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State Water Resources Control Board

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Arnold Schwarzenegger
Governor

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D R A F T

UST Case Closure Summary
Former Rocco's Freestone Corners (Jed Wallach Trust)
12750 Bodega Highway, Sebastopol

Summary
The release from the subject site was discovered during underground storage tank (UST) removals in 1989. The residual contaminants impact only shallow soil and groundwater in the immediate vicinity of the site. The Sonoma County Local Oversight Program (County) recommended case closure and requested concurrence from North Coast Regional Water Quality Control (Regional Board) staff. Regional Board staff did not concur with the County and recommended that additional groundwater monitoring be conducted, especially during the dry season when groundwater is at its lowest elevation. Regional Board staff indicated that additional data is needed to determine trends that show that water quality objectives (WQOs) will be reached within a reasonable period for the constituents of concern and that impacts to current and future beneficial uses of water will be prevented.

Groundwater fluctuates seasonally between 2 to 10 feet below ground surface (bgs) and residual petroleum hydrocarbons appear limited to between 6 and 10 feet bgs. The mass of remaining residual petroleum hydrocarbons is adsorbed to shallow fine grain soil and dissolved petroleum constituents are degrading. There is a septic tank leach field down gradient of the former UST but it is unclear if the associated leach field dissolved contaminant plume in groundwater is commingling with and contributing to biodegradation of the dissolved petroleum hydrocarbon plume. Although monitoring wells screened in the source area have consistently had elevated concentrations of residual petroleum hydrocarbons in groundwater, after over 20 years the groundwater plume does not extend more than approximately 120 feet from the UST excavation. Analytical data from the two monitoring wells located farther than approximately 120 feet down gradient from the former USTs have had non-detect results for all sampling events conducted over the past 12 years. Trend lines for down gradient monitoring well MW-8 located approximately 90 feet from the source area show that WQOs will be reached in several decades:

The site is located in an unincorporated area of Sonoma County that is served by a public water supply although many properties have individual drinking water wells. An onsite irrigation water supply well is located down gradient approximately 230 feet from the UST excavation, an offsite water supply well is located down gradient approximately

280 feet from the UST excavation, and Salmon Creek is located approximately 370 feet from the former USTs. All groundwater analytical results for water supply wells and Salmon Creek have been non-detect for chemicals of concern. The affected shallow groundwater (less than 10 feet bgs) is not used as a source of water supply nor is it likely to be used as a source of water supply in the future. Based on facts in the record and the hydrologic and geologic conditions at the site, the limited residual petroleum hydrocarbons that remain in shallow soil and groundwater pose a low risk to public health, safety and the environment. For these reasons, case closure is appropriate.

Background

This UST Case Closure Summary has been prepared in response to a petition to the State Water Resources Control Board (State Water Board) for closure of the Former Rocco's Freestone Corners' UST case located at 12750 Bodega Highway, Freestone. All record owners of fee title for this site as well as adjacent property owners and other interested parties have been notified of the recommendation for closure and were given an opportunity to comment.

The site operated as an automotive repair and fueling facility from circa 1950 to 1979 and is currently occupied by three buildings that are used as a souvenir store, bakery, and a residence. Land use in the vicinity of the site is primarily rural residential. Individual wells provide water for the area residents and a leach field for septic tanks is used for wastewater disposal.

Regional Board staff rejected the County's October 30, 2008 recommendation for UST case closure. Regional Board staff asserted that additional groundwater monitoring be conducted during dry seasons when groundwater is at its lowest elevation because a spike of total petroleum hydrocarbons as gasoline (TPHg) with a concentration of 6,100 µg/L was reported in monitoring well MW-8 during a seasonally low groundwater sampling event on August 1, 2007. Regional Board staff indicated that additional data is needed to determine trends that WQOs will be reached within a reasonable period for the constituents of concern and impacts to the current and future beneficial uses of water will be prevented.

