

STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING MAY 9, 2008

ITEM NUMBER: 8

SUBJECT: Cleanup Cases

DISCUSSION

Underground Storage Tank Program & MTBE Cases

*New information for this report in italics*

Water Board staff members are working on numerous petroleum underground storage tank (UST) cleanup cases involving methyl tertiary-butyl ether (MTBE). Five high profile sites or "worst case" problems are discussed below. Also attached to this report is a list of sites with MTBE in groundwater that gives an overall perspective of the regionwide problem.

Chevron Service Station, 2194 Main Street, Cambria, San Luis Obispo County [John Mijares 805/549-3696]

Chevron Cambria service station, located on the corner of Main Street and Burton Drive in Cambria, has been a Regional Board lead groundwater investigation and cleanup case since December 1993. In 1995 Chevron Products Company commissioned the removal of an UST system and transferred ownership of the service station to an independent owner/operator who installed a new UST system.

Chevron is cleaning up a petroleum hydrocarbon discharge, including the fuel additive MTBE, from the original UST system. The discharge threatened groundwater in Cambria Community Service District (CCSD) Wells No. 1 and 3, which provide supplemental water to the community of Cambria.

As part of interim corrective action beginning in May 2000, Chevron continuously pumped MTBE-contaminated water from four onsite wells. Currently, there are 15 shallow groundwater extraction wells. Beginning in November 2000, Chevron began full operation of groundwater extraction and high vacuum dual phase extraction systems. Both systems operate continuously, except for periodic system upgrade, mechanical breakdowns, and system maintenance activities. Extracted and treated groundwater is stored in an onsite, 15,000-gallon tank until being trucked offsite for disposal at the Santa Maria Wastewater Treatment Plant.

During a November 2001 technical work group meeting with Regional Board staff, CCSD representatives, and Chevron representatives, the CCSD indicated the new temporary high school well had been connected to the Cambria municipal drinking water supply. The CCSD's

high school well is needed as an alternative water supply. CCSD installed a wellhead treatment system on their Santa Rosa Creek wells will enable their use in the event of an emergency.

On May 18, 2004, the Regional Board's Executive Officer rescinded Cleanup or Abatement Order (CAO) No. 00-28. The CAO required Chevron to provide CCSD with alternative water supply due to loss of CCSD's Well Nos. 1 and 3. The settlement agreement between CCSD and Chevron explicitly resolves all of CCSD's claims against Chevron, including claims for an alternative water supply.

Since the Last Staff Report:

The Fourth Quarter 2007 Groundwater Monitoring and Remediation Status Report indicates the following:

- *Monitoring wells within the plume boundaries continue to exhibit MTBE and tertiary butyl alcohol (TBA) concentrations exceeding the cleanup goals of 5 micrograms per liter ( $\mu\text{g/L}$ ) and 12  $\mu\text{g/L}$ , respectively. However, current concentrations have decreased significantly compared to historical maximum values. The fourth quarter 2007 MTBE and TBA concentrations detected in monitoring well MW-50 were 940  $\mu\text{g/L}$  and 890  $\mu\text{g/L}$ , respectively. Maximum concentrations of MTBE and TBA in well MW-50 were 5,500  $\mu\text{g/L}$  and 8,800  $\mu\text{g/L}$ , respectively. Shallow-zone MTBE and TBA isoconcentration maps are shown on Attachments 1 and 2, respectively.*
- *Monitoring wells known to be located beyond the plume boundaries continue to be free of detectable concentrations of MTBE.*
- *Concentrations of petroleum hydrocarbons and fuel oxygenates were below reporting limits in all groundwater samples collected from the northern bank of Santa Rosa Creek (three sampling stations) during this quarter.*
- *Concentrations of petroleum hydrocarbons and fuel oxygenates were below reporting limits in all surface water samples collected from Santa Rosa Creek (three sampling stations) during this quarter.*
- *The high-vacuum, dual phase extraction (HVDPE) system operated during the reporting quarter. The HVDPE system has extracted and treated approximately 4,933 pounds of vapor phase petroleum hydrocarbons (TPHg) and 189 pounds of vapor phase MTBE between January 26, 2001 and November 14, 2007.*
- *The groundwater extraction and treatment (GWET) system also operated during the reporting quarter. The GWET system and the HVDPE system extracted and treated approximately 90,000 gallons of groundwater during the reporting quarter, which were disposed at the City of Santa Maria wastewater plant.*
- *In March 2008, SECOR conducted a Phase 2 pilot study to evaluate the feasibility of stimulating in-situ biodegradation by infiltrating aerated groundwater via existing remediation wells. Effluent from the GWET system was aerated in a small tank until saturated with oxygen and released to selected onsite wells. SECOR conducted the Phase 2 pilot study to further evaluate sustainable infiltration rates, biodegradation rates, water level and Dissolved Oxygen response to infiltration, and performance of the GWET system. Central Coast Water Board staff will pass on progress and results of this study in future reports.*

