



CITY OF FILLMORE

CENTRAL PARK PLAZA

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Fillmore, California 93015-1907

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November 6, 2017

VIA EMAIL AND OVERNIGHT DELIVERY

Department of Conservation
801 K Street, MS 24-02
Sacramento, CA 95814
ATTN: Aquifer Exemption
E-Mail: comments@conservation.ca.gov

Re: Sespe Aquifer Exemption

Dear Sir or Madam:

The City of Fillmore strongly opposes the proposed expansion of the current aquifer exemption for the Basal Sespe Zone of the Sespe Formation in the Sespe Oil Field. The Sespe aquifer proposed for exemption is just over one mile from the Fillmore Sub-basin – the sole source of drinking water for the residents of the City of Fillmore. Permitting Seneca Resources Corporation to continue injecting fluids produced by oil and gas extraction (i.e. fracking) so near a source of drinking water presents an unreasonable and unnecessary risk of danger to human health, in violation of both the State and EPA exemption criteria.

State exemption criteria in Public Resources Code section 3131(a) require that an exemption cannot be approved unless “the injection fluids will not affect the quality of water that is, or may reasonably be, used for any beneficial use”, and that “the injected fluid will remain in the aquifer or portion of the aquifer that would be exempted”.

Fillmore’s drinking water aquifer is used for beneficial use, in fact essential use, of the City’s residents. It is the City’s sole source of drinking water. Yet Fillmore is prone to earthquakes, and the proposed exemption is for wells approximately one mile away from the City’s drinking water aquifer. Worse, the City’s aquifer is downhill from the proposed exemption area. If the City’s aquifer is contaminated, this will be catastrophic as the City will be without potable water.

The State claims such contamination is “an unlikely occurrence”. But groundwater aquifers interact underground in ways scientists do not fully understand, although it is known that aquifers at low levels impact neighboring aquifers and that water flows downhill. The State cannot make the required finding that the injection fluids “will not” affect the quality of Fillmore

drinking water aquifer, nor the finding that the injection fluids “will” remain in the exempted aquifer. The State’s EIR for Well Stimulation Treatment activities admits the State has, at best, only shown migration across aquifers is “an unlikely occurrence.”

In addition, the EPA exemption criteria in 40 C.F.R. 146.4 require that “The aquifer cannot now, and will not in the future, serve as a source of drinking water”. The State claims this finding can be made. However, in a letter dated June 10, 2016 from the Los Angeles Regional Water Quality Control Board to Seneca Resources Corporation, the Water Quality Control Board refers to the Sespe Basal Formation – the subject of the pending exemption proposal – and states, “the native formation water collected from nearby production wells and within the injection zone has been determined to have less than 10,000 mg/l TDS, which is considered an underground source of drinking water (USDW) and could have current or future beneficial uses.” (See page 4 of the Water Board’s letter enclosed herewith [emphasis added].)

The State cannot make the required EPA exemption finding because the Regional Water Quality Control Board has concluded the subject aquifer is considered an underground source of drinking water.

The City of Fillmore strongly opposes the aquifer exemption. We will continue to oppose the exemption unless we are assured with full confidence that Fillmore’s drinking water is absolutely protected and cannot be impacted by injection and hydraulic fracturing in the Sespe Aquifer. We strongly urge that the aquifer exemption be denied.

Sincerely,



Carrie Broggie
Mayor
City of Fillmore

Enclosure: June 10, 2016 letter from LARWQCB to Seneca

cc: Honorable Members of the City Council, City of Fillmore
Honorable Julia Brownley, United States House of Representatives
Honorable Hannah-Beth Jackson, California Senate
Honorable Monique Limón, California Assembly
Honorable Kelly Long, Ventura County Board of Supervisors, District 3
David W. Rowlands, City Manager, City of Fillmore
Tiffany J. Israel, City Attorney, City of Fillmore



Los Angeles Regional Water Quality Control Board

June 10, 2016

Mr. Bradley D. Elliott
Seneca Resources Corporation
4800 Corporate Court
Bakersfield, California 93311