Petitioner information

Jed Wallach Trust, Rocco's Freestone Corners	12750 Bodega Highway Sebastopol, CA 95472
Global ID No: T0609700197	Petition Date: January 28, 2009
USTCUF Claim No: 7880	USTCUF expenditures: $362,663

Agency Information

North Coast Regional Water Quality Control Board	Address: 5550 Skylane Blvd., Suite A Santa Rosa, CA 95403
Regional Board Case No. 1TSO260	SCDHS Case No:00001518
Years case open: 20	

Release Information:
USTs:

Tank No.	Size in Gallons	Contents	Status	Date
1	250	Waste oil	Removed	May 1989
2	500	Gasoline	Removed	May 1989
3	1,000	Gasoline	Removed	May 1989
4	1,000	Gasoline	Removed	May 1989

- Source of Release: UST system.
- Release Discovery Date: May 1989.
- Affected Media: Shallow soil and groundwater.
- Free Product: None reported.
- Corrective Actions:
    - May 1989 - UST removal.
    - June 1995 - Soil and groundwater investigation.
    - September 1996 - Soil and groundwater investigation.
    - August 1997 - Soil and groundwater investigation.
    - July 1998 - Soil and groundwater investigation.
    - July 2002 through December 2004 - Ozone injection.
    - May 2005 through March 2008 - Verification monitoring.

Site Information/ Description/ Conditions:
- GW Basin: Salmon Creek Hydrologic Unit.
- Beneficial Uses: MUN, AGR, IND, PRO.
- Land Use: Residential, Commercial.
- Distance to Nearest Supply Well[1]:
    - 230 feet southwest - Irrigation well.
    - 280 feet south - Domestic well.
- Minimum Groundwater Depth: ~1 foot (wet season) and ~10 feet (dry season).
- Distance to Nearest Surface Water: ~370 feet southwest.
- Sanitary System: Two onsite septic tanks and associated leach field located between former USTs and the two supply wells.
- Groundwater Flow Direction: Southwest to south.
- Geology: Boring logs show that the site is underlain by silty sand and clayey alluvial fan deposits with low permeability to depths of greater then 20 feet.

[1] Groundwater from each of these wells has been tested four times between November 2003 and January 2008. Each sample analysis reported non-detects for all constituents of concern.

- Hydrology: Depth to groundwater varies seasonally from a foot or two in the spring to six to ten feet in the fall. Groundwater is recharged from rainfall infiltration and septic tank leach field discharges. Groundwater discharge is via evapotranspiration and lateral flow to Salmon Creek.
- Estimate of Remaining Mass in Soil: Small – shallow and limited to immediate vicinity of former USTs.
- Time to Meet WQOs: Several decades.

Site History:
The case was opened as a Regional Board UST case in May 1989 when elevated concentrations of gasoline constituents were reported in shallow soil and groundwater samples within the UST excavation. The UST case was transferred to the County in July 1993.

Between April 1995 and January 2009, corrective actions undertaken by petitioner include advancing over 15 borings to multiple depths down to 20 feet bgs, collecting and analyzing over 40 soil samples, installing 9 monitoring wells and performing in-situ ozone injection.

The UST system including two 1,000-gallons, one 550-gallon and one 250-gallon USTs were removed in May 1989. The site was remediated between July 2002 and December 2004 using an in-situ ozone injection system.

