



February 15, 2013

Dr. Teklewold Ayalew, PG
California Regional Water Quality Control Board – Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

**SUBJECT: Completion of Excavation Pilot Testing Program
Former Kast Property, Carson, California
Site Cleanup No. 1230, Site ID No. 2040330, CAO No. R4-2011-0046**

Dear Dr. Ayalew:

URS Corporation (URS) is submitting this letter regarding Excavation Pilot Testing at the Former Kast Property in Carson, California (Site) on behalf of Equilon Enterprises LLC doing business as Shell Oil Products US (SOPUS) in accordance with Cleanup and Abatement Order (CAO) No. R4-2011-0046 issued to SOPUS by the Regional Water Quality Control Board (RWQCB) on March 11, 2011. In response to the CAO, URS and Geosyntec Consultants (Geosyntec) submitted the *Pilot Test Work Plan for Remedial Excavation and In-Situ Pilot Testing* at the Site on May 10, 2011 on behalf of SOPUS. Additionally, URS and Geosyntec submitted Addenda to the Pilot Test Work Plan on August 15 and August 26, 2011. The RWQCB completed its review of the Pilot Test Work Plan, including a California Environmental Quality Act review leading to adoption of a Negative Declaration, and issued an approval letter for the Pilot Test Work Plan on November 23, 2011.

Background

The excavation portion of the Pilot Test Work Plan proposed five types of pilot excavations:

- Trench-box shored excavation to approximately 10 feet below ground surface (bgs) in a front yard;
- Unshored slot trench excavations to approximately 10 feet bgs at two locations, one in a front yard and one in a back yard;
- Unshored surgical excavation to less than 10 feet bgs in a back yard;
- Large unshored excavation to approximately 10 feet bgs with sloped sidewalls spanning the front yard of two adjacent properties; and
- Slide-rail shored excavation to approximately 10 feet bgs in a front yard.

In a letter dated June 20, 2012, URS recommended that the pilot test excavation using trench-box shoring be eliminated due to geotechnical conditions at the property identified for this pilot excavation, logistical difficulty associated with using this method in the residential neighborhood, and availability of less disruptive methods for conducting excavations to 10 feet bgs. On July 3, 2012, the RWQCB concurred that the trench box shoring system is not suitable for use in pilot test excavations.

Pilot test excavation grading plans were prepared and Grading Permit applications were submitted to the City of Carson and Los Angeles County Department of Public Works (DPW) for the following pilot excavations and locations:

- 24612 Neptune – Slot trench excavation (front yard);
- 24533 Ravenna – Surgical excavation;



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- 24715 Neptune – Slot trench (back yard);
- 24432 Marbella and 24502 Marbella – Large unshored excavation; and
- 24736 Ravenna – Slide-rail shored excavation.

Excavation Pilot Test Implementation

In its response dated July 6, 2012 to the July 5, 2012 status report and schedule extension request submitted on SOPUS' behalf, the RWQCB temporarily suspended the July 9, 2012 submittal date for the Pilot Test Report set forth in the Regional Board's amendment to the CAO dated March 22, 2012, pending receipt of approval of the Grading Permits. On September 6, 2012, URS was advised that the Grading Plans for excavation pilot testing were approved by the DPW. DPW forwarded all information to the City of Carson and requested the City calculate final permit fee amounts required prior to permit pickup. On Thursday, September 13, 2012, we received information from DPW on final fee amounts for Grading Permits, and Grading Permits were picked up by American Integrated Services, Inc. (AIS, URS' excavation subcontractor) on Monday September 17, 2012.

The first property scheduled for excavation pilot testing was 24533 Ravenna Avenue, with excavation scheduled to start on October 15, 2012. On October 10, 2012, URS notified the RWQCB of SOPUS' concerns about proceeding with the excavation pilot test at this residence based on the health condition of the elderly homeowner, and work at this property was postponed.

Consequently, the first excavation method pilot tested was slot trenching in the front yard at 24612 Neptune Avenue. This pilot excavation began on November 5 and was completed on November 20, 2012. URS submitted a report documenting findings from this excavation pilot test to the RWQCB on January 4, 2013. The slot-trench excavation at this location was approximately 26 feet long by approximately 12 feet wide and varied from approximately 10 to 12.5 feet deep. This pilot excavation provided useful data regarding the feasibility of excavating to approximately 10 feet bgs to remove impacted soils and the exposed portion of the concrete reservoir base using slot trenching without the need for installation of shoring. This pilot excavation also allowed evaluation of noise and odor control methods and evaluation of vibratory motions induced by excavation and concrete removal activities and the potential for these vibrations to damage structures. Allowing for setbacks from structures and hardscape, the overall area of the excavation was approximately 39% of the total area of the front yard, or 5% of the total lot at this residence. In addition to slot-trench excavation to 10 feet bgs, shallow soils to a depth of 2 feet bgs were excavated from the remaining non-hardscaped portion of the front yard and replaced with clean imported fill soil prior to landscape restoration. This excavation technique will be considered and addressed in the Remedial Action Plan (RAP) to be submitted for the site.