Via Certified Mail
Return Receipt Requested
CLAIM NO. 7015 0640 0006 6057 7204

**REVIEW OF TECHNICAL REPORTS PURSUANT TO CALIFORNIA WATER CODE
SECTION 13267 ORDER R4-2015-0488
SENECA RESOURCES CORPORATION INJECTION WELLS, VENTURA COUNTY,
CALIFORNIA
(GLOBAL ID NO.: T10000007383) (CASE NO.: 11102615)
(GLOBAL ID NO.: T10000007384) (CASE NO.: 11120590)
(GLOBAL ID NO.: T10000007385) (CASE NO.: 11120591)
(GLOBAL ID NO.: T10000007386) (CASE NO.: 11121179)**

Dear Mr. Elliott:

On February 19, 2016, the California Regional Water Quality Control Board, Los Angeles (Regional Board) directed Seneca Resources Corporation (Seneca), to submit a Technical Report. The Regional Board received the following documents:

- Letter Response (Letter) prepared by Seneca dated December 15, 2015
- Technical Report on Formation Water Sampling (Technical Report) prepared by InterAct on behalf of Seneca, dated March 2016

SUMMARY OF DOCUMENTS

As previously noted in the Regional Board correspondence dated February 19, 2016,¹ in response to the Order issued by the Regional Board, Seneca commented in its Letter that injection well Twilight 2 (Case No.11102615) was disconnected in September 2015 and is planned to be plugged and abandoned (P&A). A copy of an email from The California Division of Oil, Gas, and Geothermal Resources (DOGGR) to Seneca confirming the disconnection was attached to the Letter.

In order to determine if injection wells Red Rock 67-29 (American Petroleum Institute [API] number 111-20590), Red Rock 68-29 (API No.111-20591), and Cal Pac 65-31 (API No.111-21179) are or have been potentially injecting fluids produced by oil and gas extraction activities into an aquifer that may not have been properly designated as an exempted aquifer, Seneca collected samples of native formation water from the injection zone, as well as produced water

¹ The February 19, 2016 Amended Order contained more specific directives to Seneca that originally arose out of the Water Code section 13267 Order issued on November 16, 2015.

prior to injection into the subject wells. Specifically, Seneca collected water samples from active production wells Oak Flat 3-31 (API No. 111-22202) and Oak Flat 4-31 (API No. 111-22212), located approximately 1,900 feet south of Cal Pac 65-31. Samples were then collected from Shale Ridge 86-29 (API No. 111-20563), located approximately 1,500 feet northeast of the two Red Rock injection wells. Additionally, formation water samples were collected from production wells White Star 37-33 (API No. 111-20202), White Star 45-33 (API No. 111-20092), and White Star 47-33 (API No. 111-20177) located further to the southeast in Section 33 of Township 5 North Range 19 West. Filtered production water samples were also collected from the White Star Water Treatment facility (Sespe Injection Water), which represent water that would be injected into the subject injection wells.

The Shale Ridge and Cal Pac injection wells included in the Order are located in Sections 29 and 31 of Township 5 North Range 19 West in the Tar Creek – Topatopa Area of the Sespe Oil and Gas Field. Prior to use as injection wells, the wells were commercially produced oil wells producing from the Basal Sespe Formation. The injection zone for the three injection wells is also the Basal Sespe former production zone. The production wells used for sampling were selected based on completion depths within the Basal Sespe Formation. The following are the injection well depths and perforation intervals:

Red Rock 67-29: Total vertical depth (TVD) of 3,720 feet with perforations between 2,846 and 3,564 feet (TVD).

Red Rock 68-29: TVD of 3,728 feet with perforations between 2,910 and 3,656 feet (TVD).

Cal Pac 65-31: TVD of 3,916 feet with perforations between 3,282 and 3,698 feet (TVD).

InterAct also provided a structural contour map of the Basal Sespe Formation showing the southeasterly dipping surface of the formation in the project area. Mechanical Integrity Tests (MIT) included with the Technical Report confirm that all injection within the Red Rock (April 2015) and Cal Pac (October 1996) injection wells was occurring in the zones approved by DOGGR at that time.

Analytical Results:

InterAct noted that due to the high oil content in the formation water, samples required dilution prior to some analyses.