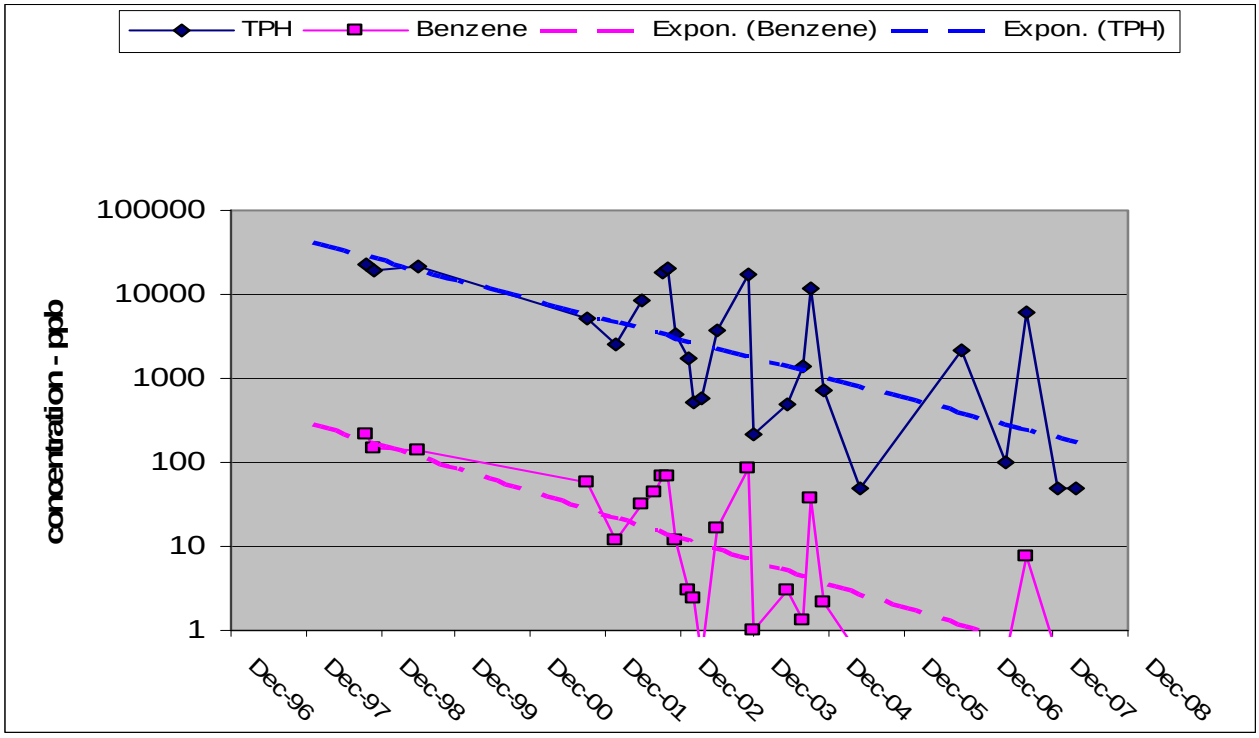
In December 2004, in-situ ozone injection operations were shut down when it was found that sparge points were short-circuiting. The system was shut down for safety reasons and post remedial verification monitoring was initiated. Groundwater contamination was observed in post remedial monitoring but closure was recommended to Regional Board staff based on declining trend analyses of all chemicals of concern.

In October 2008, the County referred the case to the Regional Board staff for concurrence with its recommendation for case closure. The Regional Board did not concur with this recommendation. In January 2009, Petitioner petitioned the State Water Board for case closure.

Contaminant Concentrations in Groundwater:
Monitoring well MW-8, which is located approximately 90 feet down gradient of the source area, has reported the highest post-remedial contaminant concentrations. The following graph shows that this well has consistently shown overall decreasing concentrations of petroleum constituents in groundwater, despite seasonal fluctuations. This decrease in down gradient concentrations is consistent with a zone of robust biodegradation.

Because source area contamination impacts shallow soil and groundwater in the immediate vicinity of the site, the mass of remaining residual petroleum hydrocarbons is limited and dissolved petroleum constituents are degrading. The rate of biodegradation of the remaining mass is dissolution limited and the natural biodegradation in groundwater is effectively limiting the length of the dissolved plume to less than approximately 120 feet from the source area for the past 20 years.

Groundwater Concentrations and Trends
MW-8



WQOs	TPHg – 5 ppb	benzene – 0.15 ppb

Objections to closure and response:
The Regional Board staff did not concur with the County's recommendation for case closure because of the following concerns;

- Additional dry season groundwater monitoring data is needed to determine trends that show that WQOs will be met within a reasonable period.

In response to the Regional Board's January 2, 2008 non-concurrence letter, the petitioners' consultant prepared and submitted graphs of trend analysis of low-groundwater sampling results collected since 1998 for well MW-8. The analyses for MW-8 showed that groundwater would reach the benzene WQO (0.15 µg/L) by 2014, ethyl benzene WQO (29 µg/L) by 2019 and TPG as gasoline WQO (50 µg/L) by 2034. Trend lines for down gradient monitoring well MW-8 located approximately 90 feet from the source area show that WQOs will be reached in several decades.

- Additional dry season groundwater monitoring data is needed to determine trends that show that impacts to current and future beneficial uses of water will be prevented.

The site is located in an unincorporated area of Sonoma County that is served by a public water supply although many properties have individual drinking water wells. Samples from water supply wells and Salmon Creek located within 400 feet of the former USTs have been non-detect for chemicals of concern. The affected shallow groundwater (less than 10 feet bgs) is not used as a source of water supply nor is it likely to be used as a source of water supply in the future.

