

**STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION**

**STAFF REPORT FOR REGULAR MEETING FEBRUARY 6, 2004**

Revised on January 8, 2004

**ITEM NUMBER: 14**

**SUBJECT: MTBE Priority Sites**

**DISCUSSION:**

*New information is shown in italics*

This is a continuing report on the status of MTBE sites in our region. Staff is working on numerous petroleum underground tank cleanup cases involving MTBE. Some of the more high profile 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 problem in the region. Staff plans to provide the Board with regular updates of these and other problem sites in this report format. Staff also will use this report to answer questions from previous Board meetings.

Attached is an updated Regionwide MTBE Listing and High Priority Sites table. The list shows site names and addresses as well as the priority listing (Rank A, B, or C) based on State Board guidelines developed for response timing. Staff has required accelerated cleanup at some higher priority Rank A sites. Interim cleanup action is required as soon as technically feasible until full-scale cleanup activity can begin.

Cleanup levels are typically set at the secondary maximum contaminant level (MCL) for drinking water of 5 parts per billion (ppb), which is a taste and odor threshold. The primary MCL, based on threat to public health, is 13 ppb.

*Pursuant to the Regional Board's request at the December 5, 2003 board meeting in San Luis Obispo, on December 17 Regional Board and Santa Barbara County staff met to discuss enforcement issues related to UST cases under Santa Barbara County preview. In addition, Santa Barbara County and Regional Board staff*

*continue to meet to discuss the GeoTracker database and Santa Barbara County cases listed on the Regionwide MTBE Listing and Priority Sites.*

*The Regionwide MTBE Listing and High Priority Sites list, included as Attachment 1, contains the latest information provided by Santa Barbara County as of January 5, 2004. Beginning in late March 2002, Santa Barbara obtained the ability to update information in the MTBE report by way of the Statewide GeoTracker database system.*

**HIGH PRIORITY SITES STATUS:**

**Chevron Service Station, 2194 Main Street, Cambria San Luis Obispo County [Sheila Soderberg 805/549-3592]**

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.

**Background:**

In 1995 the underground storage tank (UGT) system was removed and service station ownership/operation was transferred from Chevron Products Company (Chevron) to an independent owner/operator who installed a new UGT system.

Chevron is cleaning up a discharge from the first UGT system of petroleum hydrocarbon constituents, including the fuel additive methyl tertiary-butyl ether (MTBE) in soil and groundwater beneath, and migrating from the site. The discharge threatens groundwater in two Cambria Community Service District (CCSD)

Wells, Nos. 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. Beginning in November 2000, Chevron began full operation of a groundwater extraction and high vac system. Throughout 2001 and 2003, both systems operated continuously, except for periodic system upgrade and system maintenance activities.

Extracted, treated groundwater is stored in an onsite 15,000-gallon tank until trucked offsite for disposal.

In February 2002, the Executive Officer enrolled Chevron under Waste Discharge Requirements Order No. 01-134, National Pollutant Discharge Elimination System (NPDES) No. CAG993002, General Permit for Discharges of Highly Treated Groundwater to Surface Waters (General Permit). In March 2002, the CCSD and the Cambria Legal Defense Fund filed an appeal with the State Water Resources Control Board (State Board) against Chevron's enrollment under the General Permit. Also, in March 2002, CCSD filed a lawsuit against the Regional Board and Chevron's enrollment under the General Permit. Chevron agreed to put their permitting efforts for the discharge to Santa Rosa Creek on hold while Chevron and CCSD meet to discuss these issues. In response, CCSD and Cambria Legal Defense Fund are holding their petitions to the State Board in abeyance.

#### Alternative Water Supply Issues:

During the November 2001 technical work group meeting (with Regional Board staff, CCSD representatives, and Chevron representatives), the CCSD indicated the new temporary high school well was connected to the municipal drinking water supply. The CCSD's high school well is needed as an alternative water supply and the wellhead treatment system CCSD installed on their Santa Rosa Creek wells will enable their use in the event of an emergency. Chevron continues to submit monthly Status Reports in compliance with Order No. 00-28 to secure an alternative water supply. *Chevron's most recent status report is included as Attachment 2.*

#### Since the Last Staff Report:

*Since November 2000, approximately 6.6 million gallons of water have been extracted and hauled away, with 85,000 gallons trucked in October 2003 alone. Using the high vac system, approximately 4,003 pounds of petroleum hydrocarbon vapor have been removed. Combining both the high vac and groundwater extraction systems, approximately 189 pounds of MTBE have been removed to date.*

