City of Carson
Report to Mayor and City Council

May 20, 2014
Unfinished Business

SUBJECT: CONSIDER STATUS REPORT ON THE REGIONAL WATER QUALITY CONTROL BOARD ENVIRONMENTAL INVESTIGATION AND CARSON DECLARATION OF THE EXISTENCE OF A LOCAL EMERGENCY WITHIN THE CAROUSEL TRACT

Submitted by Cedric L. Hicks, Sr.
Director of Community Services

Approved by Nelson Hernandez
City Manager

I. SUMMARY

This item is on the agenda at the request of Mayor Pro Tem Santarina to provide updates at all regularly scheduled City Council meetings related to the environmental investigation of the Carousel Tract.

II. RECOMMENDATION

CONSIDER and DISCUSS.

III. ALTERNATIVES

TAKE such other action the City Council deems appropriate that is consistent with the requirements of law.

IV. BACKGROUND

On April 30, 2014, the Los Angeles Regional Water Quality Control Board (Regional Board) completed its review of the Remedial Action Plan (RAP), the Feasibility Study (FS), and the Human Health Risk Assessment Report (HHRA) submitted by Shell Oil Company (Shell) on March 10, 2014. The Regional Water Board concluded that Shell did not use approved cleanup goals and that Shell's proposed cleanup plan for soil and groundwater may not be sufficient to attain cleanup goals in a reasonable time. As a result, the Regional Board rejected Shell's proposed cleanup plan and directed Shell to submit a revised RAP which complies with the Regional Board's direction by 5 p.m. on June 16, 2014 (Exhibit No.1).

In addition to its rejection of Shell's cleanup plan, the Regional Board determined that Shell failed to submit a RAP based on the Regional Board's previously approved site-specific cleanup goals to protect residential uses and groundwater. Shell is directed to comply by June 16, 2014. Failure to comply may result in monetary penalties (Exhibit No.2).

In compliance with the California Environmental Quality Act (CEQA), preparation of a draft Environmental Impact Report (EIR) is underway which will evaluate the potential effects the cleanup methods may have on the environment, and what can be done to avoid or reduce these impacts.

As of April 22, 2014, the completed Residential Sampling Activity is as follows:

- 270 homes have been screened for methane. (95%)
- 270 homes have had soils sampled and vapor probes installed. (95%)
- 270 homes have had sub-slab soil vapor probes sampled. (95%)
- 250 homes have had indoor air sampling. (88%)
- 233 of 250 homes have had their 2nd round of indoor air sampling. (92%)*

*New data

Timeline of Activities

A general timeline that tracks past and current activities of the Carousel Tract environmental investigation is included as (Exhibit No. 3).

V. FISCAL IMPACT

None.

VI. EXHIBITS

1. Letter from Regional Board to Shell dated April 30, 2014 (pgs. 3-20)
2. Letter from Regional Board to Shell dated April 30, 2014 (pgs. 21-24)
3. Carousel Tract Environmental Investigation Timeline. (pgs. 25-29)

Prepared by: Ky Truong, Public Safety and Community Services Manager
Carousel Tract May 20, 2014

TO:Rev05-07-2014

Reviewed by:

City Clerk	City Treasurer
Administrative Services	Public Works
Community Development	Community Services

Action taken by City Council

Date_____ Action_____

_____

Water Boards

Los Angeles Regional Water Quality Control Board

April 30, 2014

Mr. Douglas Weimer
Shell Oil Products, United States
Environmental Services Company
20945 S. Wilmington Avenue
Carson, CA 90810

SUBJECT: REVIEW OF REMEDIAL ACTION PLAN, FEASIBILITY STUDY REPORT AND HUMAN HEALTH RISK ASSESSMENT REPORT PURSUANT TO CALIFORNIA WATER CODE SECTION 13304 ORDER

SITE: FORMER KAST PROPERTY TANK FARM LOCATED SOUTHEAST OF THE INTERSECTION OF MARBELLA AVENUE AND EAST 244TH STREET, CARSON, CALIFORNIA (SCP NO. 1230, SITE ID 2040330, CAO NO. R4-2011-0046)

Dear Mr. Weimer:

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is the lead agency overseeing the environmental investigation and cleanup of the Former Kast Property Tank Farm Site (Site) under the authority of the Porter-Cologne Water Quality Control Act (Cal. Water Code §§13000 et seq.) and other applicable laws and regulations. Pursuant to Water Code sections 13304 and 13267, the Regional Board issued Cleanup and Abatement Order No. R4-2011-0046 (CAO) on March 11, 2011, requiring Shell Oil Products US (SOPUS) on behalf of Shell Oil Company (collectively, Shell) to investigate and clean up discharges of waste in soil and groundwater at the Site.