Based on facts in the record and the hydrologic and geologic conditions at the site, the limited residual petroleum hydrocarbons that remain in shallow soil and groundwater pose a low risk to public health, safety and the environment. Therefore, the impact to water quality is limited and localized as discussed above.

Closure:
Does corrective action performed to date ensure the protection of human health, safety, and the environment? Yes

Is corrective action and UST case closure consistent with State Water Board Resolution 92-49? Yes
Is achieving background water quality feasible? No.

To remove all traces of residual petroleum constituents at the site would require significant effort and cost. If complete removal of detectable traces of petroleum constituents becomes the standard for UST corrective actions, however, the statewide technical and economic implications will be enormous. For example, disposal of soils from comparable areas of excavation throughout the state would greatly impact already limited landfill space. In light of the precedent that would be set by requiring additional excavation at this site and the fact that beneficial uses are not threatened, attaining background water quality at this site is not feasible.

If achieving background water quality is not feasible,
Is the alternative cleanup level consistent with the maximum benefit to the people of the state? Yes

It is impossible to determine the precise level of water quality that will be attained given the limited residual petroleum hydrocarbons that remain at the site, but in light of all the factors discussed above, and the fact that the residual petroleum constituents will not unreasonably affect present and anticipated beneficial uses of groundwater, a level of water quality will be attained that is consistent with the maximum benefit to the people of the state.

Will the alternative cleanup level unreasonably affect present and anticipated beneficial uses of water? No.

Impacted groundwater is not used as a source of drinking water or for any other beneficial use currently and it is highly unlikely that the impacted groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable future.

Will the alternative level of water quality exceed water quality prescribed in applicable Basin Plans? No

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant basin plan. Pursuant to SWRCB Resolution 92-49, a site may be closed if the basin plan requirements will be met within a reasonable time frame.

Have factors contained in Title 23 of the California Code of Regulations, Section 2550.4 been considered? Yes.

In approving an alternative level of water quality less stringent than background, the State Water Board has also considered the factors contained in California Code of Regulations, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal and localized, and there will be no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents, the hydrogeological characteristics of the site and surrounding land, and the quantity of the groundwater and direction of the groundwater flow. In addition, the potential for adverse effects on beneficial uses of groundwater is low, in light of the proximity of the groundwater supply wells, the current and potential future uses of groundwater in the area, the existing quality of groundwater, the potential for health risks caused by human exposure, the potential damage to wildlife, crops, vegetation, and physical structures, and the persistence and permanence of potential effects. Finally, a level of water quality less stringent than background is unlikely to have any impact on surface water

quality, in light of the volume and physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; the quantity and quality of groundwater and direction of groundwater flow, the patterns of precipitation in the region, and the proximity of residual petroleum to surface waters.

Has the requisite level of water quality been met? No
If no, the approximate time period in which the requisite level of water quality will be met:

The approximate time period in which the requisite level of water quality for dissolved petroleum hydrocarbons will be met is estimated to be several decades.

