

## San Gabriel Valley NPL Area 3 Well Installation Report - Supplemental Information

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This memorandum has been prepared in response to your November 4, 2003 letter regarding the October 2003 draft Well Installation Report for the San Gabriel Valley NPL Area 3 RI/FS. As follows are significant or noteworthy deviations from the Field Sampling Plan For San Gabriel Valley NPL Area 3 Remedial Investigation Field Activities (FSP) and July 25, 2001 Work Plan Amendment No. 1, as well as unanticipated project complications and resolutions. A summary of well installation activities, with the start and finish dates, is presented in Table 1.

### Unanticipated Project Deviations and Justifications

As follows are summaries of deviations from the FSP or Work Plan and an explanation of why these deviations occurred.

**1. Planned:** Section 4.1.1 *Sampling Locations* of the FSP lists the anticipated number of wells to be installed, as well as the proposed screen interval depths for each of the wells. **Actual:** The actual number of wells and screen intervals was different than proposed in the FSP and Work Plan, most notably at well MW1-1. Please refer to Tables 2-1 and 2-2 of the October 2003 draft Well Installation Report for San Gabriel Valley NPL Area 3 RI/FS for the number of wells installed and their well construction details. **Explanation:** Bedrock was encountered at a much shallower depth than anticipated in the western portion of Area 3. Because of the relatively shallow bedrock depth and, hence, relatively thin alluvium, monitoring well MW1-1 was not completed as a cluster of wells, but instead as a single well with one screened interval.

**2. Planned:** Section 4.2.1 *Drill Cuttings and Fluids* of the FSP discusses the sampling technique and analyses of drill cuttings and fluids produced during drilling activities. The FSP states that, the drill cuttings and fluids will be analyzed for the following, according to local landfill requirements:

- pH
- Flashpoint

- Total Petroleum Hydrocarbons – gasoline (TPHg)
- Total Petroleum Hydrocarbons – diesel (TPHd)
- VOCs
- Total threshold limit concentration (TTLC) Metals

In addition to the analytes listed above, a Fish Bioassay was also performed on the cuttings from MW1-1, MW1-2 and MW1-3. McKittrick, the landfill that would accept the drill cuttings with an elevated pH and water content, required this test in additions to the others.

3. **Planned:** Section 6.1.3 *Well Installation and Construction* of the FSP states that “immediately upon completion of the drilling, boreholes will be geophysically logged. Results from the geophysical logging will help determine which zones to monitor. The following geophysical logs will be run:

- Resistivity (16- and 64-inch lateral)
- Spontaneous potential (SP)
- Focused resistivity
- Natural gamma
- Caliper”

**Actual:** In addition to the above geophysical logs, a sonic log was also run at well locations MW1-1, MW1-3, MW1-4 and MW1-5. The sonic log is used to estimate the depth of the water table. **Explanation:** At monitoring well MW1-2B, where the water table is currently below the screen interval, we specifically targeted an aquifer close to the water table for future sampling and monitoring of a likely contaminant pathway. When groundwater was not encountered, we consulted with the geophysical logging contractor on alternative methods for use in assessing the location of the water table in a mud-filled borehole. The geophysical logging subcontractor recommended a sonic log, which was subsequently used to assist in placement of well screens near the water table at the other monitoring well locations. This geophysical log proved useful in Area 3 because of the wide range of groundwater and bedrock depths in the area, which are due to faulting. In addition, groundwater depth is at an all time low in the San Gabriel Basin and because of this, pre-drilling predictions of the depth to water at each well location based on historic work and data in the area, needed to be supplemented with information from the sonic logs. Based on the history of groundwater levels and contamination detected in monitoring well MW1-2A, we anticipate future sampling of well MW1-2B to occur and that VOCs will be detected in groundwater at this location.