In the CAO, the Regional Board required Shell to submit a Remedial Action Plan, including a Feasibility Study, and a Human Health Risk Assessment for the Site. As required by the CAO, URS Corporation (URS) and Geosyntec submitted, on behalf of Shell, documents titled *Remedial Action Plan* (RAP), *Feasibility Study Report* (FS), and *Human Health Risk Assessment Report* (HHRA) for the Site on March 10, 2014 to the Regional Board for review.

The Regional Board has reviewed the RAP, FS, and HHRA, and provides the following comments and direction to Shell. This letter provides a description of the site background, a summary of the requirements of the CAO and State Water Resources Control Board (State Water Board) Resolution 92-49 (Resolution 92-49), a summary of the remedial actions proposed by Shell, comments on the RAP and the FS, and direction to Shell to revise the RAP and FS

Exhibit 1

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consistent with the comments. In conducting its review, the Regional Board received and considered comments from the Office of Environmental Health Hazard Assessment (OEHHA) (See Attachment I) and from the University of California, Los Angeles (UCLA) Expert Panel (convened to provide input to the Regional Board regarding site cleanup), (See Attachment II). This letter also directs Shell to revise the RAP, FS, and HHRA consistent with comments from OEHHA and the UCLA Expert Panel.

BACKGROUND

From the 1920s to the mid-1960s, Shell operated a tank farm consisting of three large reservoirs used for storage of crude oil. In the 1960s, crude oil was removed from the reservoirs and the reservoirs were partially dismantled, leaving behind the concrete floor and sides of the reservoirs and residual petroleum hydrocarbons and other associated waste at the Site. The concrete floor was broken up, the property was graded and a housing development with 285 residences – the Carousel Tract – was constructed above the reservoir remnants and other residual waste at the Site.

Upon discovery of waste at the Site in 2008, the Regional Board, in an order issued pursuant to California Water Code section 13267, ordered Shell to investigate the nature and extent of the waste. Since that time, Shell has conducted extensive investigations of the Site that have determined the nature and extent of the waste and evaluated indoor air quality of private houses and the potential for vapors generated by the waste to affect indoor quality (i.e. vapor intrusion potential) at the Site.

Waste was detected across the entire site at depths to ten feet below ground surface (bgs); in some areas waste was detected to the water table at depths greater than 50 feet bgs. Waste was detected in soil, soil vapor and groundwater and consisted of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs) including, but not limited to, benzene and volatile chlorinated compounds, semi-volatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs), and methane. In addition, crude oil was detected as a separate phase light non-aqueous phase liquid (LNAPL) above the groundwater that underlies the Site.

The CAO required Shell to submit proposed site-specific cleanup goals (SSCGs) for residential (i.e., unrestricted) land use for Regional Board approval. The CAO required that SSCGs that are approved by the Regional Board were to be used in developing the RAP. On February 22, 2013, Shell submitted a SSCG Report to the Regional Board that proposed SSCGs for waste constituents of concern (COCs) in soil, soil vapor and groundwater. In a letter dated August 21, 2013, the Regional Board responded to the SSCG Report and notified Shell that the proposed SSCGs were not approved. The August 21, 2013 letter directed Shell to revise the SSCGs in accordance with comments and directives contained in the letter, including comments from the OEHHA, and the UCLA Expert Panel.

On October 21, 2013, Shell submitted a revised SSCG Report (Revised SSCG Report) that included revised SSCGs and a screening feasibility study that provided a technological and

economic feasibility analysis of several remediation scenarios for the Site. The Regional Board reviewed the Revised SSCG Report and found that some of the revised SSCGs did not meet the Regional Board's directive in the August 21, 2013 letter. The Regional Board found that the revised SSCGs proposed by Shell did not adequately address issues of TPH leaching to groundwater from soil, nor the potential for soil vapor to intrude into houses. Consequently, the Regional Board modified some of the SSCGs in a letter dated January 23, 2014 and directed Shell to submit the RAP and updated HHRA in accordance with the approved and modified SSCGs by March 10, 2014.

On March 10, 2014, Shell submitted a RAP, FS, and HHRA. The RAP focuses on cleanup of waste in soil, soil vapor and groundwater based on an evaluation of cleanup alternatives that is provided in the FS. The HHRA evaluates present and future health risks to residents on a Site-wide basis to assist in the evaluation of cleanup alternatives. Documents regarding the Site may be found at http://www.waterboards.ca.gov/losangeles/Kast/index.shtml. This letter provides Regional Board comments on the RAP, FS and HHRA and directs Shell to revise the RAP, FS and HHRA to address the Regional Board, OEHHA and UCLA Expert Panel comments.