Attachment 1 & 2: TBA and MTBE Isoconcentration Maps

**California Water Service Company Supply Wells, Pajaro Street and Bridge Street, Salinas, Monterey County [John Goni 805/542-4628]**

In February 2002 Central Coast Water Board staff was notified by California Water Service Company in Salinas (CWSC), that monitoring indicated MTBE in two supply wells in the Salinas area. Central Coast Water Board staff's review of known leaking underground tank cases near the wells found no active cases with high concentrations of MTBE in the area. Further investigation revealed a gasoline distributor (with 100,000 gallons of fuel products storage) close to the well, but a subsequent site investigation showed no evidence of a fuel release to underlying groundwater. Staff continued their investigation and directed other permitted underground tank facilities without previously reported leaks to perform groundwater investigations. These investigations failed to find a release of MTBE of significant size to account for the contaminant in the supply wells.

Surface water samples from the Salinas Reclamation Ditch near the CWSC supply wells showed no gasoline constituents or MTBE. A joint investigation by the Monterey County Health Department, Division of Environmental Health (MCEHD) and Central Coast Water Board staff concluded former packing houses in this area are not likely the source of MTBE contamination because (1) tank sizes were small, (2) the dates of tank closures precedes significant use of MTBE, and (3) hydrocarbons were not found in soil beneath the removed tanks.

Central Coast Water Board staff continued to coordinate the investigation with other agencies in search of the source of MTBE. A review of the State Water Resources Control Board's implementation of enhanced leak detection testing requirements for all underground tank facilities within 1000 feet of water supply wells did not identify any new potential sources of MTBE. The MCEHD agreed to increase inspections of all nearby permitted underground and aboveground tank facilities to ensure compliance and found no operational violations. The Monterey County Water Resources Agency (Agency) performed additional groundwater analytical testing at nearby production wells up and crossgradient of the CWSC wells but did not detect any MTBE. CWSC information and Central Coast Water Board staff inspections confirmed that gasoline has not been stored at CWSC supply well locations. CWSC performed depth discrete sampling of Well Station 13-02 in December 2004. The sampling results indicate that the shallower/180-foot aquifer contains the highest concentrations of MTBE (67 µg/L).

Central Coast Water Board staff continues to require leaking underground tank cases in the area of the water supply wells to vigorously clean up fuel releases associated with their cases. Valero has started a dual phase extraction cleanup system test for the Valero (formerly Beacon) station at 430 North Main Street. Shell is currently extracting groundwater to contain their release from the station at 417 North Main Street. Sturdy Oil Company is implementing a soil vapor extraction system to clean up soil and groundwater associated with the former Exxon Station at 225 North Main Street.

In an effort to expand the investigation, Central Coast Water Board staff assisted the Agency in applying to the State Water Resources Control Board for Cleanup and Abatement Account money to fund additional groundwater sampling. The State Water Board approved the allocation of cleanup and abatement funds to perform additional investigation and a recently approved contract between the Central Coast Water Board and the Agency. On December 13, 2007, the Agency hosted a well site visit and informational meeting for prospective consultants. Approximately 25 representatives of potential responsible parties and 14 consulting firms were present. The Agency, MCEHD, CWSC and Central Coast Water Board staff made presentations. *As a result of the informational meeting, the Agency received and evaluated seven conceptual proposals for the*

investigation. The Agency mailed a scope of work for performing the investigation on February 29, 2008, using ideas from the seven conceptual proposals. The Agency received final bids on April 3, and finished their review on April 10. Consultant interviews are scheduled for April 24 and election of a final consultant is expected by the end of April. Water Board staff expects contract execution by July 1, 2008 and final documentation of the completed project by April 30, 2009.

