

# MISSION VALLEY FUEL LEAKAGE AND CONTAMINATION ABATEMENT

## *SUMMARY*

Accidental releases of petroleum liquids have contaminated soils and ground water near the 66-acre Mission Valley Terminal (MVT) in San Diego's Mission Valley. Over many years of petroleum storage and distribution operations near Interstate 15 and Friars Road, fuel leaks and spills originating on the MVT property have extended in a plume arching downward into the subsurface to the south and west of the terminal property. This underground plume extends through the soil, sediment and aquifer portions of the watershed beneath the City-owned Qualcomm Stadium complex.

Multiple interviews conducted by the 2012-2013 San Diego County Grand Jury (Grand Jury) revealed some disagreement about the current extent of the plume. The Grand Jury heard conflicting testimony about fuel plume migration into and under the San Diego River to the opposite (southern) shore of the river, including portions beneath Interstate 8 and the Interstate 805 overpass.

Contamination of the Mission Valley aquifer poses a significant loss of water resources for the citizens of the City of San Diego (City). In addition, on-going abatement and contamination cleanup processes by the MVT owner extracts over one million gallons of water from the aquifer each day without reimbursement to the City. This is enough water to supply the needs of 4,000 to 5,000 households. It is not clear when abatement efforts will be completed, when utilization of the groundwater for abatement will cease and when the aquifer might be available for use as a water resource for the City.

The Grand Jury was informed that the City and the State of California rely on water quality data supplied by the MVT owner for assessment of the character and extent of the contamination plume. Similarly, the City relies on information from the owner on the progress being made toward the abatement and cleanup efforts. The Grand Jury found no independent assessment of the extent of the plume or the progress of the cleanup effort.

There has been a protracted litigation by the City against the MVT owner before a United States District Court. The litigation concerns the effectiveness of the cleanup effort and extraction of water from the City-owned aquifer without monetary compensation to the City. The court recently ruled in favor of the owner. The City is now in the process of appealing that ruling.

The Grand Jury does not address matters under litigation and now being appealed. However, our investigations have led to concerns that the City has not been sufficiently proactive in independently monitoring the scope and character of the contamination as well as in keeping the public adequately informed of the ongoing status. The Grand Jury recommends that the San Diego Mayor and the San Diego City Council:

- Establish a City-owned and operated monitoring capability to examine City-owned areas of Mission Valley affected by the fuel plume.

- Provide quarterly reports to the public regarding results obtained from the City-operated monitoring
- Develop a long-range plan for oversight of the MVT fuel containment control and stabilization efforts

### ***INTRODUCTION***

The Grand Jury investigated accidental releases of petroleum liquids into the Mission Valley watershed sediments from the MVT petroleum products facility. This facility is located on the north slope of Mission Valley adjacent to the Qualcomm Stadium complex near the intersection of Interstate 15 and Friars Road.

The Grand Jury investigated the history of this fuel terminal and ongoing cleanup efforts to mitigate the fuel plume that originates on the MVT property. Leaked fuel affects soil, sediment, and ground water extending in a plume arching downward, southerly, and westerly from the terminal property. This underground plume extends through the soil and sediment beneath Qualcomm Stadium and its surrounding parking lots. In the investigation, we heard some conjecture and differing testimony as to the extent of the fuel plume. The Grand Jury was told that contamination might have migrated into and under the San Diego River and subsequently to the opposite (southern) shore of the River, beneath portions of Interstate 8 and the Interstate 805 overpass.

In the past, the Mission Valley watershed aquifer was used to supply San Diegans with potable water. When lower cost fresh water supplies from the Colorado River and the San Francisco Bay Delta via the Metropolitan Water District of Southern California (MWD) became available, the Mission Valley aquifer was no longer utilized as a source of water. Due to the growth of the San Diego region and increasing demands for a reliable and lower-cost water supply independent of the MWD, groundwater from the Mission Valley aquifer is likely to become increasingly attractive as a supplemental source of water. An often-discussed plan is to pump up to three million gallons a day of water from the Mission Valley aquifer into the San Diego regional water supply system. The Mission Valley aquifer is also important as a potential local water resource in connection with ongoing efforts by the San Diego County Water Authority (SDCWA) to provide emergency water supplies for six or more months in the event of loss of MWD supplies due to an earthquake or other regional emergency.