*From January through October 2003, the high vac and groundwater extraction systems operated continuously with the exception of brief shut downs due to normal maintenance. The high vac system continues to operate in a "pulse" mode to increase source zone removal. Attachment 3 shows the influence of operation of the groundwater extraction system on shallow groundwater in October 2003.*

*In compliance with the Monitoring and Reporting Program No. 97-79, groundwater samples were collected and analyzed from groundwater extraction wells and selected groundwater monitoring wells. During the October 2003 groundwater-sampling event, the highest concentration of MTBE in groundwater was detected in MW-47 at 4,400 ppb. MTBE was not detected (<0.5 ppb) in groundwater monitoring well MW-37A, located in the near vicinity of Santa Rosa Creek.*

*On December 2, 2003, Regional Board, Chevron, and CCSD staff met to discuss implementation of the enhanced high vac and groundwater extraction system. Chevron noted that they are negotiating for site access with a private property owner. If needed, Regional Board staff will work with the private property owner to expedite permission to install the enhanced system.*

*Also discussed at the December 2, 2003 meeting, Chevron had not yet received notice from San Luis Obispo County that the work would be covered under the existing Minor Use Permit or if additional permits were needed. On December 5, 2003, Regional Board staff called the county and on December 8, the county notified Regional Board staff that Chevron's proposed work would be covered under Chevron's existing Minor Use Permit; Regional Board staff notified Chevron and CCSD that the permit was issued. It is expected*

*that the next Technical Work Group meeting will be scheduled after the new wells for the enhanced system are installed and preliminary results of the enhanced system become available.*

*As noted in Attachment 2, Chevron and CCSD reached a settlement agreement in connection with the CCSD's lawsuit. Regional Board staff will request Chevron provide a final report to document that the required alternative water supply is in place.*

*After the settlement is final, John Mijares, Water Resources Control Engineer on Regional Board staff, has been assigned to provide oversight for this case, as Sheila Soderberg has taken over the Unocal Guadalupe Oilfield work..*

**Los Osos Valley Garage, Former Bear Valley Chevron Service Station, 1099 Los Osos Valley Road, Los Osos [Corey Walsh 805/542-4781]**

This UST release site, which is located on the corner of Los Osos Valley Road and Sunset Drive in Los Osos, was originally reported in June 1990. In August 2000, methyl tertiary-butyl ether (MTBE) was discovered in nearby municipal water well (Los Olivos #3). Staff issued a cleanup or abatement order requiring investigation and cleanup on an expedited schedule. The facility ceased distribution of fuel in May 2001, and the UST system was later removed. A second release was identified in July 2001 during the UST removal and investigation activities at the site.

On September 9, 2003, the Regional Board staff met with the Los Osos Interagency Technical Work Group to discuss investigation and cleanup status for the site.

*On September 19, 2003, the Regional Board staff directed the discharger to implement the proposed expansion of the off-site cleanup system.*

*On September 30, 2003, the discharger conducted the second 2003 semi-annual groundwater monitoring event. Depth to groundwater was measured in all sixty-one chambers of the multi-level (ML) monitoring wells and all fourteen additional monitoring wells (MW) to characterize the three groundwater zones monitored at the site. Of the wells that were measured, fifteen chambers of six ML wells and ten MW wells were sampled*

*and analyzed pursuant to Monitoring and Reporting Program No. 95-87 (Revised May 5, 2003), and modifications required in September 19, 2003, Regional Board letter.*

Groundwater results from the September 30 sampling event detected up to 960 (ML-2 C-3) micrograms per liter ( $\mu\text{g/L}$ ) total petroleum hydrocarbons reported as gasoline (TPH-g), 140 (ML-2 C-3)  $\mu\text{g/L}$  benzene, 280 (ML-3 C-3)  $\mu\text{g/L}$  MTBE, and  $<5$   $\mu\text{g/L}$  tertiary-butyl alcohol (TBA) in groundwater at the site.

Activities scheduled during the first semi-annual monitoring period of 2004: revise Monitoring and Reporting Program (MRP) No. 95-87; implement expansion of the off-site remediation system tentatively scheduled to begin January 5; submit second 2003 semi-annual groundwater monitoring event report due January 20; reevaluate restart of on-site system due January 20; complete installation and startup of off-site remediation system expansion report due February 28; and conduct first semi-annual 2004 groundwater monitoring pursuant to revised MRP tentatively scheduled for April/May.

