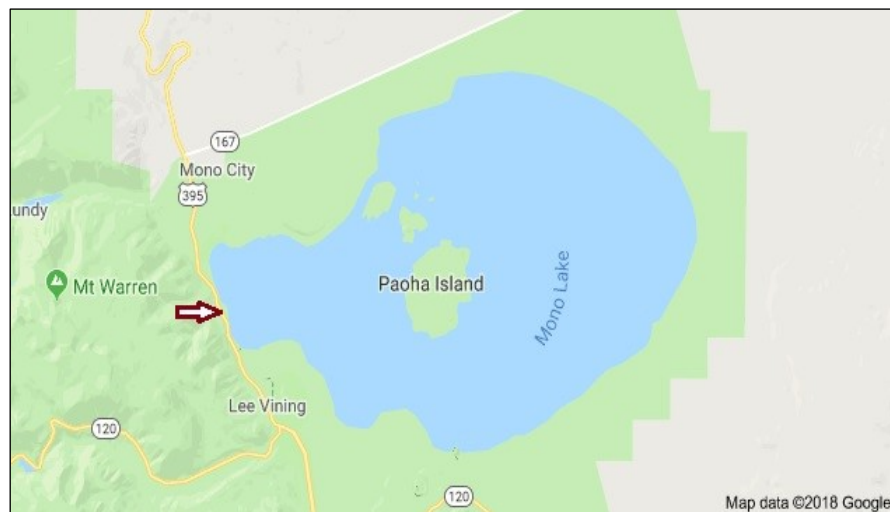


Figure 1 – The Tioga Lodge at Mono Lake property is located near the west shore of Mono Lake (red arrow).

On October 21, 2016, in response to the unpermitted work affecting waters of the United States in violation of waste discharge prohibitions prescribed by the *Water Quality Control Plan for the Lahontan Region*, I issued Cleanup and Abatement Order (CAO) No. R6V-2016-0063. The CAO requires immediate restoration of Post Office Creek to its pre-disturbance channels, and stabilization of the disturbed soils on the site. The soil stabilization work required by the CAO is necessary to prevent discharges of earthen materials to Mono Lake. Mono County and the California Department of Fish and Wildlife issued Notices of Violation.

When the required restoration did not proceed immediately, per the CAO and directives from other regulatory agencies, the state agencies referred the matter to the California Office of Attorney General (Attorney General's Office). The Attorney General's Office filed a complaint against Ms. Ma and other responsible parties on September 13, 2017. Subsequently, Ms. Ma and TGL Management LLC engaged the services of Jim Paulus, Ph.D., who prepared a November 2017 *Draft Habitat Restoration Plan and Restoration Monitoring and Reporting Program*.



Figure 2 – Post Office Creek flow was diverted into an old, historically constructed channel and pond on the property, and wood and other debris was cleared and stockpiled on the site.

The draft plan generally proposed re-establishing the creek channels (widths, depths and alignment), restoring flow, reusing the woody material in the debris piles for microhabitat variation and mulch, reseeding upland and lowland habitats (e.g., affected wetland and riparian areas), installing willow stakes in wetlands, and conducting annual vegetation monitoring and maintenance. The draft plan generally represented a good initial starting point; however, Water Board staff has some concerns with the draft plan that will be discussed with Ms. Ma before the plan is

finalized. In preparation for site restoration later this year, Ms. Ma and TGL Management LLC removed three of the debris piles this winter that were placed within and/or immediately adjacent to Post Office Creek's primary and distributary channels. Based on the draft plan, the majority of the restoration activities are planned for summer/fall 2018, to be followed by annual vegetation monitoring, maintenance, and adaptive management, as needed, for at least five years or until final success criteria for the restoration project have been met.