REQUIREMENTS OF THE CAO AND STATE BOARD RESOLUTION 92-49

The CAO states with regard to the RAP and FS:

I. The RAP shall include, at a minimum, but is not limited to:

   i. A detailed plan for remediation of waste in shallow soil that will incorporate the results from the Soil Vapor Extraction Pilot Test currently being performed;

   ii. A plan to address any impacted area beneath any existing paved areas and concrete slab foundations of the homes, if warranted;

   iii. A detailed surface containment and soil management plan;

   iv. An evaluation of all available options including proposed selected methods for remediation of shallow soil and soil vapor;

   v. Continuation of interim measures for mitigation according to the Regional Board approved Interim Remediation Action Plan (IRAP); and

   vi. A schedule of actions to implement the RAP.

II. The RAP, at a minimum, shall apply the following guidelines and Policies to cleanup waste and abate the effects of waste in soil and groundwater. The cleanup goals shall include, at a minimum:

   i. Soil cleanup goals set forth in the Regional Board's *Interim Site Assessment and Cleanup Guidebook, May 1996*, waste concentrations, depth to the water table, the nature of the chemicals, soil conditions and texture, and attenuation trends,

human health protection levels set forth in *USEPA Regional Screening Levels (Formerly Preliminary Remediation Goals)*, for evaluation of the potential intrusion of subsurface vapors (soil vapor) into buildings and subsequent impact to indoor air quality, California Environmental Protection Agency's *Use of Human Health Screening Levels (CHHSLS) in Evaluation of Contaminated Properties*, dated January 2005, or its latest version, and Total Petroleum Hydrocarbon Criteria Working Group, Volumes 1 through 5, 1997, 1998, 1999; Commonwealth of Massachusetts, Department of Environmental Protection, *Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of MADEP VPH/EPH approach*; MADEP 2002; Commonwealth of Massachusetts, Department of Environmental Protection, *Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology*; MADEP 2003; Commonwealth of Massachusetts, Department of Environmental Protection, Method for the Determination of *Air-Phase Petroleum Hydrocarbons (APH) Final*, MADEP 2008, Soil vapor sampling requirements are stated in the *DTSC Interim Guidance* and the Regional Board's *Advisory – Active Soil Gas Investigations*, dated January 28, 2003, or its latest version, DTSC's *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, revised February 7, 2005, or its latest version, USEPA Risk Assessment Guidance for Superfund, Parts A through E; USEPA User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings, 2003; USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, 2002; USEPA Supplemental Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites, 2002; CalEPA Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities, CalEPA DTSC, February 1997; CalEPA Use of the Northern and Southern California Polynuclear Aromatic Hydrocarbons (PAH) Studies in the Manufactured Gas Plant Site Cleanup Process, CalEPA DTSC, July 2009. Cleanup goals for all contaminants of concern shall be based on residential (i.e., unrestricted) land use;

ii. Groundwater cleanup goals shall at a minimum achieve applicable Basin Plan water quality objectives, including California's Maximum Contaminant Levels or Action Levels for drinking water as established by the California Department of Public Health, and the State Water Resources Control Board's "Antidegradation Policy" (State Board Resolution No. 68-16), at a point of compliance approved by the Regional Board, and comply with other applicable implementation programs in the Basin Plan;

iii. The State Water Resources Control Board's "Antidegradation Policy", which requires attainment of background levels of water quality or the highest level of water quality that is reasonable in the event that background levels cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of water, and not result in exceedence of water quality objectives in the Regional Board's Basin Plan; and

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iv. The State Water Resources Control Board's "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304" (State Water Board Resolution No. 92-49), requires cleanup to background or the best water quality which is reasonable if background levels cannot be achieved and sets forth criteria to consider where cleanup to background water quality may not be reasonable.

III. The Discharger shall submit site-specific cleanup goals for residential (i.e., unrestricted) land use for the Executive Officer's approval concurrent with the submittal date of the Pilot Test Report. The proposed site-specific cleanup goals shall include detailed technical rationale and assumptions underlying each goal.