The municipal water wells owned by Southern California Water Company (Los Olivos #3 Well) and Los Osos Community Services District (10<sup>th</sup> Street Well) located near the site continue to be sampled monthly for MTBE. Water production from both the Los Olivos #3 and 10<sup>th</sup> Street wells had been reduced until recently. *In June 2003 water production from Los Olivos #3 Well began to be increased and is currently at approximately 50% capacity. Sample results for the 10<sup>th</sup> Street Well, collected December 1, 2003, continue to remain below detection limits ( $<0.5$   $\mu\text{g/L}$ ) for MTBE and ( $<5.0$   $\mu\text{g/L}$ ) for TBA. Monitoring results for Los Olivos #3 Well continue to be  $<0.5$   $\mu\text{g/L}$  (non-detect) for MTBE, when last sampled on November 10, 2003. The secondary maximum contaminant level (MCL) for MTBE is 5  $\mu\text{g/L}$ , and the DHS Drinking Water Action Level for TBA is 12  $\mu\text{g/L}$ .*

*Attachment 4 shows MTBE concentration contours for the three groundwater zones sampled in May 2003.*

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

Petroleum hydrocarbon and gasoline additives including BTEX, 1,2-DCA and MTBE have been detected in ground water beneath and downgradient from four gasoline service stations located at the intersection of Mount Hermon Road and Scotts Valley Drive. The site, consisting of four service stations, has been a Regional Board lead groundwater investigation and cleanup case since 1989. Since staff has written status reports for this site for each Board meeting since October 2001, this report only provides the updated information.

**CORRECTIVE ACTIONS**

The following corrective actions are being performed at the site:

- Tosco: Expanded soil vapor extraction and air-sparging; due to very low vapor concentrations, soil vapor extraction has been operated on an intermittent basis. Air sparging is ongoing.
- Equiva: Soil vapor extraction is ongoing; ground water extraction system operation began in September 2000. Because the extraction well has been frequently dry, the system was converted to dual phase (vapor/groundwater) extraction in early 2001. The groundwater extraction system ended in the middle of 2002.
- BP: Two of the existing wells were included in the interim groundwater-pumping program. Since hydrocarbon removal rate became low due to reduced contaminant concentrations, pumping at the former BP site has been discontinued.

In addition, the supply water pumped from the Manana Woods well has been treated with the existing air-striper and (a larger) carbon unit. A new wellhead treatment facility with larger capacity to treat MTBE and benzene contamination is being designed to replace the existing system and is planned to be installed this year.

In a joint effort, Tosco, Equiva, and BP Oil (Responsible Parties or RP's) also submitted a workplan in October 2001 to completely delineate the MTBE plume extent in the downgradient area of the service stations and the Manana Woods well, and select and implement another more effective, permanent remedial alternative to control and cleanup the downgradient plume. Staff concurred with the proposed downgradient plume delineation and the RP's are implementing it.

In addition to the above, groundwater monitoring wells associated with the Camp Evers site and the treatment systems at Tosco and Equiva sites are monitored on a quarterly basis, and the wellhead treatment system is monitored on a weekly basis. MTBE concentrations have generally decreased in the source area (e.g., from the maximum of 86,000 to 200 ppb in Equiva well, MW-4) as of the fourth quarter of 2002. However, in the downgradient plume area around CEMW-6 and newly installed well nest (CEMW-13 through CEMW-16) MTBE concentrations decreased first in mid-2000, and had increased (e.g., from 5,630 to 13,000 ppb in cooperative well CEMW-6 as of the fourth quarter of 2002) before the downgradient plume remediation system began operation. However, MTBE concentrations in the downgradient plume area decreased significantly since the downgradient plume remediation system operation began (see below).

**DOWNGRADIENT PLUME DELINEATION AND CLEANUP**

The RP's *implemented* the approved workplan for delineation and remediation of the downgradient plume, which includes installation of seven groundwater monitoring well nests, a groundwater extraction well and a treatment system compound. Fieldwork for well installation started in late April 2002 and was completed in October 2002. Initial sampling results showed most new wells containing non-detectable MTBE and benzene concentrations, with one sample from well CEMW-19 detected MTBE at 8.8 ppb and three samples from wells CEMW-17 and CEMW-21 containing benzene at concentrations range from 1.3 to 3.0 ppb.