Mission Valley is the flood plain of the San Diego River. As such, it is subject to occasional surface flooding and substantial subsurface water flow westward to the ocean. The City constructed, and for the last 45 years has operated, the Qualcomm Stadium complex on 166 acres on the flood plain adjacent to the San Diego River and Interstate 15 in close proximity to the MVT. There has been ongoing discussion concerning the future of Qualcomm Stadium and its possible replacement by another stadium elsewhere in the greater San Diego region.

Should the Qualcomm Stadium facility be deemed obsolete and relocated, there have been various proposed developments planned for the vacated land, including schools, parks, and a fire station. Other proposed development options have included the conversion of the stadium property into a \$2 billion sports complex that would contain

hotels, apartments, offices, shops and parking garages. New construction at the Qualcomm Stadium site cannot be considered until the MVT contamination has been mitigated and effective fuel containment and stabilization have been established.

## ***PROCEDURE***

**The Grand Jury completed the following interviews:**

- San Diego County Regional Water Quality Control Board (RWQCB), an agency of the California Water Quality Control Board
  - Central Groundwater Unit
  - Sanitary Engineering Unit
  - Industrial Compliance Unit
- San Diego County Water Authority (SDCWA)
- City of San Diego Public Utilities Department
- City of San Diego Water Resources Long Range Unit
- Qualcomm Stadium Management

## ***DISCUSSION***

MVT is a “tank farm” consisting of 29 petroleum product storage tanks located on approximately 66 acres of the north slope of Mission Valley along Interstate 15 at Friars Road. MVT receives a variety of petroleum fuel products via pipeline from refineries located in the Los Angeles area. In total, the tank farm can store up to 26 million gallons of petroleum products. The current MVT owner, who operates about half of the storage tanks, purchased this facility in 1998. The remaining tanks are leased to other petroleum products companies. As the single regional delivery hub, all of the gasoline, diesel, and other petroleum fuels utilized across the San Diego area are distributed by pipelines or tanker trucks from MVT, including gasoline or diesel sold by neighborhood fuel stations, jet fuel for commercial aircraft at Lindberg Field, and military aircraft at local airbases.

The tank farm is situated above a streambed composed of gravel and sand. Due to the porosity and permeability of the streambed sediments, this area is especially vulnerable to downstream spreading of contamination by fuel spills and leaks. In the 1980s, an unintentional leak resulted in up to 500,000 gallons of fuel flowing into the sediments and contaminating the Mission Valley ground water aquifer near MVT.

The Grand Jury learned through witness testimony that one of the largest pockets of Methyl-Tertiary-Butyl Ether (MTBE) and Tertiary-Butyl Alcohol (TBA) in Southern California may be due to fuel leaks that originate from MTV property. One of the most persistent pollutants associated with fuel spills is MTBE<sup>1</sup>, which is a known carcinogen. Starting in the 1970s, MTBE was added to gasoline as a fuel oxygenate to help gasoline burn cleaner and to reduce smog emissions. Adding MTBE to gasoline produced noticeable benefits to ambient air quality, but has also resulted in the accidental release of

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<sup>1</sup> [http://en.wikipedia.org/wiki/MTBE\\_controversy](http://en.wikipedia.org/wiki/MTBE_controversy)

MTBE into the groundwater of the Mission Valley watershed. TBA<sup>2</sup>, also used in gasoline as an octane booster and oxygenate, is a carcinogen.

The alleged MTBE and TBA contamination extends over 6,000 feet downstream. The Grand Jury heard some speculation and received differing testimony as to the extent of the fuel plume migration across the San Diego River to the south side of Mission Valley. Additional conflicting testimony was received regarding the effectiveness of the ongoing abatement and mitigation efforts being performed by the MVT owner.