The second excavation pilot test was surgical excavation in the back yard at 24533 Ravenna Avenue. After the excavation was rescheduled in consultation with the homeowners, the pilot test began on December 3 and was completed on December 19, 2012. URS submitted a report documenting findings from this excavation pilot test to the RWQCB on February 4, 2013. The completed surgical excavation was approximately 9 by 9 feet in plan dimension and 6 feet deep. Evaluation of post-excavation sidewall and excavation base samples showed that it was feasible to surgically remove impacted soils to a depth of 6 feet bgs in the back yard at this location, with residual constituents of concern concentrations below risk-based screening levels. In addition to the surgical excavation,



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shallow soils to a depth of 2 feet bgs were excavated from the remaining non-hardscaped portion of the back and side yard and replaced with clean imported fill soil prior to landscape restoration. This pilot excavation provided useful data regarding the feasibility of performing surgical excavations and excavation of shallow soils from non-hardscaped areas of back yards with equipment accessing the back yard along narrow side yards. This excavation technique will be considered and addressed in the RAP to be submitted for the site.

Proposed Program Completion

Members of the community have expressed an interest in concluding the pilot testing and moving forward with the CAO process leading to submission of the RAP for the site. To expedite completion of the pilot testing program and development of the RAP, we suggest the following prioritization:

First Priority (Completed):

- Slot trench in front yard (completed at 24612 Neptune)
- Surgical excavation in back yard (completed at 24533 Ravenna)

Second Priority:

- Slide-rail shored excavation

Last Priority:

- Slot-trench excavation in back yard
- Large unshored excavation spanning two front yards.

The completed first priority pilot excavation at 24612 Neptune Avenue has provided information regarding the applicability of slot trenching, and tested the use of a conveyor to transport excavated soils. Additionally, the pilot excavation at 24533 Ravenna has provided data regarding the feasibility of excavation in limited maneuverability areas, such as back yards.

The slide-rail shored method of excavation would be a more disruptive excavation method than slot-trench excavation for use in residential yards with limited space. This type of excavation would require larger excavating equipment than that used for the slot trench excavation, a laydown area for shoring components, and a clean soil stockpile area for backfilling behind the shoring panels once installed, in addition to equipment for odor, dust, and noise mitigation. Also, although the grading plans for slide-rail shored excavation at 24736 Ravenna Avenue have tentatively been approved by the DPW, SOPUS is still awaiting receipt of the signed homeowner authorization that is required before final DPW approval.

The unshored pilot test excavation would need to span two yards and be constructed with side slopes of 1:1 (horizontal:vertical) in the upper 6 feet of the excavation for geotechnical stability and for worker safety considerations. Considering required setbacks from structures and working space, the sloped sidewall excavation would expose an area of approximately 13 by 18 feet at the depth of the concrete reservoir slab, and the excavation walls would be no closer than 14 feet from the existing residential structures at the slab depth. Due to the need for setbacks from existing structures, and the limited number of homes with adjoining yards large enough to perform large unshored excavations



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(limited to less than 10% of the properties), the large unshored excavation is not likely to be considered an applicable excavation method for the Site in the RAP. Additionally, the large soil surface area that would be exposed to the atmosphere with this type of excavation would increase the potential for odor releases.

In our experience with these excavation techniques, the first priority excavation methods, slot trenching and surgical excavation, are likely to face fewer complications and restrictions based upon the layout, hardscaping, and size of the properties in the Carousel community, and to be as effective, or potentially more effective, than the slide-rail shoring, trench-box shoring and large unshored sloped excavation methods for those properties that may require some type of excavation in the RAP. Based on the two pilot excavations completed, SOPUS and URS believe the excavation pilot testing to date has provided enough data to allow the excavation option to be adequately addressed in the RAP.

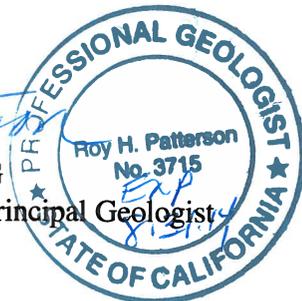
To expedite completion of the pilot testing program, SOPUS and URS recommend eliminating the second and last priority pilot test excavation methods. This would entail eliminating the slide-rail shored excavation, as the slot-trench and surgical excavation methods can accomplish the same objectives with wider applicability and fewer potential impacts. The large, unshored, sloped sidewall excavation pilot test can be eliminated due to a general lack of applicability to the properties within the Carousel community and because the area of the concrete slab that can be exposed and removed with a sloped sidewall excavation at two adjacent properties is smaller than the area excavated using slot trenching in a single yard. The back yard slot-trench pilot test excavation is unnecessary because the front yard slot-trench pilot test excavation at 24612 Neptune Avenue has provided enough data to assess the applicability of slot trenching to particular properties in the RAP.

SOPUS and URS believe that the data gathered in the first phase of the pilot testing project demonstrate that the remaining pilot test excavation techniques are either unnecessary or unlikely to be viable candidates for inclusion in the RAP, and recommend that additional pilot test excavation work be suspended so that SOPUS and the Regional Board can move forward with the next phases of the CAO process. If the RWQCB concurs with this recommendation, a final Pilot Test Report summarizing findings from all elements of the pilot testing program (to include excavation, bioventing, ISCO, etc.) will be submitted within 30 days of RWQCB concurrence that all Pilot Test activities are complete.

If you have any questions, please contact me.

Sincerely,
URS Corporation


Roy H. Patterson, PG
Vice President and Principal Geologist





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cc: Gene Freed – SOPUS
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