All new wells *have been sampled since* the first quarter 2003 monitoring event. MTBE was not detected in any of the new downgradient monitoring wells except *the deep wells CEMW-19B and CEMW-17B. MTBE concentrations in CEMW-19B* showed an increase from the initial 8.8 ppb in September 2002, to 220 ppb in March 2003, and then decreased to 110 ppb in May 2003 and 120 ppb in August 2003. *MTBE was detected at 1.2 ppb in CEMW-17B, which is the first time MTBE was detected in this well. Other oxygenates were not detected in any of the new well clusters sampled during the third quarter 2003 monitoring event.* Low levels of benzene (from 0.96 ppb to 7.3 ppb) were detected in four wells, which are located upgradient (CEMW-17A, CEMW-17B, and CEMW-18B) or cross-gradient (CEMW-21B) from the Manana Woods Well. Based on the above results, it appears that the downgradient extent of petroleum hydrocarbon impacted groundwater is defined by non-detection or relatively low concentrations of chemicals of concern in the newly installed, downgradient well clusters, CEMW-17 through CEMW 23.

In addition, in October 2002 the Responsible Parties applied for coverage under Order No. 01-134, General NPDES Permit for discharge of highly treated groundwater from the downgradient plume remediation system to surface waters. Staff discussed the proposed enrollment of the RP's under the General Permit at the Regional Board's November 1, 2002 meeting. The Executive Officer enrolled the RP's under the General Permit on November 7, 2002 on condition that the initial batch of water generated from the system is trucked off-site. The RP's started operation of their downgradient plume remediation treatment system in November 2002 and the RP's initiated continuous operation of the treatment system on December 12, 2002. Weekly monitoring of the discharge is now being performed.

From November 26, 2002 to *September 29, 2003*, the downgradient remediation system has removed approximately 6,711,847 gallons of water, 205.9 pounds (lbs) of TPH, 3.1 lbs of benzene, 46.6 lbs MTBE, and 7.4 lbs of TBA from the impacted downgradient area. MTBE concentrations in the downgradient plume area have shown relatively significant decreases. For example, MTBE concentrations in wells CEMW-6 and CEMW16 were reduced from 13,000 ppb to 2,700 ppb

(*comparing to 6,600 ppb in May 2003*) and from 3,500 ppb to 1,200 ppb (*comparing to 1,500 ppb in May 2003*) during October 2002 and August 2003, respectively. These results suggest that the downgradient remediation system *continues to be* effectively removing petroleum hydrocarbons from the downgradient plume area.

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

In February of 2002 Board staff was notified by California Water Service Company (CWSC) of a supply well (Well Station 1-04) in the Salinas area showing a detection of the fuel oxygenate MTBE at 3.9 parts per billion (ppb). A review of the well construction log indicated a proper sanitary seal was installed at the time of construction (6/16/1948) to a depth of approximately 250 feet. The well draws water from depths of 250 feet to 438 feet in three perforated sections. A review of known leaking underground tank cases in close proximity to the well showed no active cases with high concentrations of MTBE to indicate a suspected source. The investigation was expanded to include permitted operating underground tanks (without reported leaks) and identified a gasoline distributor (with 100,000 gallons of fuel products storage) close to the wells. A previous investigation by the distributor revealed no evidence of leaks or spills at the site. The distributor was directed and completed another site investigation last fall, and no evidence of a fuel release was found in underlying groundwater.

CWSC notified Board staff in November 2002 another supply well (Well Station 13-02, approximately ¼ mile from Well Station 1-04) showed a detection of MBTE at 3.5 ppb. Staff continued the investigation and has directed three other permitted underground tank facilities (service stations further from both wells) to perform groundwater investigations. Staff is also coordinating with the State Water Resources Control Board's implementation of enhanced leak detection testing for all underground tank facilities within 1000 feet of water supply wells. Facilities failing the enhanced leak detection tests will be considered for additional groundwater investigation as an MTBE source.

Staff met with representatives of the CWSC and the Monterey County Environmental Health Department (MCEHD) on June 10, 2003, to discuss the status of the investigation and the next appropriate steps. At this meeting, the CWSC reported Well Station 1-04 had increases in MTBE, to a maximum concentration of 120 parts per billion of MTBE in January 2003. The well was placed out of service and properly abandoned to prevent possible trans-aquifer migration of contaminants. Well Station 13-02 has also had an increase in MTBE, with data from April 2003 indicating 39.9 ppb. The CWSC is using wellhead treatment to allow continued use of this well. The MCEHD has committed to inspecting all nearby permitted underground and aboveground tank facilities to ensure compliance.