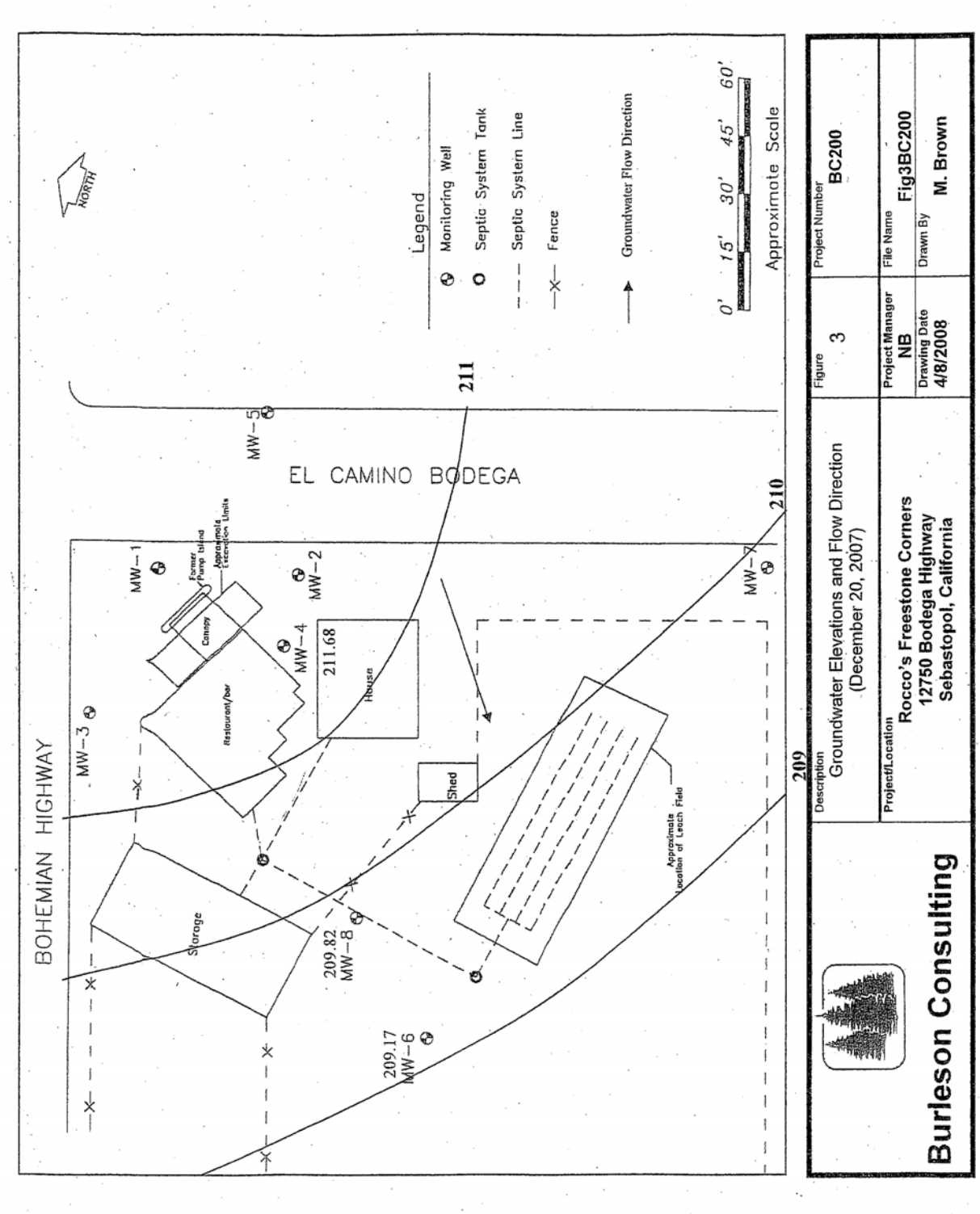
Though the requisite level of water quality has not been met, water quality objectives will be achieved via natural attenuation within three decades. This is a reasonable period in which to meet the requisite level of water quality because the affected groundwater is not currently being used as a source of drinking water and it is highly unlikely that the affected groundwater will be used as a source of drinking water in the future. Other designated beneficial uses of water are not adversely impacted and it is highly unlikely that they will be.

Summary and Conclusion

Based on the hydrology, geology, and other factors at and in the vicinity of the site, shallow affected groundwater does not represent a threat to public health and safety, or the environment. The dissolved petroleum hydrocarbon plume is decreasing and concentrations of petroleum hydrocarbons are decreasing; residual petroleum hydrocarbons dissolved in groundwater and absorbed to shallow soil are localized and limited in extent and will continue to naturally degrade and attenuate. Shallow groundwater is not used as a source of drinking water or for any other designated beneficial use nor is it likely to be beneficially used in the foreseeable future. Case closure is appropriate.

Benjamin Heningburg
Engineering Geologist
Professional Geologist No. 8130

Date


NORTH
Legend
Monitoring Well
Septic System Tank
Septic System Line
Fence
Groundwater Flow Direction
0' 15' 30' 45' 60'
Approximate Scale
EL CAMINO BODEGA
BOHEMIAN HIGHWAY
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
211.68
209.82
209.17
211
210
209
Former Pump Island
Approximate Excavation Limits
Canopy
Restaurant/bar
House
Shed
Storage
Approximate Location of Leach Field
Description
Groundwater Elevations and Flow Direction
(December 20, 2007)
Project/Location
Rocco's Freestone Corners
12750 Bodega Highway
Sebastopol, California
Figure
3
Project Number
BC200
Project Manager
NB
File Name
Fig3BC200
Drawing Date
4/8/2008
Drawn By
M. Brown
Burleson Consulting