



Memorandum

To: Mark Detterman, ACDEH

From: Andrew Lojo,

Date: December 4, 2017

Subject: Comments on Interim Remedial Action Plan, 1700 Jefferson Oakland, Ca. October 2017, Prepared by Applied Water Resources (Fuel Leak Case No. RO0000151)

Dear Mr. Detterman

Terraphase Engineering Inc. (Terraphase) has reviewed the Interim Remedial Action Plan prepared by AWR for the 1700 Jefferson Street, site in Oakland, Ca. The attached PDF of the plan includes our detailed comments provided in relative places as comment boxes.

We are disappointed that the plan does not address the significant amount of gasoline contamination present beneath the residential Jefferson Court property. The speculation suggesting that contamination in MW-5 might not have come from the ARC site is completely unsupported by the data. Also, because of flaws in the sampling we are skeptical that no free product is present as asserted in the IRAP. Aggressive remediation is necessary given the significant amount of benzene and product documented at the site since the contamination was discovered in 1987 and the lack of progress over the last 30 years. The proposed remedial goals are insufficient to protect human health and the environment. The IRAP focuses on merely breaking the vapor intrusion pathway rather than actually cleaning up the problem. To try move this 1987 site toward closure we are proposing appropriate and achievable goals that will meet regulatory criteria.

IRAP's Limited Scope:

The very limited scope described in the IRAP includes soil vapor testing in only three wells and only on the ARC site. This is not an IRAP, it is a mini pilot test. If implemented, it would take years if ever, to remediate the ARC site and it would do absolutely nothing to remove the significant amount of gasoline present beneath the residential Jefferson Court property. The IRAP considers only a minor implementation of SVE, no other remedial methods such as combining air sparge and liquid extraction, which would be far more effective at achieving real

remediation at the site, are considered. There is no discussion or plan to actually clean anything up, certainly none to clean up the residential Jefferson Court property.

MW-5 Contaminant Source Speculation:

The IRAP presents unsupported speculation that the gasoline in MW-5 may not have come from the ARC site. (also made in the 2016 Site Investigation Report) This is completely unsupported by the decades of site monitoring data. The size of the plume, including and beyond MW-5 to the north, should be expected for a site with a long history of leakage like this. The gasoline station operated on the ARC site for 48 years, leaking gasoline into a sandy subsurface prior to closure in 1987, would be expected to create a plume of the length encountered here. The constituents and their ratios are what would be expected coming from the ARC site. The lead and other lead scavenger data is also the same as what has been found on the ARC site. The recent C-boring data cited as the reason for this separate source speculation, in fact does not support the speculation at all. No water was obtained from C16 located directly south of MW-5 and the only water sample obtained on 18th street was on the northwestern edge of the plume where concentrations are expected to be low. The data in the report do not support the new interpretation of the extent of benzene shown on Figure 10 of this IRAP. Figure 9 of the Site Investigation Report breaks the simple rules of contouring. These interpretations should not have made it into this document since the groundwater data from the new monitoring wells on the Jefferson Court site all show a continual plume from the ARC site to MW-5.

In addition to the technical data demonstrating that the source of the contamination at MW-5 is from the ARC property, the fact is that there is no historic evidence of a viable off-site source.

Free Product Detection:

Statements are made in the IRAP and recent AWR reports that no free product is being detected in site monitoring wells. While possibly true, this is inconsistent with the high levels of TPHg and BTEX compounds detected continually in the monitoring wells. A likely explanation for the lack of free product detections is that the construction methods used for the new monitoring wells, and past use of ORC socks in the older monitoring wells, could be preventing detection of product.

The historic monitoring reports do not have a complete, consistent record that product monitoring was even conducted except sporadically after shutdown of the remedial system in 1999. ORC was placed into monitoring wells MW-1 through 5 however, in September 1999 and left there for several years. They were reportedly removed two weeks prior to each quarterly sampling event, then replaced. This continued until ACDEH instructed ARC not to do that anymore, which was in the fourth quarter of 2002 (Mactec, Feb 13, 2009, QMR). The socks remained in MW-5 longer however, due to problems removing them. That ORC use, likely resulted in remediation of product in the areas immediately surrounding the older monitoring

wells, which could be preventing them from detecting it now. As a result, site conditions are not accurately characterized.