The selected remedy is required to be consistent with State Water Board Resolution 92-49. Resolution 92-49 requires the Regional Board to assure that the cleanup promotes attainment of background water quality or the best water quality that is reasonable, is consistent with maximum benefit to the people of the State, and complies with applicable Regional Board and State Water Board plans and policies. In addition, the alternative cleanup level, other than background, must take into account the criteria set forth in section 2550.4 of Title 23, California Code of Regulations, which includes criteria to protect human health and address nuisance conditions. Section 2550.4 requires that the cleanup achieve the lowest levels for constituents of concern (COCs) that are technologically and economically feasible and at least attains maximum contaminant levels where applicable. In establishing a cleanup level greater than background, the Regional Board must consider various factors, including the current and potential future uses of groundwater, the potential for health risks caused by human exposure to waste constituents, and the persistence and permanence of the potential adverse effects.

Resolution 92-49 requires the Regional Board to concur with cleanup and abatement proposals which the discharger demonstrates and the Regional Board finds to have a substantial likelihood to achieve compliance, within a reasonable time frame, with cleanup goals and objectives that implement the applicable Regional Board and State Water Board plans and policies, and which implement permanent cleanup and abatement solutions which do not require ongoing maintenance, wherever feasible. It also requires that the discharger consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, and cleanup and abatement, with supporting rationale.

SUMMARY OF PROPOSED REMEDIAL ACTION PLAN

Based on the evaluation of several remediation alternatives, Shell proposed its preferred alternative in the RAP that includes the following scope of activities:

1. Excavation of shallow soils will be conducted at both landscaped and hardscaped areas of residential properties that have been identified in the Site investigation to have shallow soils containing waste that exceed applicable SSCGs to a depth of three feet bgs;

2. Soil vapor extraction (SVE) and bioventing will be implemented to reduce waste concentrations in soil and soil vapor at residential properties which have been identified having soil or soil vapor that exceed SSCGs at depths below three feet bgs. SVE and biovent wells will be installed in City streets and private yards to implement these technologies;

3. Sub-slab abatement actions, which may include the installation of passive barriers, passive venting, or active sub-slab depressurization systems beneath the houses will be implemented at residential properties that have been identified as having SVE concentrations beneath the house foundations that exceed SSCGs for sub-slab soil vapor;

4. LNAPL will be removed from wells if it accumulates at a thickness of greater than 0.5 feet;

5. Groundwater pollution will be reduced through monitored natural attenuation (MNA). Based on the results of the initial five years of annual MNA data, supplemental remediation in localized areas may be considered; and

6. A Site-wide Remedial Design and Implementation Plan (RDIP) will be developed to provide details on the SVE/bioventing system including vapor well locations, location of the vapor treatment system, and details regarding:

    a. Sub-slab depressurization (SSD) systems that will be implemented beneath houses where the sub-slab vapor concentrations exceed the applicable SSCGs;

    b. Property-Specific Remediation Plans (PSRPs), individual property remediation plans, will be prepared for all properties that require excavation, sub-slab mitigation, and/or SVE/bioventing; and

    c. Permits necessary to implement the RAP, including:

        - Grading Permits from the City of Carson Department of Building and Safety; Traffic Management Plan and Encroachment Permit from the City of Carson Engineering Department;

        - Permits for Rule 1166 Volatile Organic Compound Emissions from Decontamination Soil Mitigation Plan from the South Coast Air Quality Management District (SCAQMD);

        - Permit to Construct/Operate SVE/bioventing equipment from the SCAQMD;

        - Permit to abate asbestos-containing materials for homes that require installation of a sub-slab mitigation system from the SCAQMD; and

- Additional permits needed to address excavation and restoration activities including: OSHA Trenching Permit, Plumbing and Electrical Permits, Masonry Permit, Landscaping Permit, City of Carson electrical, building, and construction permits.

Based on evaluation of Site investigation data and the proposed SSCGs, the RAP indicates that excavations will be conducted at 183 properties and sub-slab mitigation will be implemented at 27 houses. SVE will be implemented across the site and at 210 to 214 houses.

COMMENTS ON REMEDIAL ACTION PLAN

Resolution 92-49, Section III.G requires Regional Boards to *"ensure that dischargers are required to clean up and abate the effects of discharges that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those water and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup alternative less stringent than background. Any such alternative cleanup level shall:*

1. *Be consistent with the maximum benefit to the people of the state;*
2. *Not unreasonably affect present and anticipated beneficial use of such water; and*
3. *Not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards; and*
4. *Consider the designation of a containment zone."*