Representatives of RWQCB, a California state agency, have testified that the contamination appears to be restricted to the MVT facility and down slope fuel plume spreading beneath the Qualcomm Stadium parking lot. The RWQCB asserted to the Grand Jury that the MVT owner has reduced the MTBE contamination by greater than 99.8 percent and that the TBA contamination has been reduced by greater than 89 percent. Existing RWQCB survey reports do not identify soil contamination under the Stadium facility. However, the Grand Jury noted that there are no monitoring wells drilled underneath the Stadium facility itself, which is the lowest point on the property. Thus, it is uncertain whether the fuel plume extends under the Stadium or only under the parking lot area. The Grand Jury also noted that these reports find that all soil contamination appears to be due to fuel leakage emanating from the MVT facility. However, the reports do not indicate whether the leaks emanate from manifolds that distribute petroleum products within the facility or if the tanks themselves are leaking.

In their testimony, the City Public Utilities Department stated that the majority of fuel leakage and soil contamination data are produced by measurements provided by the MVT owner through MVT owned and operated monitoring wells and RWQCB analysis of these measurements. The City does not have independent monitoring capability in the Qualcomm Stadium complex area and must rely on the MVT-provided data and RWQCB analyses.

Recently, the City drilled several test wells on the opposite side of the San Diego River near the Interstate 805 overpass. Analysis of data from these City-owned and operated test wells found the same types of contaminants in the soil as reported by the MVT owner under the Qualcomm Stadium parking lot.

In a letter to the City, the RWQCB reported that the strategy used by the MVT operator includes soil vapor extraction (SVE). SVE is known to be a relatively quick and effective remediation technique for removing petroleum products from soils and sediments. Contaminants are carried out by forcing air or steam through the soil or sediment. As part of the SVE process, the MVT operator extracts water from the Mission Valley aquifer using three groundwater extraction wells located on the MVT facility land 16 groundwater extraction wells are located adjacent to the MVT facility. By extracting ground water from the aquifer, the remediation process effectively lowers the water table and dewateres the contaminated zone, thereby enhancing the effectiveness of the vapor extraction system. In all, 172 soil extraction wells are being used to remove

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<sup>2</sup> <http://en.wikipedia.org/wiki/Tert-Butanol>

hydrocarbons from the dewatered zone using the SVE process. There are 79 groundwater monitoring wells located on the MVT property and 141 located adjacent to the MVT facility. The monitoring wells are used to collect water quality data that serve to evaluate the effectiveness of the remediation effort and comply with the Corrective Action Order and amendments thereto issued by the RWQCB.

Another component of the corrective action is to create a hydraulic containment barrier at the boundary of the MVT property. The Grand Jury was told that the purpose of the hydraulic barrier is to prevent petroleum contaminants in groundwater from migrating beyond MVT property. Thus, it was understood that the hydraulic barrier is intended to contain current and future fuel leakage. Witness testimony did not produce an adequate explanation about the physical properties of this barrier, how it functions, or if it is, in fact, complete and in place. The Grand Jury did not see any evidence in the RWQCB report specifically evaluating the success of this barrier.

The Grand Jury did not receive a satisfactory answer as to the use of the water after removal from the aquifer. Some testimony inferred that the extracted water was being used as a decontamination agent, then filtered and injected back to the groundwater system. Other testimony inferred that the extracted water was simply disposed of as surface runoff without treatment in order to dewater the zone targeted for the SVE process. In either case, we were not able to learn the extent of or the location of the disposal area relative to the boundary of the contaminant plume.

The Grand Jury found lack of clarity among the various witnesses interviewed to be disturbing. It was not apparent whether this lack of clarity was due to deliberate obfuscation or systematic compartmentalization between the various entities involved.

The MVT owner currently has permission from the RWQCB to pump up to 795,000 gallons per day from the Mission Valley aquifer. The Grand Jury heard testimony that the MVT operator is actually extracting up to 1.2 million gallons per day from the Mission Valley aquifer. The MVT owner does not pay the City for the groundwater extracted from the aquifer. The City claims Pueblo Water Rights ownership to this aquifer.