Red Rock 67-29 (API No. 111-20590) and Red Rock 68-29 (API No. 111-20591): Analytical results of the water sample collected from the Shale Ridge production wells, which InterAct noted would be similar to the Red Rock 67-29 and Red Rock 68-29 injection wells, indicate that native formation water has a Total Dissolved Solids (TDS) concentration of 5,700 milligrams per liter (mg/L). Petroleum hydrocarbons in the crude oil range (C8-C40) were measured at 11,000 mg/L. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at 1,900 micrograms per liter (µg/L), 700 µg/L, 470 µg/L, and 1,500 µg/L, respectively. Naphthalene, methane, boron, gross alpha particles, radium 226, and radium 228 were detected at concentrations of 3,400 µg/L, 2.77 mg/L, 10 mg/L, and 41 picocuries per liter (pCi/L), 20 pCi/L, and 38 pCi/L, respectively.

Cal Pac 65-31 (API No. 111-21179): Analytical results of the water samples collected from the Oak Flat production wells, which InterAct noted would be similar to the Cal Pac 65-31 injection

well, indicate that native formation water has a TDS concentration between 9,340 and 10,020 mg/L. Petroleum hydrocarbons in the crude oil range (C8-C40) were measured at a maximum of 2,100 mg/L. Benzene, toluene, ethylbenzene, and xylenes were detected at maximum concentrations of 1,800 µg/L, 2,400 µg/L, 630 µg/L, and 2,600 µg/L, respectively. Naphthalene, methane, boron, gross alpha particles, radium 226, and radium 228 were detected at maximum concentrations of 700 µg/L, 1.38 mg/L, 33 mg/L, and 130 pCi/L, 26 pCi/L, and 45 pCi/L, respectively.

Sespe Injection Water: Analytical results of the water samples collected from the White Star Water Treatment facility indicate that injection water has a TDS concentration of 9,060 mg/L. Petroleum hydrocarbons in the crude oil range (C8-C40) were measured at 510 mg/L. Benzene, toluene, ethylbenzene, and xylenes were detected at concentrations of 3,500 µg/L, 2,400 µg/L, 290 µg/L, and 1,600 µg/L, respectively. Naphthalene, methane, boron, and gross alpha particles, radium 226, and radium 228 were detected at concentrations of 190 µg/L, non-detect, 42 mg/L, and 16 pCi/L, 6.4 pCi/L, and 44 pCi/L, respectively.

The water samples collected from the White Star production wells were only analyzed for TDS concentrations. Laboratory results of all three wells detected TDS concentrations at 11,700, 18,040, and 33,000 mg/L, respectively.

Water Supply Wells:

Seneca made a request to the South Central Regional Department of Water Resources (DWR) for water supply well completion reports for all wells located within one mile of the injection wells to the South Central Regional Department of Water Resources (DWR). DWR provided redacted well completion reports (WCRs) for two water supply wells located within the one mile review area: (1) WCR No. 432575 - State Well No. 05N19W28F001 referred to as Tar Creek Water Well 1 and (2) WCR No. 069152 – State Well No. 05N19W31Q1 referred to as Oak Flat Fire Station Well.

Tar Creek Water Well 1: Located approximately 0.75 mile northeast of injection wells Red Rock 67-29 and Red Rock 68-29, the well is approximately 400 feet deep and used as a water supply well for oil field operations. Seneca noted that due to the presence of oil and tar in the water, the well is not currently used for water supply. Driller log notes describe alternating beds of sandstone and shale bedrock.

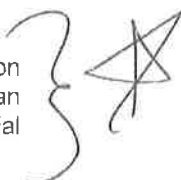
Oak Flat Fire Station Well: Located approximately 0.25 mile south of injection well Cal Pac 65-31. The well is identified as a domestic well and drilled horizontally to a total vertical depth of 45 feet below ground surface (bgs). Driller log notes describe the upper 45 feet of geologic material as landslide debris composed of the Sespe Formation maroon siltstone and fine-grained sandstone. Water collected from this well is used by Seneca for non-potable office use.

No other water well information for the area was provided as part of the Technical Report.

On May 9, 2016, on behalf of Seneca, InterAct submitted an aquifer exemption request for the Tar Creek – Topatopa Area to DOGGR, which would include the subject injection wells. The request has not been submitted to the State Water Resources Control Board (State Water Board) for review at the time of this letter.