Resolution 92-49 also requires the discharger to consider the effectiveness, feasibility, and relative costs of alternative methods for cleanup and abatement. It also requires that in approving cleanup levels less stringent than background, the Regional Board must apply section 2550.4 of title 23, California Code of Regulations. Section 2550.4, requires in part, that the Regional Board may approve a cleanup level greater than background only if it finds that it is technologically or economically infeasible to achieve background. Resolution 92-49 defines the term "economic feasibility" to mean, in part, *"an objective balancing of the incremental benefit of attaining further reductions in the concentrations of constituents of concern as compared with the incremental cost of achieving those reductions."* With regard to technological feasibility, Resolution 92-49 states that: *"[t]echnological feasibility is determined by assessing available technologies, which have been shown to be effectives under similar hydrogeologic conditions in reducing the concentration of the constituents of concern."*

Resolution 92-49, Section III.A requires that the Regional Board *"concur with any investigative and cleanup and abatement proposal which the discharger demonstrates and the Regional finds to have a substantial likelihood to achieve compliance, within a reasonable time frame, with cleanup goals and objectives that implement the applicable Water Quality Control Plans and Policies adopted by the State Water Board and Regional Water Boards, and which implement permanent cleanup and abatement solutions which do not require ongoing maintenance, wherever feasible."*

The cleanup technologies proposed in the RAP include excavation, SVE, bioventing, LNAPL removal, and MNA. Based on cleanup of other sites within the Los Angeles region, these technologies can be effective in cleaning up the types of wastes at the Site if implemented in an effective manner. However, the Regional Board does not concur that the manner in which these technologies are proposed to be implemented by the RAP will attain residential (i.e. unrestricted) land use, protect human health, and protect the beneficial uses of groundwater. The RAP is based, in part, on SSCGs that were not approved by the Regional Board, and consequently the RAP will not achieve the approved SSCGs and cleanup objectives. In addition, based on the Site investigation and pilot tests of cleanup technologies proposed by the RAP, and taking into account the performance of these technologies at other sites in the Los Angeles Region, the Regional Board does not concur that the proposed RAP has a substantial likelihood to achieve compliance with approved SSCGs within a reasonable time frame, nor meet the cleanup goals and objectives that implement the applicable Water Quality Control Plans and Policies in a reasonable time frame for the following reasons:

Site-Specific Cleanup Goals

A primary concern with the RAP is that it does not implement two SSCGs that were approved in the Regional Board's letter of January 23, 2014 which amended the CAO.

1. In developing the RAP, Shell used generic guidance from the Regional Board's Underground Storage Tank (UST) program to define SSCGs for TPH in soil (*Interim Site Assessment and Cleanup Guidebook, May, 1996).* However, there are Site specific data available that indicate the generic UST cleanup goals are not sufficient to reduce the leaching potential of waste from soil to groundwater at the Site. SSCGs for TPH in soil based on Site specific soil characteristics were calculated in the Revised SSCG Report and approved by the Regional Board, however, these approved SSCGs were not used to develop the RAP. Consequently, the generic cleanup goals proposed in the RAP are not appropriate for the Site. The RAP also inappropriately applied a dilution/attenuation factor to the UST program cleanup goals and proposed less stringent SSCGs than are needed to reduce the leaching potential of TPH from soil to groundwater. The dilution/attenuation factor used by Shell to set a less stringent SSCG for TPH in soil was not approved by the Regional Board in the January 23, 2014 letter. The January 23, 2014 letter amended the CAO, approved appropriate SSCGs, and directed Shell to use the approved SSCGs in the development of the RAP. However, the RAP is not based on the SSCGs that are approved by the Regional Board. The Regional Board cannot concur that the SSCGs used to develop the RAP will attain SSCGs necessary to protect groundwater quality.

2. The RAP proposes sub-slab mitigation to reduce vapor intrusion potential at houses at the Site where the SSCGs for soil vapor have been exceeded. Sub-slab mitigation is necessary because the proposed remedy does not include removal of waste beneath houses at the Site. However, the attenuation factor used in the RAP to develop soil vapor SSCGs is not adequately protective of indoor air quality and thereby may not be protective of human health. The RAP is based on a SSCG for soil vapor beneath the house foundations (i.e. sub-slab soil vapor SSCG), but it does not provide a SSCG for soil vapor in shallow soils beyond the footprint of the house slabs (i.e., soil vapor SSCG).

The attenuation factor approved in the Regional Board's January 23, 2014 letter addressed development of SSCGs for soil vapor in shallow soil, not SSCGs in sub-slab soil vapor. By using non-approved SSCGs for sub-slab soil vapor and failing to develop a SSCG for soil vapor in shallow soil, the RAP may underestimate the number of houses that need sub-slab mitigation measures to reduce the potential for vapor intrusion. This issue was discussed in the Regional Board's January 23, 2014 letter and the UCLA Expert Panel Report attached to the Regional Board's January 23, 2013 letter. The Regional Board's January 23, 2013 letter required Shell to consider the results in the Site Delineation Reports (*Plume Delineation Report*, URS, September 29, 2010; and *Supplemental Site Delineation Report*, URS, May 27, 2011) and in the property-by-property investigations in developing the RAP. However, the RAP considered only the results of the property-by-property investigations, and did not consider the Site Delineation Reports.