South Lahontan Region

5. Fremont Basin Regional Water Management Group Meeting – Jeff Fitzsimmons

The Fremont Basin Regional Water Management Group (Fremont RWMG) held a stakeholder meeting in California City on January 18, 2018. Member agencies of the Fremont RWMG include Antelope Valley East Kern Water Agency, Mojave Public Utilities District, and the City of California City. The meeting was attended by Water Board staff Jeff Fitzsimmons, multiple staff from each of the member agencies, representatives from the Rand Communities Water District, and several residents of the Fremont Basin. The purpose of this meeting was to present to the stakeholders a progress report on the efforts related to development of the Integrated Regional Water Management Plan (IRWM Plan) and to discuss other matters pertaining to the Fremont RWMG. Brian Deitrick and Brenda Ponton of Woodard & Curran led the stakeholder meeting.

Discussion on prospective projects included a call for projects, along with the submittal, review, and selection processes. As part of the review process, a number of projects will be selected to apply for specific grants. Those projects that are multi-beneficial or complement other projects for increased benefit to the Fremont Basin will be given the highest priority for grant funding. All projects are expected to be incorporated into the overall IRWM Plan.

Options for increasing water supply and maintaining water quality with respect to current demands, anticipated demands, and climate change were discussed. The Fremont RWMG anticipate having the limited ability to meet the demands of the projected regional cannabis cultivation industry, along with any associated employment and population growth demands. Reclaimed water and water with elevated nitrate concentrations were discussed as potential source waters that require additional evaluation regarding feasibility and limitations for meeting the demands of the basin.

6. Inyo – Mono Regional Water Management Group – *Jeff Fitzsimmons*

Water Board staff attended the Inyo-Mono Regional Water Management Group (Inyo-Mono RWMG) regularly scheduled stakeholder meeting on January 24, 2018. The meeting was hosted at the Owens Valley Paiute Shoshone Cultural Center. These stakeholder meetings serve as an opportunity for representatives and citizens of the Inyo-Mono area to voice their concerns, and provides the opportunity for discussion and collaboration of the participant's thoughts and efforts to manage regional water issues, taking into consideration social and economic concerns. A quorum of representatives of the Inyo-Mono RWMG were present to approve prior meeting summaries from January 2, 2017, and October 25, 2017. Additionally, the quorum selected three Inyo-Mono RWMG members to provide invoice payment oversight.

Water Board staff, Cindy Wise, provided a handout and presentation of the “Bishop Creek Vision Project.” This project pertains to the Water Board’s efforts in addressing water quality impairments in Bishop Creek. Bacteria detections in water samples collected from Bishop Creek prompted our ongoing efforts to focus on identifying the extent and source(s) of the bacteria as documented in Bishop Creek.

Stakeholder representatives provided updates on several grant funded projects and indicated that these projects are either on schedule or have already been completed. Stakeholders also discussed criteria for prioritizing future projects, opportunities for Proposition 1 and Proposition 84 implementation grants, and soliciting funds from stakeholders to help manage the Inyo-Mono RWMG. The Inyo-Mono RWMG intends to distribute a letter of solicitation for funds from stakeholders that will also include an attachment/enclosure providing a detailed status of projects to date.

The Inyo-Mono RWMG proposed updating the Integrated Regional Water Management Plan (IRWM Plan) with input and/or assistance from the stakeholders. Additionally, the Inyo-Mono RWMG indicated that a best management practices advisement committee, composed of stakeholders, would be formed to assist with updating the IRWM Plan and assessing and prioritizing proposed projects. The next Inyo-Mono RWMG meeting date has not yet been announced.

7. Antelope Valley Integrated Regional Water Management Group Meets in Palmdale to Discuss New Requirements, Update on Advisory Team List, and Update on Draft Amendment to 2007 Memorandum of Understanding – *Tiffany Steinert*

Integrated Regional Water Management (IRWM) began in 2002 when the Regional Water Management Planning Act (SB 1672) was passed by the Legislature. Since then, various bond acts approved by California voters have provided over \$1.5 billion in State funding to support and advance integrated, multi-benefit regional projects. The local match on the State resources has

often been on the order of 4:1. Cities, counties, water districts, community/environmental groups and others across the State have worked collaboratively to organize and establish 48 regional water management groups, covering over 87 percent of the State's area and 99 percent of its population. Since the Antelope Valley IRWM began in 2002, they have acquired approximately \$13.7 million to assist in water projects throughout the Antelope Valley Basin.