Some of the testimony to the Grand Jury indicated that, after use, the water extracted from the aquifer is treated with a sophisticated filtering system then refined and discharged into the Murphy Canyon Creek (along Interstate 15 adjacent to the MVT facility), which subsequently flows to the San Diego River and out into the ocean. Treating the effluent (used water) requires permanently discarding approximately 360 million gallons of water from the Mission Valley watershed each year. This refined water contains Total Dissolved Solids (TDS)<sup>3</sup> levels above the levels measured in untreated water from the aquifer. It should be noted that while TDS is not generally considered a primary pollutant (i.e. it is not deemed associated with health effects). It can be used as an indication of aesthetic characteristics of drinking water and as an indicator of the presence of a broad array of dissolved components.

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<sup>3</sup> A measure of the combined content of all inorganic and organic substances contained in a liquid.

The RWQCB has given the MVT owners a temporary waiver from the government allowable specified TDS levels of 2000 milligrams per liter (mg/L) for effluent. For remediation discharges into the Murphy Canyon Creek, the Board has temporarily raised the maximum TDS effluent requirements imposed on the MVT operator from 1,500 mg/L to 2,400 mg/L.

Testimony heard by the Grand Jury posed two different strategies for release of the MVT effluent. The City took the position that the MVT owner should re-inject the treated water back into the aquifer. In contrast, the MVT owner has taken the position that such a practice would be a mistake, and that among other issues, re-injecting the effluent into the aquifer could cause the TBA and MTBE plumes to expand. As we understand it, the MVT owner's position is that dewatering is essential to the SVE process. If the effluent were injected in such a manner as to refill the dewatered zone, remaining petroleum contaminants not yet removed by the SVE process would re-contaminate the groundwater. The RWQCB appears to support the MVT owner's position.

More recently, the MVT owner has asked permission from the City to pump the treated effluent into the San Diego Municipal Separate Storm Sewer System (MS4).<sup>4</sup> The City has not approved such a plan.<sup>5</sup> The Grand Jury learned that the MVT owner reported that an extension of the fuel plume has been found alongside Friars Road westward of Qualcomm Stadium, although the source of this plume extension was not identified. The Grand Jury questions whether the effluent being released by the MVT owner is the source of the reported plume extension. The Grand Jury notes that it has been 18 years since the environmental decontamination and cleanup of the Mission Valley soil and water due to MVT leakage began. The most recent schedules set by the RWQCB for completion of this effort state that MTV was to clean up the soil by December 31, 2010, and clean up the groundwater by December 31, 2013. The MVT owner is currently requesting an extension to the cleanup deadlines from RWQCB and for permission to pump up to 1.26 million gallons of water per day from the aquifer to aid in the cleanup process.

The many issues discussed in this report concerning the MVT fuel leakage and the extensive contamination abatement actions are complex and interrelated. There has been a protracted litigation by the City against the MVT operator before United States District Court concerning the effectiveness of the cleanup efforts and the extended extraction of City-owned aquifer water without monetary compensation to the City<sup>6</sup>. The City is now appealing this litigation that recently found in favor of the MVT operator. The Grand Jury will not comment further on the matters under litigation and now being appealed. However, as public citizens, we do hope that all parties concerned in these issues can earnestly work together toward a common goal of restoration of the Mission Valley watershed to its previous state.

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<sup>4</sup> The MS4 is a "separate storm sewer system" owned by the City which includes ditches, curbs, gutters, storm sewers, and similar means of collecting or conveying runoff that do not connect with a wastewater collection system or treatment plant.

<sup>5</sup> Letter from the City of San Diego Transportation & Storm Water Department to the RWQCB dated June 5, 2012.

<sup>6</sup> United States District Court case 3:07-cv-01883-MMA-WVG Document 271 Filed 11/29/12.

## ***CLEAN UP STATUS***

The MVT owner is still performing ongoing decontamination and cleanup efforts with the meeting of deadlines not assured. The Grand Jury heard testimony that the MVT owner agreed to develop a more accurate profile showing the current extent of contamination and to expedite installation of the hydraulic barrier at their property boundary. In addition we learned that the MVT owner agreed to investigate possible contamination of City-owned utilities under public rights of way.

In June 2012, the RWQCB submitted a report to the California Water Quality Control Board.<sup>7</sup> The report stated that petroleum product contamination due to fuel leakage from the MVT has degraded City property and the Mission Valley groundwater from which the City intends to develop a potable water source and water storage capacity when remediation is completed.