**Camp Evers Combined Site (Four Gasoline Service Stations) Mount Hermon Road and Scotts Valley Drive, Scotts Valley, Santa Cruz County [Wei Liu 805/ 542-4648]**

Petroleum hydrocarbons including benzene, 1,2-DCA and MTBE were first detected in groundwater beneath the Tosco, Shell, BP, and Chevron (responsible parties) service stations located at the intersection of Mount Hermon Road and Scotts Valley Drive in the mid-1990s. Previous onsite corrective actions at the Tosco, Shell, and BP sites included soil vapor extraction, air sparging, dual phase extraction, and/or groundwater extraction to remediate the MTBE plume. Chevron has continued remediation of the benzene plume. The onsite corrective actions have successfully removed MTBE and other gasoline constituents from groundwater directly beneath the four service station sites and onsite remediation has been discontinued at all four sites.

An MTBE plume mass appears to have "detached" from the original plume, and migrated to a downgradient offsite location beneath the nearby King's Village Shopping Center. Maximum detected MTBE concentration was 38,300 micrograms per liter ( $\mu\text{g/L}$ ) in a May 1999 monitoring event. In addition, the adjacent Manana Woods water supply well was impacted by benzene and MTBE and extracted water is being treated using a wellhead treatment facility to remove the contaminants.

The responsible parties installed a permanent groundwater pumping and treatment system at the King's Village Shopping Center in November 2002, to remediate and hydraulically control the detached plume. Treated groundwater from the treatment system was discharged by way of the storm sewer system to surface water (ultimately Bean Creek) under a Water Board General NPDES Permit for highly treated groundwater. The recently updated General NPDES Permit includes sampling requirements for various metals and other priority pollutants. In July 2007, effluent samples from the treatment system showed a zinc concentration which exceeded the General Permit effluent limit for zinc. The system has since been shutdown. Staff has worked with the dischargers to identify the cause of the elevated zinc effluent concentrations, and to evaluate various options to ensure compliance with the new General Permit. However, it appears the current treatment systems cannot meet the effluent limits for metals, probably because the treatment system has been designed primarily for treating hydrocarbons. In addition, metals occur naturally in the area and are present in some parts of the treatment system itself.

Staff recommended the discharger apply for a permit to discharge highly treated groundwater to City of Scotts Valley's sanitary sewer system, which allows higher metal effluent limits while maintaining equally stringent limits for petroleum hydrocarbons. In December 2007, the dischargers applied for and received a discharge permit from the City of Scotts Valley for discharging highly treated groundwater to its sanitary sewer system.

*Fourth Quarter 2007 groundwater sample results indicate maximum MTBE concentrations of 21  $\mu\text{g/L}$  in onsite monitoring well BP MW-6, and 120  $\mu\text{g/L}$  in offsite monitoring well CEMW-9 which is located upgradient of groundwater extraction well CEEW-1. A maximum concentration of 1,300  $\mu\text{g/L}$  TBA was detected in offsite monitoring well CEMW-16. MTBE concentrations in downgradient offsite well CEMW-6, which historically had the highest MTBE concentrations, have*

been reduced from a maximum of 38,300 µg/L in May 1999 to below the detection limit of 2.5 µg/L in November 2007. In addition, MTBE concentrations in downgradient offsite well CEMW-16, which is near the groundwater pumping and treatment system, were reduced from 4,710 µg/L in January 2001 to below the detection limit of 2.5 µg/L in November 2007. Wells CEMW-6 and CEMW-16 are located upgradient of groundwater extraction well CEEW-1.

The downgradient offsite remediation system has removed approximately 23.7 million gallons of water, 340.4 pounds (lbs) of TPH, 11.4 lbs of benzene, 66.7 lbs of MTBE, and 28 lbs of TBA since November 26, 2002.

Attachment 3: Well Location Map

**Quik Stop Market No. 78, 5505 Soquel Drive, Soquel, Santa Cruz County [Tom Sayles 805-542-4640]**

Quik Stop Market No. 78 (Quik Stop) is an operating gasoline service station located on the corner of Soquel Drive and Hardin Way in Soquel. The site has been a Regional Board lead groundwater investigation and cleanup case since June 1999.

The approved corrective action plan, consisting of a permanent dual-phase (soil vapor and groundwater) treatment system, has been operating since July 5, 2002. The treated groundwater is discharged to the sanitary sewer under a County of Santa Cruz Permit (No. 00002829). The catalytic oxidizer treatment system operates under a Monterey Bay Unified Pollution Control District air permit (No. 11054).