The Antelope Valley IRWM group held a meeting in Palmdale on February 7, 2018, to discuss the vacancies on the Advisory Team (A-Team), address new compliance requirements, and receive an update on the draft amendment to the 2007 Memorandum of Understanding (MOU). The meeting was organized and attended by members of the Antelope Valley IRWM group, as well as Water Board staff, Tiffany Steinert. Approximately 15 Antelope Valley IRWM stakeholders attended the meeting.

Currently, the Antelope Valley IRWM stakeholders are concerned with new compliance requirements. These requirements include updating region objectives to include determining the impacts from climate change, preparing a Storm Water Resources Plan, and preparing a Sediment Management Plan. A single line addition to the region objectives in the MOU was added to address the climate change requirement. The Storm Water Resources Plan and the Sediment Management Plan are still being written by the consultant, Woodard & Curran. Water Board staff offered technical assistance for items that should be included in the Storm Water Resources and Sediment Management plans.

The Antelope Valley IRWM stakeholders then addressed vacancies on the A-Team, which is composed of seven seats where the elected representative votes on the behalf of one of the categories listed below. Each A-Team representative holds the seat for three years and typically has a designated stand-in in the event that the elected representative is not available. The only A-Team seat still open is for agriculture.

A-Team Seat Category	Current Representative
Agriculture	Vacant – Previously Gene Nebeker
Conservation, Environmental, and Water Quality	Richard Campbell
Industry & Commerce	Nominee – Zachary Ahinga (Mark Beuhler, Stand-in)
Municipalities	Nominee – Gabe Nevarez (Stand-in vacant)
Mutual Water Companies	Nominee – Mary Woods (Stand-in vacant)
Public/Land Owners/Rural Town Councils	Bob Large
Urban Water Suppliers	Kirk Allen (Jim Riley, Stand-in)

The draft amendment to the MOU was also addressed. The Antelope Valley IRWM has a contract with Woodard & Curran to provide a basic MOU update to bring the Antelope Valley IRWM plan into compliance. Currently, Woodard & Curran has completed the introduction, regional description, issues, and needs of the document.

The meeting concluded with discussion over contacting other IRWM groups before the competition for grants begins. The stakeholders agreed that coordination with the other IRWM groups is a preferred approach. The next Antelope Valley IRWM meeting will be held on April 4, 2018.

8. Standing Item – Onsite Septic Systems – Status of Local Agency Management Plans
 – Francis M. Coony

The implementation of the state-wide policy (Policy) for Onsite Wastewater Treatment Systems (OWTS) in the Lahontan Region, to date, is detailed below.

Water Board Workshops – Workshops regarding the OWTS Policy have been held during Water Board meetings in July 2013, September 2016, April 2017, and May 2017. The purpose of these workshops was to discuss the OWTS Policy and the associated issues, such as the requirements of a Local Agency Management Program (LAMP). These effective workshops cleared the path for Water Board staff to bring proposed LAMPs to the Water Board for consideration and approval, as appropriate.

Lahontan Water Board LAMP Approval Status – Water Board staff expect that all submitted LAMPs will be received for Water Board consideration before the Tier 1 effective date of May 13, 2018. However, a local agency may submit a draft LAMP at any time. The following is a status of LAMPs planned, received, or approved by the Lahontan Water Board.

- The San Bernardino County LAMP was approved on July 13, 2017.
- The Town of Apple Valley and City of Hesperia LAMPs were approved on January 10, 2018.
- The City of California City has submitted a final proposed LAMP. The LAMP is planned to be heard during the April 2018 Board meeting.
- Inyo and Mono Counties have submitted draft LAMPs. Mono County submitted a revised LAMP in December 2017. Both LAMPs remain in the review process by Water Board staff. Water Board staff anticipate scheduling these LAMPs for Water Board consideration in May or July 2018.
- The City of Adelanto submitted a draft LAMP in May 2016, and Water Board staff provided comments. To date, Adelanto has not submitted a revised LAMP.
- Alpine County submitted a draft LAMP and responded to staff comments on January 17, 2018, with a revised LAMP. The revised Alpine County LAMP is in the review process.
- The City of Barstow submitted a draft LAMP in November 2017, and this LAMP is in the review process.
- The City of Victorville has verbally communicated with Water Board staff that they do not plan to submit a LAMP. Instead, they plan to manage their OWTS program under the Policy's Tier 1 prescriptive siting and design requirements.