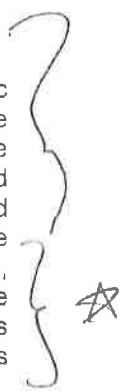
REGIONAL BOARD COMMENTS

The Regional Board staff has the following concerns:

1. All of the subject injection wells are located within the Sespe Oil and Gas Field boundaries regulated by DOGGR. However, it was confirmed by DOGGR Coastal District Staff on June 1, 2016, that the wells are all located outside of the Tar Creek – Topatopa Area oil productive limits (shaded area) based on 1973-74 production boundaries identified in DOGGR's primacy agreement with the United States Environmental Protection Agency (USEPA) dated September 1982.
2. InterAct demonstrated in submitted cross sections that the Shale Ridge production wells have similar well profiles to the Red Rock injection wells and provided appropriate locations for a representative sample of native formation water to determine TDS concentration for the injection zone. While the Oak Flat production wells have perforations in the same horizons as the Cal Pac injection well (below the X marker), they are also perforated in a shallower zone (below the T marker) that may contribute different formation water TDS concentration. The formation water samples collected from the White Star production wells are all perforated in different zones (below the Qr, T and X markers), which may also contribute to the varying TDS concentrations. The White Star production wells are located much further down dip in the Basal Sespe Formation as well. Additional sampling and analysis is required to determine the accurate TDS for the Cal Pac injection well. As noted in the February 19, 2016 correspondence, the formation water samples were collected without Regional Board approval.
3. A geologic interpretation of the vertical and horizontal containment features associated with the injection zone aquifer were not presented in the Technical Report.
4. The native formation water collected from nearby production wells and within the injection zone has been determined to have less than 10,000 mg/L TDS, which is considered an underground source of drinking water (USDW) and could have current or future beneficial uses. 
5. According to the California Department of Water Resources, on-line Groundwater Information Center interactive mapping database, the Seneca oil and gas operations associated with the injection wells and production wells are located directly north of the Santa Clara River Valley Groundwater Basin, Fillmore Subbasin (4-4.05). The primary water-bearing materials are sands and gravels of the upper Pleistocene to Holocene age alluvium and the lower Pleistocene San Pedro Formation. The San Pedro Formation consists dominantly of finer sands and gravels than the overlying alluvium and extends as deep as 4,000 feet. Produced water accounts for the largest waste stream volume associated with oil and gas production. Analytical results for TDS, boron, chloride, gross alpha particles, and combined radium 226 and 228 on water collected from the White Star Water Treatment facility exceeds the Regional Water Board Basin Plan groundwater quality objectives. Benzene, toluene, boron, naphthalene, gross alpha particles, and combined radium 226 and 228 also exceeded regulated drinking water maximum contaminant levels (MCLs).

CONCLUSIONS

Injection of produced water into wells Twilight 2, Red Rock 67-29, Red Rock 68-29, and Cal Pac 65-31 has occurred within a non-exempted aquifer. The injection wells are not located within the current productive limit boundary of the Sespe oil field. While Twilight 2 was confirmed to be disconnected in September 2015 and is planned to be plugged and abandoned, Seneca should inform DOGGR, the State Water Board, and the Regional Board if the status changes. Continued injection of produced waters could degrade the current injection zone aquifer for current or future beneficial uses. According to the DOGGR Aquifer Exemption Compliance Schedule Regulations, "if the portion of the aquifer where injection is approved is a hydrocarbon producing zone and the groundwater has less than 10,000 TDS, then injection shall cease by February 15, 2017, unless and until there is an aquifer exemption for the aquifer or the portion of the aquifer where injection is occurring."



If you have any questions regarding this matter, please contact Mr. Joshua Cwikla at (213) 576-6713, or by email at joshua.cwikla@waterboards.ca.gov, or Dr. Yue Rong at (213) 576-6710, or by email at yue.rong@waterboards.ca.gov

Sincerely,

Samuel Unger
 Samuel Unger, P.E.
 Executive Officer

- cc: Jonathan Bishop, State Water Resources Control Board
- John Borkovich, State Water Resources Control Board
- Christine York, State Water Resources Control Board
- Julie Macedo, Office of Enforcement, State Water Resources Control Board
- Eric Gillman, Office of Chief Counsel, State Water Resources Control Board
- Kenneth Harris, California Division of Oil, Gas, and Geothermal Resources
- John Geroch, California Division of Oil, Gas, and Geothermal Resources
- Pat Abel, California Division of Oil, Gas, and Geothermal Resources
- David Ortiz, California Division of Oil, Gas, and Geothermal Resources
- Beth Ainsworth, InterAct