Excavation

The RAP proposes to excavate impacted soil from areas around houses that contain waste that exceeds SSCGs for TPH and other COCs in soil to a depth of three feet bgs. The Regional Board has several concerns with the excavation proposed by the RAP and FS (discussed further below) pertaining to the proposed excavation depth. Excavations to three feet bgs may not be sufficient to address nuisance caused by waste at the Site, may not protect residents from exposure to waste during some types of residential activities, and will leave a considerable mass of waste in Site soil that can continue to leach to groundwater. The waste mass in soil below three feet bgs will result in an unreasonable time frame needed for other components of the RAP such as SVE, bioventing, and MNA to achieve the SSCGs. Specifically:

1. The Site investigation characterized soil from samples taken at depths of two feet, five feet and ten feet bgs. Waste was detected at all depths investigated and Site data show that the waste concentration, and thus waste mass, increases significantly with depth. Consequently, the proposed RAP excavation depth to three feet leaves significant quantities of waste in soil at levels that exceed the SSCGs necessary to reduce the leaching of waste from soil to groundwater.

2. The RAP relies on SVE, bioventing, free-product removal, and monitored natural attenuation (MNA) to reduce the waste in soil that will not be removed by excavation. However, these technologies have not been proven effective in reducing waste concentrations at the Site in a reasonable time frame as required by Resolution 92-49. The bioventing pilot test (*Biovent Pilot Test Summary* Report, Geosyntec, December 6, 2012) indicated, for example, that time frames of greater than 80 years may be required to reduce waste concentrations to attain the SSCGs for soil. The RAP estimates of SVE duration are based on the time necessary to vent a specific number of soil pore volumes. The basis for the SVE time frame estimates may not be accurate because the mass of sorbed COCs to the Site soils may continue to volatilize into the soil pores as they are vented. Based on information provided in the RAP, the Regional Board cannot concur that SVE and bioventing will attain SSCGs in a reasonable time frame.

3. The RAP indicates that excavation of residential properties to three feet bgs would effectively limit exposure to residents who may engage in gardening or construction of residential yard features that require digging because there are existing institutional controls through the City of Carson building codes. However, the institutional controls cited by the RAP may not be effective in limiting residential exposure to waste because the institutional controls may not apply to excavations that generate small volumes of soil that are typical of residential activities.

SVE/Bioventing, LNAPL Removal and Monitored Natural Attenuation

The RAP proposes a combination of SVE, bioventing, LNAPL (i.e. free-phase product) removal, bioventing, and MNA to ultimately achieve the SSCGs for groundwater.

1. Pilot tests of SVE and bioventing indicated that more than 80 years may be necessary to reduce waste concentrations to a level at which leaching to the groundwater will be reduced in order to attain the SSCGs for groundwater in a reasonable time frame.

2. The RAP proposes LNAPL removal in wells where it accumulates to a depth exceeding 0.5 feet. LNAPL removal has been on-going at the Site for approximately three years. Although free product removal can be an effective technology for removing waste at some cleanup sites, the mass of product removed to date at the Site is a small percentage of the total waste mass remaining at the Site. Consequently, the Regional Board cannot conclude that free product removal will greatly affect the time frame necessary to achieve the SSCGs for groundwater. Further, the Board notes that at other sites in the Los Angeles Region, LNAPL removal to a thickness of a sheen has been shown to be technologically and economically feasible. Consequently, the LNAPL recovery to a thickness of 0.5 feet proposed by the RAP may be less than that which is technologically and economically feasible.

The RAP proposes MNA to reduce concentrations of COCs in groundwater to levels that meet applicable water quality objectives where SVE and bioventing are not effective at achieving the objectives. However, there are no studies of MNA at the site to indicate that MNA will be effective in reducing COC concentrations to levels that meet applicable water quality objectives in a reasonable time frame. Review of the past five years of groundwater monitoring data show COC levels fluctuate and there is no discernable trend of COC reduction in most of the monitoring wells. The RAP proposes that Shell will propose additional remedies if MNA is not effective after five years. Although MNA may be an appropriate component of the remedy, the proposed remedy would leave a significant mass of waste in soil that will continue to leach to groundwater. As a result, the time frame for MNA may be excessive. Therefore, the Regional Board cannot conclude that MNA as proposed in the RAP will attain the groundwater SSCGs in a reasonable time frame.