Other Water Boards LAMP Approval Status – The following is a status of LAMPs approved or to be considered by other Water Boards.

- Los Angeles Water Board – Lahontan Water Board staff met with Los Angeles Water Board staff on August 8, 2017, to clarify Lahontan Water Board comments on the Los Angeles County LAMP. Together, with the Los Angeles County staff, both the Los Angeles and Lahontan Water Board staff members met again on January 24, 2018, to further discuss comments on the LAMP. Our comments have been resolved, and the Los Angeles Water Board intends to consider the Los Angeles County LAMP during their April 2018 Board meeting.
- Central Valley Water Board has approved the following County's LAMPs, all of which are partially in the Lahontan Region: El Dorado, Kern, Modoc, Nevada, and Placer. Sierra County may select to be covered under the Policy's Tier 1 prescriptive siting and design requirements.

OWTS information may be found on the Lahontan Water Board's web site, including draft LAMPs, final proposed LAMPs, approved LAMPs, and Water Board comment letters. The web site address is as follows:

http://www.waterboards.ca.gov/lahontan/water_issues/programs/owts/index.shtml

9. Dispute Elevated to EPA Administrator Pruitt, Draft Final Explanation of Significant Differences, South Air Force Research Laboratory, Edwards Air Force Base – Alonzo Poach

Following the first 5-Year review of the South Air Force Research Laboratory (South AFRL) Record of Decision in 2012, the Air Force submitted an Explanation of Significant Differences (ESD) document for regulator review with the intent to add the newly adopted California Maximum Contaminant Level (MCL) for perchlorate. However, the Air Force also proposed changing the toxicity criteria for Perchloroethylene (PCE) adopted in the original South AFRL ROD (signed in 2007), to a less stringent federal toxicity number. The United States Environmental Protection Agency (USEPA) toxicity number for PCE (adopted in 2012) is approximately 23 times less stringent than the State of California toxicity number. The Department of Toxic Substances Control (DTSC) initiated formal dispute on the document in 2014 because the less stringent PCE toxicity value would cause significant changes to cleanup and potential land use. Since 2014, members of management from all agencies have met on various occasions in an attempt to resolve the dispute. A majority of the disputed issues had been worked out (including adopting the perchlorate MCL of 6 micrograms per liter); however, a resolution could not be reached on the PCE toxicity value. In the Federal dispute process if resolution cannot be reached, the USEPA Regional Administrator issues a final decision to the stakeholders. If any party does not agree with the USEPA Regional Administrator's decision, it can be further elevated to the USEPA Administrator in Washington, D.C.

On January 17, 2018, USEPA Region IX's acting Regional Administrator, Ms. Alexis Strauss, ruled that the California toxicity number for PCE originally adopted in the 2007 Record of Decision would stand for the South AFRL. Ms. Strauss noted that there was no evidence of site-specific factors that warranted the change and that the California PCE toxicity number remained protective of both human health and the environment. The Air Force does not agree with the decision and has elevated the dispute to the USEPA Administrator, Scott Pruitt, for his consideration.