The recent monitoring wells installed on the Jefferson Court property reportedly used pre-pack well screens. They are screened only inches above the reported groundwater table elevation and may be submerged. In addition, Terraphase observed the placement of pre-pack screens during the recent grab groundwater sampling conducted inside the Jefferson Court apartment building. The pre-pack well screens placed in the ground had a gray fabric cover over the sand packed screen. Fabric filter sock material can absorb gasoline constituents. It, and very fine-grained sand often used in pre-packed screens can prevent the migration of product into wells even if they are not submerged screens. Lastly, the use of low flow sampling methods would also prevent the detection of floating product because of the extremely low flows used and the fact that the water table is not depressed during sample collection. We request that exact well construction and material cut sheets be provided for review.

We also suggest that additional measures to detect floating product be conducted as part of the IRAP so that adequate remedial methods such as additional liquid/product removal can be implemented in areas that warrant it.

Lack of Focus by ARC/Predecessors on Problems Under the Adjacent Apartment Building:

As noted in the site history section of the IRAP and numerous earlier reports for the Site, the gasoline tanks were in use from 1939, until 1987. That is a very long time to be leaking gasoline into the ground, more than enough to cause a 300+-foot-long gasoline plume in a relatively sandy subsurface. Product was detected in the wells on-site and in MW-5 as early as 1988. Product was bailed out of site monitoring wells located approximately 10 feet from the property line adjacent to the apartment building on a daily basis for approximately 4.5 years (September 1987 to March 1991), totaling approximately 2,300 gallons. Product extraction continued using pumps for another 7 years. Yet no one apparently thought to notify the adjacent apartment building owners of the presence of all the product so that steps could be taken to protect the residents. Even after shutdown of the system in 1999, monitoring reports have continually contoured benzene concentrations in groundwater up to 10,000 ug/l under the apartment building. We request that ARC remediate the gasoline from underneath the residential Jefferson Court property.

Lack of Clear, Specific, and Appropriate Cleanup Goals:

The IRAP discusses the use of Low Threat Closure Policy (LTCP) criteria for the ARC site and refers to using Environmental Screening Levels (ESLs) for the Jefferson site in a very non-specific way. The introduction section states, somewhat equivocally that the goal of the IRAP is merely to reduce the potential for future unacceptable risk to indoor air. This does not adequately protect human health and the environment. The sub slab data has already shown that for the time being, the vapor intrusion pathway is safe. The question however is for how

long, and the bigger issue is when will ARC finally start cleaning up the neighborhood? The Jefferson Court site is not, and never has been a gasoline station nor is it an industrial property. Residential ESLs are the appropriate cleanup goals for the residential Jefferson property. The IRAP fails to specify any actual numeric goals however, and refers instead to minimization of unacceptable risk to indoor air receptors. Acceptable and achievable remedial goals for the Jefferson site should be:

1. Start of remediation on the Jefferson site within 3 months.
2. Reduction of benzene concentrations in groundwater to less than 1,000 ug/l in all Jefferson site monitoring wells within 12 months of start of remediation.
3. Reduction in BTEX, naphthalene and TPHg, concentrations in groundwater in all Jefferson site monitoring wells, to residential ESLs (Groundwater Summary Table Column H), within 24 months of start of remediation.
4. Reduction of BTEX, naphthalene, and TPHg concentrations in deeper soil gas to ESLs within 24 months of the start of remediation.
5. Semi-annual monitoring for 2 years following achievement of remedial goals, and annual for an additional 3 years, with more monitoring or re-start of remediation if rebound is detected.
6. Quarterly sampling of the sub slab vapor points is necessary during this time to confirm the safety of residential occupants from indoor air risk.

The ARC site needs to be remediated so that it is not a continuing source of contamination to the Jefferson Court Apartments. Therefore, the above listed goals are appropriate for both sites.

Conclusion:

The three SVE wells only on ARC's site will not achieve cleanup on the residential Jefferson Court property, which has a significant amount of residual and perhaps free product still beneath it. This IRAP should have addressed that contamination, even though current sub slab soil gas data do not show an immediate significant exposure. Protection of residents is the highest importance and mechanically breaking the vapor intrusion pathway is not enough to do that. More importantly, SVE alone is not going to clean up the Jefferson site as already stated, even if wells are placed on the property. In order to achieve these goals in an acceptable time frame (defined above as two years), remediation needs to include a combination of water removal to lower the GW table enough to allow product removal and to make SVE more effective. It should also include air sparging below the groundwater table to assist in mobilizing the submerged petroleum to the surface for direct removal as liquid and/or vapor which will also enhance natural bio of the remaining dissolved phase. It is high time that the significant gasoline problem emanating into the neighborhood from the ARC site be remediated.