The City submitted proposed conditions for approval of MVT fuel leakage containment and remediation.<sup>8</sup> If implemented, the conditions would require the MVT owner to:

- Pay the City for the replacement cost of groundwater extracted from the Mission Valley aquifer.
- Submit a comprehensive analysis demonstrating why alternatives to discharging extracted groundwater into MS4 is technically or economically infeasible.
- Discharge effluents to a location other than Murphy Canyon Creek to avoid causing erosion and maintenance impacts.
- Promptly bring TDS levels in the discharge into compliance with the Basin Plan standard 1500 mg/l.
- Conduct monthly monitoring (and quarterly reporting to the City) of the extracted groundwater treatment system.
- Provide the City with quarterly reports on all data related to wells, pumping tests and water quality for all work performed.
- Obtain annual approval from the City for discharges into its MS4 system if utilized.

The San Diego River Park Foundation issued the Annual Water Quality Report for Water Year 2012 and monthly snapshot reports.<sup>9</sup> The reports provide water quality monitoring results and a “grade” for various sections of the river. Region IV Qualcomm Way to I-15 and Region V Mission Valley East received substandard (poor or very poor) grades indicating that in these regions of the river the water quality falls below minimum standards. Parameters measured to assess water quality include pH, specific conductivity and oxygen concentration. The rating is not directly related to contamination from petroleum products, but it does give a general indication of water quality in the region of the river near Qualcomm Stadium.

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<sup>7</sup> State of California, Regional Water Quality Control Board, San Diego Region, Executive Officer Summary Report June 13, 2012.

<sup>8</sup> Letter from the City of San Diego Transportation & Storm Water Department to the RWQCB dated June 5, 2012.

<sup>9</sup> <http://sandiegoriver.org/documents/2011stateoftheriver.pdf>

## ***FACTS AND FINDINGS***

**Fact:** The 66-acre MVT facility includes 29 storage tanks located on the north slopes above and within the Mission Valley watershed near the intersection of Interstate 15 and Friars Road. MTV distributes most of the gasoline, diesel, and other petroleum fuels utilized across the San Diego area from this facility.

**Finding 01:** It is not economically reasonable to relocate the MVT fuel storage and distribution facility to a more environmentally desirable site within the San Diego area.

**Fact:** The MTV facility fuel seepage has contaminated soil and water within the Mission Valley watershed

**Fact:** The MVT owner monitors water quality in test wells located on MVT property and the Qualcomm Stadium parking lots. RWQCB receives and analyzes the data obtained from MVT's groundwater monitoring wells.

**Fact:** The City has on-line access to the soil and water contamination data as posted from measurements collected by the MVT owner. It relies on assessments of this data provided by the RWQCB.

**Fact:** The City Public Utilities Department drilled and operates several groundwater monitoring test wells located on City property on the southern side of the San Diego River adjacent to a Qualcomm Stadium parking lot near the Interstate 805 overpass.

**Fact:** The City operated test wells have found the same types of soil and water contamination as found under the Qualcomm parking lots.

**Finding 02:** The City does not have an adequate independent City-owned and operated monitoring capability in the impacted portions of Mission Valley in the areas within and surrounding Qualcomm Stadium that is separate and distinct from those monitoring wells controlled by the MVT owner.

**Finding 03:** Results from the two City-operated monitoring wells located on the south side of the San Diego River indicate that the fuel plume is larger than prior data suggests.

**Fact:** The City asserts "Pueblo Water Rights" over the water resources of the San Diego aquifer. Los Angeles and San Diego are the only two cities with Pueblo Water Rights recognized by judicial decisions.

**Fact:** The RWQCB is allowing the MVT operator to utilize the Mission Valley aquifer for mitigation of the fuel plume.

**Finding 04:** The City of San Diego should continue to assert Pueblo Water Rights over the Mission Valley aquifer.

**Fact:** The San Diego County RWQCB issued the first cleanup order to the MVT owner in 1992.



**Fact:** The cleanup order requires the remediation of liquid gasoline from the subsurface and groundwater by December 31, 2010, and that the concentrations of dissolved phase petroleum hydrocarbon are reduced to attain pre-contamination conditions by December 31, 2013.