10. Update on Barstow Perchlorate – Alonzo Poach

Status of Site Cleanup Account grant

Water Board staff submitted a grant application to conduct a pilot scale treatability study at the perchlorate source area located at 30433 Poplar Road in Barstow. The application was submitted to the Site Cleanup Subaccount Program (SCAP) in April 2016. The application was approved, and on December 29, 2016, \$2.67 million was awarded to the project. In January 2018, the Department of General Services and SCAP personnel selected APTIM Services, Inc. as the consultant to design and construct a pilot scale, soil-flushing system in the source area, to install groundwater extraction wells to capture perchlorate released to the aquifer during the soil-flushing process, and to conduct site characterization. The extracted groundwater will be treated onsite. Data collected during the operation of the pilot-scale system will be used to evaluate the effectiveness and feasibility of the soil-flushing system and groundwater treatment technologies. APTIM will use this data to design a full-scale system for the treatment of perchlorate in the source area for soil and groundwater, under the direction and oversight of Water Board staff. Aquifer data will be used to evaluate groundwater remediation technologies for that portion of the perchlorate groundwater plume that has migrated downgradient of the source area. Water Board staff, Alonzo Poach, attended the kick-off meeting for the contract on February 1, 2018, in Sacramento with DGS, State Board, and APTIM personnel. In the coming months, the scope of work will be finalized, and the contract will be executed so that planning for site investigation and remedial activities can begin.

Water Board Contract for Supplying Bottled Water

After the discovery of perchlorate pollution in the area, Water Board staff applied for grant money through the State Water Board's Division of Financial Assistance Cleanup and Abatement Account Unit, to provide replacement water to impacted residents. The Lahontan Water Board

currently supplies eight residents in the area with replacement-bottled water for drinking and cooking. A total of eleven residential wells in the area are impacted by perchlorate over the 6 parts per billion maximum contaminant level (MCL). There are two residents being supplied bottled water by the City of Barstow because they are also impacted by nitrate. One additional residence is over the nitrate level but the residence is unoccupied. Because the perchlorate plume has advanced much faster than expected, the contract is quickly running low on funds as the plume continues to impact additional residential wells. This will become a bigger problem as the perchlorate plume has the potential to affect more residents in the area. Water Board staff is actively searching for other sources of funding to continue to supply safe drinking water to the community members affected by perchlorate.

Status of Barstow Perchlorate Plume

Water Board staff collected fourth quarter 2017 groundwater samples during October 2017 from thirty-seven private residential wells and from sixteen groundwater monitoring wells owned by the city of Barstow. The results of the October 2017 sampling round were briefed to Board members during the January 2018 Board meeting, and a similar presentation was also briefed to the Mojave Water Agency Technical Advisory Committee on February 1, 2018. In January 2018, Water Board staff collected first quarter 2018 samples from eighteen private residential wells and eight-groundwater monitoring wells. The second and fourth quarter sampling round (April and October) is a more robust round of sampling that is used to evaluate plume shape in winter and at the end of summer (when the highest and lowest water levels are expected). The first and third quarter sampling rounds (January and July) concentrate on defining the leading edge of the plume and monitoring residential wells that are impacted with perchlorate at or above the MCL. The results from these samples help define the extent of the plume and track trends in perchlorate concentrations and movement. Based on the analytical results from the January 2018 quarterly sampling event, the plume continues to move southeast into the residential area south and east of Interstate 15 (Figure 1). Generally, concentrations of perchlorate above 500 parts per billion are located west of Webster Road. However, perchlorate at the 6 parts per billion MCL is now observed just to the west of Marks Road. Based on a limited number of monitoring wells that monitor deeper portions of the aquifer, the perchlorate plume appears to be isolated to the shallow part of the aquifer.

As of the January 2018 sampling event, eleven residential wells exceed the primary MCL for perchlorate. Of the eleven impacted residents, eight are supplied bottled water by the Water Board and two are supplied bottled water by the City of Barstow (these residences are also impacted by nitrate). One additional home is currently unoccupied and would be supplied water upon occupancy by the City of Barstow due to nitrate levels.