3. The Regional Board is concerned that the RAP does not adequately discuss the siting of the off-gas treatment facilities that will be required to implement the SVE and bioventing technologies. Based on discussions with Shell contractors, Regional Board staff is concerned that it may not be possible to locate off-gas treatment facilities at the Site because it is zoned for residential use. The RAP fails to discuss plans or contingencies

for siting the SVE treatment facility if the Site is not available to house an SVE treatment facility.

SUMMARY OF THE FEASIBILITY STUDY (FS)

The CAO requires the RAP to, among other criteria, apply various guidelines and policies to cleanup waste in soil and groundwater, to use cleanup goals that protect residential (i.e., unrestricted) land use, and be consistent with Resolution 92-49. Resolution 92-49 requires the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternatives for cleanup and abatement, with the supporting rationale. Where it is not feasible to attain background water quality, Resolution 92-49 requires the cleanup to be based on the factors set forth in title 23 California Code of Regulations section 2550.4. Among other factors, any cleanup less stringent than background must be to the level that is most stringent and technologically and economically and feasible.

The FS provides an analysis of several alternatives to achieve cleanup of the Site based on various guidance, laws, and regulation, including Resolution 92-49 and the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The FS includes a comparative analysis of alternatives using "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" [USEPA, 1988]. USEPA guidance provides that alternatives should be evaluated using nine criteria, that include two threshold criteria (overall protection of human health and the environment and compliance with ARARs [applicable or relevant and appropriate requirements]); five balancing criteria (long-term effectiveness and permanence, reduction of toxicity, mobility, and volume through treatment, short-term effectiveness, implementability, and estimated cost); and two acceptance criteria (state acceptance and community acceptance). In general, USEPA's CERCLA Guidance does not directly apply to this Site because the cleanup of the Site is subject to State law, including the Porter-Cologne Water Quality Control Act, the Water Quality Control Plan for the Los Angeles Region (i.e., Basin Plan), Resolution 92-49 and section 2550.4 of California Code of Regulations, title 23. However, USEPA's CERCLA Guidance provides for an analysis that overlaps considerably with the alternatives analysis required by state requirements, with some exceptions.[1]

The cleanup alternatives evaluated for the Site include excavation to remove waste in soil, bioventing to reduce waste in soil that is not removed by excavation, soil vapor extraction to remove waste in soil vapor, LANPL removal, and MNA to reduce waste in groundwater. In addition, the FS proposes to develop a supplemental groundwater remediation plan if MNA is not effective. The FS also evaluated alternatives of No Action and Site Capping. The cleanup

[1] The FS evaluates compliance with applicable and relevant and appropriate requirements (ARARs). CERCLA requires that cleanups directed by USEPA attain state and federal ARARs and defines the term ARARs to place limitations on which state requirements apply to cleanups under CERCLA. Since this Site is being cleaned up under State law, the limitations imposed by CERCLA, for example whether an ARAR is "applicable" or "relevant and appropriate", do not apply. The FS did provide a fairly complete list of state and federal requirements that are appropriate to apply to this Site. The FS also refers to the CERCLA acceptance criteria that USEPA must use in approving a remedial action under CERCLA. Again, this is a cleanup being overseen by a state agency, the Regional Board, and is not a CERCLA site. The Regional Board will determine whether to approve the remedial action under its authority.

alternatives differ primarily in the depth and extent of excavation to remove waste. Based on the alternatives analysis, the FS found a preference for an alternative that consists of excavation of the upper three feet of soil at private properties where TPH levels that exceed SSCGs for TPH in soil and replacement of the excavated soil with clean soil. The proposed alternative relies on institutional controls to limit resident contact with impacted soils greater than three feet bgs to address nuisance and health risk concerns: sub-slab vapor mitigation at identified houses to address vapor intrusion, indoor air, and human health concerns: SVE and bioventing of soils greater than three feet bgs to reduce leaching potential of wastes from soil to groundwater: removal of LNAPL from wells where the LNAPL it exceeds 0.5 feet thickness in wells, and MNA and supplemental groundwater remediation, as needed, to protect the beneficial uses of groundwater.