4. **Planned:** Section 6.1.3.1 *Typical Multi-Port Monitoring Well Design* of the FSP states that “after the MP instrumentation has been installed, one pumping port at a time will be opened and that interval pumped at the maximum available pumping rate (approximately 1 gallon per minute [gpm]) for a minimum of 2 hours (or until the discharge is clear, as determined by the site hydrogeologist).” **Actual:** About 25 gallons of water was purged from each of the zones in each of the wells and the purge time for each of the zones was about double the time initially stated in the FSP. **Explanation:** The pump used to purge the zone ran at a lower flow rate, due to the groundwater table being deeper than anticipated. Thus, more time was needed to produce the necessary quantity of water.

5. **Planned:** Section 6.2.1 *Cluster Monitoring Wells* of the FSP states that “a submersible pump will be used for purging and sampling the cluster monitoring wells following the guidelines outlined below. A small diameter (2-inch), variable speed pump will be placed in the center of the well screen during well construction.” **Actual:** As discussed in the Well Installation Report, a QED Model #ST1102M 1.66-inch bladder pump was installed instead. **Explanation:** This type of pump was chosen, as it was more suitable for the deeper-than-anticipated groundwater levels in the cluster monitoring wells installed in Area 3.

### **Unanticipated Project Complications and Resolutions**

1. **Planned:** Section 6.5 *Containment and Disposal of Investigation-Derived Waste* of the FSP discusses the handling of three separate waste streams, soil cuttings, drilling mud, and well development water, during drilling and well development activities. **Actual:** The complication for this project occurred when, upon request of the drilling subcontractor, two waste streams, drilling mud and soil cuttings were containerized together in roll-off bins. This resulted in complications related to disposal of the waste and delays in removing the wastes from some monitoring well sites for two primary reasons. The roll-off bin wastes were changed from a normally solid consistency to a semi-liquid consistency with the addition of drilling fluids and mud. Most waste disposal facilities did not accept this waste, because their permits do not allow for disposal of liquid wastes. In addition, the roll-off bin wastes had elevated pH levels due to the presence of high-pH content drilling fluids containing cement from construction of the wells. The elevated pH contributed to the non-acceptance of the wastes by several waste disposal facilities. The end result was that there were time delays in removing wastes from some monitoring well sites and the drilling subcontractor requested additional compensation for waste disposal. **Explanation:** After waste disposal problems at wells MW1-1, MW1-2, and MW1-3, CH2M HILL directed the drilling subcontractor to segregate the wastes into three streams as originally planned. This resulted in fewer waste disposal complications at wells MW1-4 and MW1-5. In addition, CH2M HILL rejected additional compensation requests related to the subcontractor’s handling of wastes resulting in elevated pH and liquid content.

2. **Planned:** During drilling and construction activities at monitoring wells MW1-1, MW1-2, MW1-3, MW1-4, and MW1-5, sound control equipment was set-up around the drill rig to reduce the decibel level of the sound emanating from the well installation activities. **Actual:** Despite the efforts to reduce the decibel levels, residents next to monitoring well MW1-5 complained of excessive noise and requested temporary relocation. EPA granted this request and directed CH2M HILL to coordinate with the residents. The residents were subsequently relocated for the remainder of the drilling and construction activities and reimbursed for their expenses by EPA. **Explanation:** In spite of the use of sound control equipment, well MW1-5 was so close to apartment units that decibel levels exceeded those considered acceptable by the residents. Although the City of San Gabriel did not have a noise ordinance, decibel levels at times exceeded those allowed by neighboring Alhambra. In the future when drilling in similar (residential) areas, the drilling contractor should guarantee that noise requirements can be met. If this is not possible, EPA may want to consider planning temporary relocation activities prior to well installation, in conjunction with community outreach activities. A more cost-effective strategy may be to have

contingency plans available in the event that relocation is necessary. Although the resident relocation at well MW1-5 went smoothly, anticipating future occurrences of noise complaints could facilitate future relocation activities. And, a contingency plan may be more cost effective, as the number of residents who requested relocation at MW1-5 was relatively small (five). It is possible that a greater number of residents could have requested relocation prior to well installation activities, if they anticipated more noise than actually occurred.

### **Summary of Project Milestones and Start/Completion Dates**

Please refer to Table 1 for a chronology of events for the Area 3 well installation field activities.