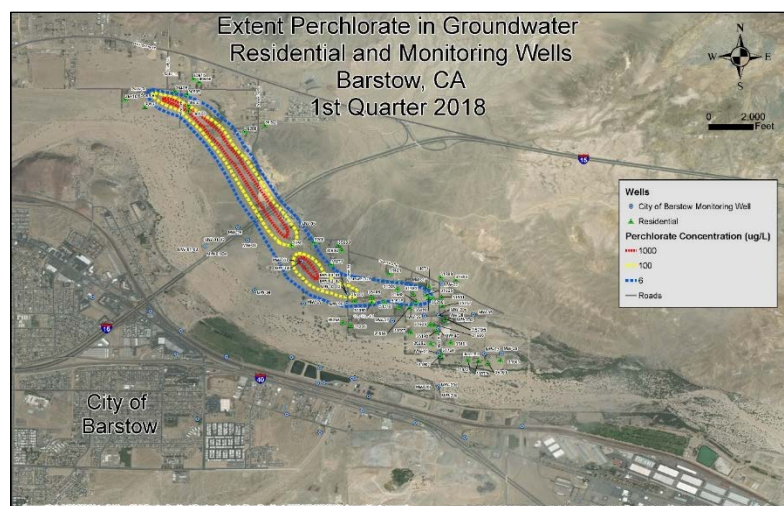


Figure 3 - Latest Plume Map showing the extent of perchlorate above the MCL

11. Standing Item – City of Barstow Wastewater Treatment Plant Compliance with Enforcement Orders – *Ghasem Pour-ghasemi*

This standing item describes the status of the City of Barstow's (City's) wastewater treatment facility, groundwater nitrate pollution cleanup, and the delivery of replacement drinking water to affected residences.

Plant Upgrades Completed

Following the 2015 Phase I improvement projects to the City's wastewater treatment plant and disposal percolation ponds, the current plant flow is about half of its rated capacity of 4.5 million gallons per day (mgd) with an average flow of 2.3 mgd. Phase II improvements are not yet scheduled.

- The average effluent total nitrogen concentration for the past 12 months is 6.55 mg/L
- Treated effluent is discharged to percolation ponds 1, 2, and 3, as well as the southern irrigation field.
- Rehabilitation of Ponds 1, 2, and 3 are completed and Pond 4 is planned for reconstruction to improve water delivery infrastructure and percolation ability.

Nitrate Pollution Groundwater Cleanup

Cleanup and Abatement Order (CAO) No. R6V-2013-0045 required the City to design and construct a system to capture and treat nitrate polluted groundwater downgradient of the northern irrigation field in the Soapmine Road neighborhood. Four additional amendments to this CAO were made due to the presence of perchlorate that is migrating from a contaminated site about three miles upgradient of the City's nitrate source area (formerly used northern irrigation field). The City is not responsible for the perchlorate pollution, but the two plumes of perchlorate and nitrate are now commingled in the Soapmine Road area. Both plumes are moving eastward sub-parallel to the Mojave River. Water Board and City staff agreed that the perchlorate and nitrate groundwater pollution should be addressed simultaneously.

BKT consultants, in cooperation with the City, applied for and received a \$1.7 million grant from the California Energy Commission (CEC) to conduct a pilot project extracting a small amount of groundwater (0.175 to 0.35 mgd) to treat and remove both nitrate and perchlorate. The treatment system is designed to treat perchlorate only after complete treatment of nitrate is achieved.

- BKT completed construction of two treatment vessels and is in the process of completing the pipeline to its planned discharge locations.
- The vessels have been tested for hydrostatic pressure.
- BKT is waiting for approval from the Division of Drinking Water to start the pump and treat process, which should be up and running in the next two months.
- Since November 2016, Water Board staff met with the City and BKT on several occasions to discuss details of the construction and disposal site for the treated water.

The pilot project, as currently installed, does not appear to satisfy the CAO requirements, and the City may miss some of the deadlines in the CAO.

Residential Well Sampling in the Soapmine Road Area

The City continues to conduct residential well sampling of drinking water wells in the Soapmine Road area and provide replacement water, as required by CAO R6V-2007-0017.

- In first quarter 2018, the City sampled 35 residential wells.
- Only one residential well exceeded the drinking water MCL for nitrate as nitrogen of 10 mg/L.

- A total of 11 private wells showed nitrate as nitrogen concentrations exceeding 5 mg/L (level at which the CAO requires replacement water). The nitrate concentration trends are fluctuating, going down in some wells and up in others.
- The City provides 11 residences within the required study area with uninterrupted replacement water service (bottled water). The City has requested to reduce the sampling frequency of the residential wells that have not exceeded 5 mg/L nitrate as nitrogen for the last several years; this requires a change to the CAO.