Staff also participated (via conference call) in a meeting with the California Water Service Company and the California Department of Health Services (DHS) on October 7, 2003, to discuss the Water Company's request for Grant funds from DHS to relocate water supply wells. Staff provided an update on the on-going investigation to identify the source of MTBE detected in the supply wells.

The California Water Service Company has confirmed gasoline has not been stored at their water supply well locations. Well Station No. 1-04 has not had any fuel stored at its location, and Well Station No 13-02 has only had diesel fuel stored in an aboveground vault. No leak has been observed at the vault. The standby power fuel storage is not considered a likely source of the MTBE (diesel should not contain MTBE). Staff has visited the well heads and no obvious sources of MTBE are apparent. The Monterey County Health Department has been inspecting permitted fuel storage site facilities in the vicinity of the supply wells and no operational violations have been found.

Staff has been in contact with the three active service stations and a car wash near the affected supply wells and directed them to investigate possible fuel leaks at their facilities, (Shell, Beacon, Amerigas, and ACME Carwash). Work plans from the facilities have been approved with Shell being the first to report results. Shell has reported elevated concentrations of MTBE, at 7,000 ug/l in groundwater and 1,100 mg/kg in soil. Shell is performing vertical and lateral delineation

investigative work to determine the extent of the release and to determine if this is a source of the contaminant in the supply wells. *Problems with attaining access have delayed Shell's installation of additional monitoring wells. Access issues are expected to be settled in early January, with sampling immediately following (Shell has mobile laboratory and a driller on call to expedite the investigation). In the interim, Shell has extracted 7,000 gallons groundwater from the heart of the MTBE plume and reduced the concentration of MTBE from 7,700 ug/l to 4,200 ug/l at the extraction point.*

Samples from the Beacon station revealed no significant release of MTBE, all concentrations in groundwater samples were less than the Maximum Contaminant Level, with a maximum of 3.0 parts per billion detected at the 57 foot depth. *A work plan for investigation of other gasoline constituents found at the site has been submitted by Beacon and approved by Board staff.*

The Amerigas station and ACME Carwash investigations are still pending.

**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 staff-approved corrective action plan consisting of a permanent dual-phase (soil vapor and groundwater) treatment system was completed. The system subsequently operated on a part time basis as the system performance was adjusted. On July 5, 2002, the treatment system began operation on a full time basis. The treated groundwater is discharged to the sanitary sewer under the County of Santa Cruz Permit (No. 00002829) and the CATOX vapor treatment system operates under the Monterey Bay Unified Pollution Control District air permit (No. 11054).

*On December 22 and December 23, 2003, three additional vapor extraction wells were installed in*

*the vicinity of MW-3 to enhance cleanup at the subject site. In addition, MW-3 was overdrilled and converted into a 4-inch well to enhance groundwater extraction. Currently Compliance & Closure Inc. (CCI) is in the process of installing trenches to connect the newly installed wells with the current remedial system, which is scheduled to begin operation during the First Quarter 2004.*

*The Fourth Quarter 2003 groundwater samples were collected on December 2, 2003. Results of the lab analysis will be included with the quarterly groundwater monitoring report due January 20, 2004. Quik Stop continues to sample Nobel Creek on a monthly basis at four separate locations downgradient from the subject site. Low levels of MTBE were detected in two of the four creek*

*samples collected during the December monitoring event, with a maximum concentration of 1.5 µg/l in Sample A located near the storm culvert outfall. TPG-G and BTEX were not detected in any of the four creek samples collected in December sampling.*

*A total of about 150 gallons of equivalent hydrocarbon product have been removed since extraction began in July 1999.*

Staff continues to work with Quik Stop and local agencies on this cleanup project to protect and restore the groundwater quality of the Soquel/Aptos area.

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#### **ATTACHMENTS:**

1. MTBE Regionwide Listing and High Priority list
2. Chevron's January 9, 2004 Progress Report
3. Chevron Cambria Shallow-Zone Groundwater Contour Map (October 2003)
4. Weber, Hayes & Associates, MTBE Plume Contour Map, May 2003

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