**Fact:** The public has not been informed about the progress of the cleanup efforts.

**Fact:** The MVT owner requested an extension of the deadlines.

**Finding 05:** The San Diego public needs to be better informed of status of the Mission Valley watershed due to contamination from MVT petroleum product leakage and the effectiveness of the ongoing contamination abatement and cleanup efforts.

**Finding 06:** The City needs an up-to-date long-range plan for oversight of the MVT fuel containment control and stabilization efforts. This plan should identify ways to reduce the possibility of future fuel leakage from this facility. Development of this plan should not be delayed until future settlement of on-going litigation. The plan should take into account necessary actions based on either settlement outcome whether or not in the City's favor.

### ***RECOMMENDATIONS***

**The 2012-2013 San Diego County Grand Jury recommends that the San Diego City Mayor and the San Diego City Council:**

- 13-73:** Establish a City-owned and operated monitoring capability in the affected portions of Mission Valley within and surrounding Qualcomm Stadium. It would be separate and distinct from those monitoring wells controlled by the MVT owner associated contamination reports provided by the San Diego County RWQCB.
- 13-74:** Provide quarterly reports to the public concerning results obtained from City owned and operated monitors. The reports would include projected trends in the mitigation of soil, river water, and aquifer contamination resulting from the ongoing cleanup efforts now being performed by the MVT owner.
- 13-75:** Develop a long-range plan for oversight of the MVT fuel containment control and stabilization efforts serving to reduce the possibility of future fuel leakage from this facility.

### ***REQUIREMENTS AND INSTRUCTIONS***

The California Penal Code §933(c) requires any public agency which the Grand Jury has reviewed, and about which it has issued a final report, to comment to the Presiding Judge of the Superior Court on the findings and recommendations pertaining to matters under the control of the agency. Such comment shall be made *no later than 90 days* after the Grand Jury publishes its report (filed with the Clerk of the Court); except that in the case of a report containing findings and recommendations pertaining to a department or

agency headed by an elected County official (e.g. District Attorney, Sheriff, etc.), such comment shall be made *within 60 days* to the Presiding Judge with an information copy sent to the Board of Supervisors.

Furthermore, California Penal Code §933.05(a), (b), (c), details, as follows, the manner in which such comment(s) are to be made:

- (a) As to each grand jury finding, the responding person or entity shall indicate one of the following:
  - (1) The respondent agrees with the finding
  - (2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefor.
- (b) As to each grand jury recommendation, the responding person or entity shall report one of the following actions:
  - (1) The recommendation has been implemented, with a summary regarding the implemented action.
  - (2) The recommendation has not yet been implemented, but will be implemented in the future, with a time frame for implementation.
  - (3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a time frame for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This time frame shall not exceed six months from the date of publication of the grand jury report.
  - (4) The recommendation will not be implemented because it is not warranted or is not reasonable, with an explanation therefor.
- (c) If a finding or recommendation of the grand jury addresses budgetary or personnel matters of a county agency or department headed by an elected officer, both the agency or department head and the Board of Supervisors shall respond if requested by the grand jury, but the response of the Board of Supervisors shall address only those budgetary or personnel matters over which it has some decision making authority. The response of the elected agency or department head shall address all aspects of the findings or recommendations affecting his or her agency or department.

Comments to the Presiding Judge of the Superior Court in compliance with the Penal Code §933.05 are required from the:

<u>Responding Agency</u>	<u>Recommendations</u>	<u>Date</u>
Mayor, City of San Diego	13-73 through 13-75	8/19/13
City Council, City of San Diego	13-73 through 13-75	8/19/13

## **DEFINITIONS AND TERMINOLOGY**

mg/L	milligrams per liter
MS4	San Diego Municipal Separate Storm Sewer System
MTBE	Methyl-Tertiary-Butyl Ether
MVT	Mission Valley Terminal
MWD	Metropolitan Water District of Southern California
RWQCB	San Diego County Regional Water Quality Control Board
SDCWA	San Diego County Water Authority
SVE	Soil Vapor Extraction
TBA	Tertiary-Butyl Alcohol
TDS	Total Dissolved Solids