12. Calico Ghost Town, San Bernardino County Regional Parks, Wastewater Disposal Alternatives – Jehiel Cass and Jan Zimmerman

The drinking water system for the Calico Ghost Town, San Bernardino County Regional Park (Park), does not meet drinking water standards for arsenic and fluoride. The San Bernardino County Special Districts Water and Sanitation Division (Special Districts) operates the Park's drinking water and wastewater treatment systems. The State Board's Division of Drinking Water has set a date of June 30, 2018, for the Park to meet drinking water standards. In fall 2017, Special Districts proposed to Water Board staff installing a fully lined evaporation containment pond system to accept brine reject water from a reverse osmosis (RO) water treatment plant, meeting the requirements of California Code of Regulations, title 27.

Water Board staff discussed with Special Districts that, in addition to the title 27 ponds, a different alternative where wastewater from the RO water treatment system and domestic wastewater effluent would be co-disposed into the Park's existing wastewater percolation ponds, contingent on information to show that total dissolved solids (e.g. salt) mass loading to receiving groundwater would remain essentially the same and that the quality of wastewater effluent is improved to reduce total nitrogen to less than 10 milligrams per liter (mg/L). In other words, we suggested the Park upgrade its wastewater treatment system to improve the effluent quality while returning naturally occurring total dissolved solids to the aquifer that were removed by the water treatment system.

These alternatives are shown on the Figure 1. The enclosed figure illustrates a conceptual flow diagram of three disposal scenarios: 1) the existing system; 2) an RO water treatment system with a title 27 surface impoundment; and 3) an RO system with an upgraded wastewater treatment system. The existing scenario would not satisfy San Bernardino County Department of Environmental Health Services (DEHS) requirements. The second scenario (Option 1) was proposed by County staff. The third scenario (Option 2) was suggested by Water Board staff.

The RO system would treat a portion of the pumped groundwater. The RO treated water would be blended with pumped groundwater for delivery as drinking water to the Park and meeting drinking water standards. The RO reject wastewater requires disposal either offsite, to a lined pond, or returned to the aquifer. Under Option 1 and Option 2, receiving groundwater monitoring is required.

Domestic wastewater from the Park is currently treated through a septic tank to remove solids, and the effluent is discharged into unlined evaporation/percolation ponds. This process does not treat or remove nitrogen in the effluent. The Park's current drinking water well is located about 600 feet downgradient from the domestic wastewater disposal ponds. Nitrate (as nitrogen) concentrations in this well are about 4.3 mg/L, below the drinking water standard of 10 mg/L, but degraded above the likely naturally occurring nitrate groundwater concentration of around 1 mg/L. The Water Board last issued waste discharge requirements in Order No. 6-83-104. This permit does not require groundwater monitoring and requires only limited effluent monitoring data collection. The Special Districts estimates the Park's average daily effluent flow is about 20,000 gallons, based on the pumped groundwater volumes, although the Park's attendance varies widely.

To implement either Option 1 or Option 2 will require the Division of Drinking Water to grant an extension to the deadline. DEHS believes that the Division of Drinking Water will grant the Park a time extension to the deadline for meeting drinking water standards and to develop an acceptable alternative meeting Water Board requirements as well.

Water Board staff believes Option 2 has advantages over Option 1 for the following reasons.

- There will be no evaporative water losses,
- Long-term effluent wastewater quality is improved,
- Long-term receiving aquifer water quality is improved,
- The downgradient production well can be assured that its nitrate concentrations remain below the drinking water standard, and
- There will be lower long-term costs as compared to installing a title 27 surface impoundment system.

Formal acceptance of either option requires submittal of a revised report of waste discharge and issuance of revised waste discharge requirements. Provided the facility flow is less than 100,000 gal/day (combined water and wastewater), discharges may be regulated by the statewide General Order [WQ 2014-0153-DWQ](#). Otherwise, individual waste discharge requirements (new or revised) are necessary for either Option 1 or Option 2.