The responsible party (RP) installed three additional vapor extraction wells in December 2003, to enhance cleanup system effectiveness. In addition, MW-3 was overdrilled and converted into a 4-inch diameter well to enhance groundwater extraction efficiency. The highest concentration of MTBE was 230,000 µg/L in monitoring well MW-4 (near the source area) on March 2, 2000.

The (RP) collected first Quarter 2008 groundwater samples on March 5, 2008. Monitoring samples showed a maximum concentration of 550 µg/L MTBE in onsite monitoring well MW-4R. Samples also showed a maximum concentration of 4,900 µg/L tert-butyl alcohol (TBA) in onsite extraction well RW-2. The MTBE and TBA concentrations are highest near the fuel tank complex which is consistent with past quarters. Quik Stop is sampling Nobel Creek on a quarterly basis at four downgradient locations. TBA was detected in Creek sample A at 14 µg/L on March 5, 2008. Staff requested a resample for Creek sample A. All other creek samples were below detection limits for MTBE and TBA.

Groundwater extraction pumps continue to operate in extraction wells RW-2, RW-3, and MW-4R and cleanup is ongoing.

**Former Bear Valley Chevron, 1099 Los Osos Valley Road, Los Osos, San Luis Obispo County, [Corey Walsh 805/542-4781]**

Groundwater sample results from an October 2007 monitoring event indicate pollution remains at concentrations greater than Central Coast Water Board cleanup goals for benzene, methyl tertiary-butyl ether (MTBE) and tertiary-butyl alcohol (TBA) in three offsite monitoring wells. The cleanup goals for benzene, MTBE, and TBA are 1 microgram per liter (µg/L), 5 µg/L, and 12

µg/L, respectively. October 2007 groundwater sample results indicate maximum concentrations of 3.8 µg/L benzene, 13 µg/L MTBE and, 45 µg/L TBA. Other typical petroleum hydrocarbon constituents of concern (e.g., total petroleum hydrocarbons, toluene, ethylbenzene, xylenes, 1,2-Dichloroethane, and other fuel oxygenates) are below cleanup goals or were not detected in groundwater samples.

After the remediation system was shut down in June 2005 to evaluate contaminant concentration rebound, the responsible party collected verification groundwater monitoring samples in January 2006, July 2006, April 2007, and October 2007. The groundwater monitoring data indicate on-going natural biodegradation of hydrocarbons, and a continued reduction in concentrations to below or near cleanup goals. However, in April 2007, the TBA concentration increased in one well. The temporary increase in TBA concentration is thought to be the result of the on-going natural biodegradation of MTBE to TBA.

MWF Properties owns the property where the offsite remediation system, treatment wells, and numerous groundwater monitoring wells are located. Remnants of the groundwater contamination plume also underlie the MWF property, which is located between the site and Southern California Water Company (Los Olivos No. 3) and the Los Osos Community Services District (10th Street) municipal water wells. In August 2000, groundwater samples showed MTBE in the Los Olivos No. 3 well at a concentration of 1.2 µg/L, sample results continued to show MTBE in the Los Olivos No. 3 well until June 2003. The maximum concentration of MTBE detected was 3.6 µg/L in January 2002 and again in November 2002. Current monitoring results for these wells show less than 0.5 µg/L (non-detect) for MTBE and other petroleum hydrocarbon constituents.

*Water Board staff evaluated the responsible party's request for case closure, and objections to case closure raised by MWF Properties LLC, an adjacent property owner. Representatives of the MWF Properties have requested additional verification monitoring be conducted prior to case closure. Staff will require a verification groundwater monitoring event of key multi-level monitoring well chambers during the fourth quarter of 2008, prior to further consideration of case closure. Upon review of this verification monitoring event results, staff will provide an update and make recommendations to the Board.*

Attachment 4: Groundwater Analytical Results Map

### **Regionwide MTBE List**

*The Regionwide MTBE Listing and High Priority Sites list is included as Attachment 5. The list shows site names and addresses as well as the priority listing (Rank A, B, or C) based on State Board MTBE guidelines. Staff has required accelerated cleanup at some higher priority Rank A sites. We require interim cleanup action as soon as technically feasible until full-scale cleanup activity can begin. MTBE cleanup goals are typically set at the secondary maximum contaminant level (MCL) for drinking water of 5 micrograms per liter (µg/L), which is a taste and odor threshold. The primary MCL, based on threat to public health, is 13 µg/L.*

### **Underground Tanks Summary Report**

Included as Attachment 6