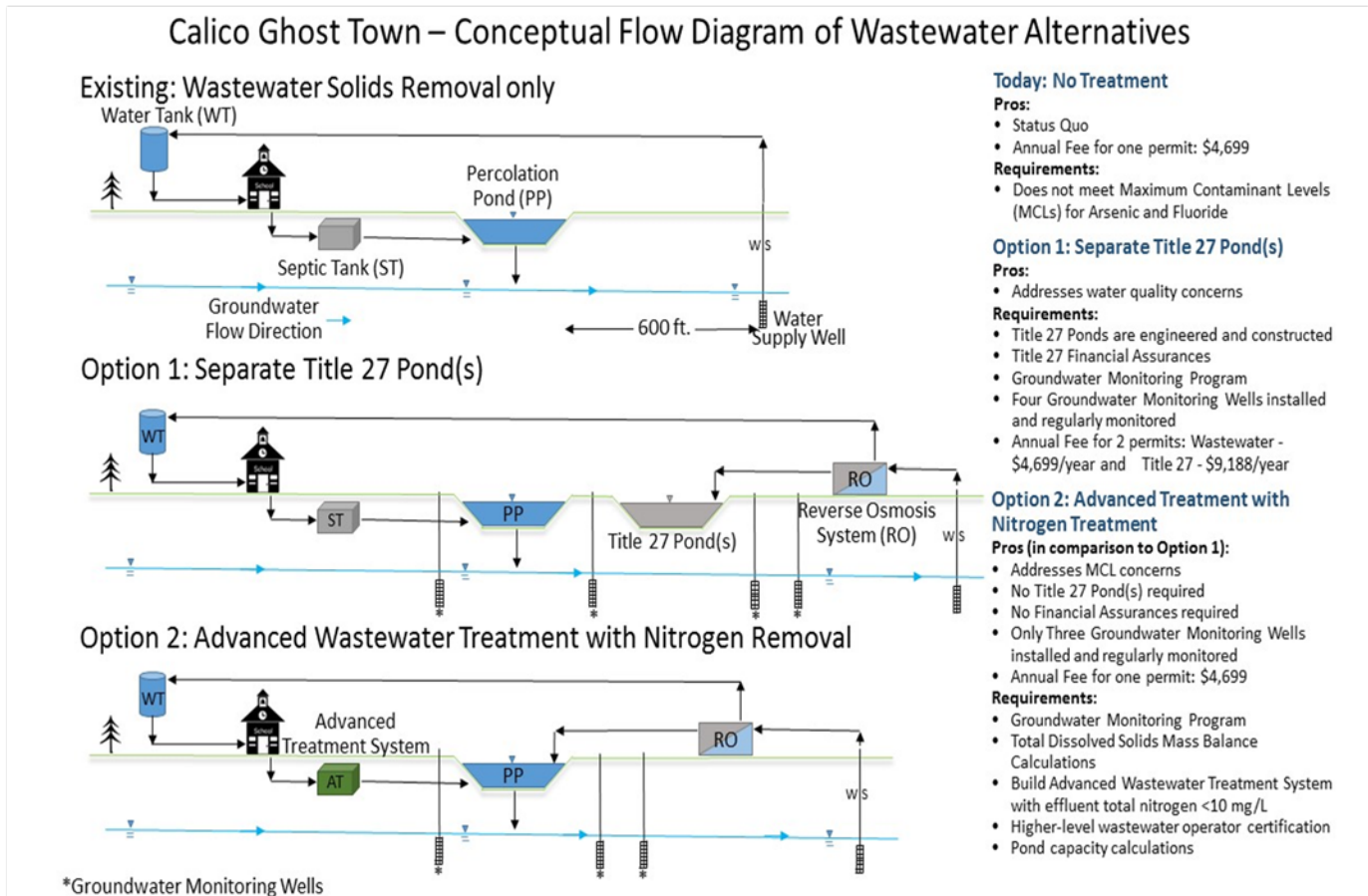


Figure 5 – Calico Wastewater Options