The FS provides an analysis of alternatives, but the FS analysis is incomplete and additional information is needed to complete the analysis required by Resolution 92-49 as follows:

Economic Feasibility

Resolution 92-49, Section III.H defines economic feasibility as "an objective balancing of the incremental benefit of attaining further reductions in the concentrations of constituents of concern as compared with the incremental cost of achieving those reductions. Economic feasibility does not refer to the discharger's ability to finance cleanup." The FS does not provide a complete evaluation of economic feasibility as required by Resolution 92-49. The FS provides cost estimates of alternatives; but does not discuss the incremental benefit of attaining further reductions in the concentrations of COCs compared with the incremental cost of achieving those reductions. The FS provides the costs of remedial excavation alternatives to depths of two feet, three feet, five feet, and ten feet. (See Attachment III). Regional Board staff note that Site data indicate that waste concentrations and mass increase with depth. The Regional Board expects that the incremental costs of excavation at depth is offset by the incremental benefits of reducing the concentrations of COCs. However, the FS failed to conduct an objective balancing of the incremental benefit of attaining further reductions in the concentrations of COCs as compared with the incremental cost of achieving those reductions as required by Resolution 92-49.

The UCLA Expert Panel also evaluated the proposed remedy in accordance with Resolution 92-49 and recommended that Shell evaluate excavation alternatives to greater depths to remove a larger fraction of the TPH mass than the estimated 6-8% of the total that would be removed in the alternative proposed by the RAP. (See Attachment II).

Nuisance Concerns

The FS does not provide sufficient rationale for the preferred alternative. With regard to the excavation depth, excavation to three feet would not be effective in limiting the exposure of residents to waste below three feet. The three-foot excavation depth alternative relies on institutional controls based on City of Carson Building Code Section 8105 to limit resident exposure to wastes below three feet. However, the City of Carson does not require a building permit for such activities as gardening and landscaping, and excavations to depths greater than three feet does not require heavy equipment. Site data indicate that waste is present in soils at depths of three feet and five feet bgs, so it is reasonable to assume that there is waste present at depths greater than three feet that residents could be exposed to through residential activities

such as gardening and building yard features. The Building Code does not apply to excavations that remove less than 50 cubic yards of soil and may not be effective in limiting exposure to wastes in soils below three feet.

Technological Feasibility, Implementability, and Effectiveness

The FS consideration of effectiveness and technological feasibility is also deficient regarding excavation depth. By limiting the FS evaluation of excavation depth to the protection of human health only, the FS does not consider the effectiveness of the proposed preferred alternative on abating nuisance and protecting groundwater quality. The FS consideration of feasibility only focuses on the degree of excavation being readily excavated rather than analyzing whether alternative depths are capable of being implemented, effected or accomplished. The FS ignores a Site pilot test that showed that excavating to ten feet is feasible at the Site. The FS's consideration of effectiveness and feasibility as required by Resolution 92-49 is limited and does not provide supporting rationale to concur with the proposed alternative.

The FS does not evaluate different types of excavation and bases its evaluation of the technological feasibility of excavation on the presence of utilities that are below grade, the constrained areas that may be available for excavation, and the need to implement shoring for deeper excavations. However, the Regional Board has overseen remedial excavations in the Los Angeles region where there are underground utilities and has approved deep excavations using technologies that address the issues cited in the FS. The FS fails to consider in detail alternative excavation technologies that may be feasible to justify the technological infeasibility of excavating below three feet bgs. The UCLA Expert Panel Report also suggests that Shell consider alternative technologies, such as use of augers, which would also have the benefit of reducing other impacts associated with excavation. (See Attachment II).

The FS did not fully evaluate alternatives based on excavating to ten feet bgs in the comparative analysis because this excavation depth was considered "Not Implementable" and thus eliminated from detailed analysis. The Regional Board notes that a pilot excavation was successfully completed at the Site to a depth of ten feet bgs and thereby excavation to ten feet bgs should be considered implementable, and the FS should fully analyze this excavation depth alternative.

The FS consideration of Overall Protection of Human Health and the Environment is based on long term effectiveness and permanence of the remedy. However, in evaluating overall protection of human health and the environment, the FS does not estimate the waste mass to be removed and the waste mass left on Site as it affects protection of human health and the environment. As discussed above, the waste mass quantity is a key determinant of the period that soil vapor will be generated and the period that soil vapor extraction and bioventing will be required to operate to meet the SSCGs. These technologies may generate COCs to which residents might be exposed over a long time frame. The FS indicates that more than 80 years is required to degrade the hydrocarbons below grade using bioventing. It follows that monitoring and maintenance will be required. The FS fails to note that Resolution 92-49 favors remedies that are permanent and do not require lengthy time frames of monitoring and maintenance which will be required for SVE and bioventing. It is also noted that bioventing will generate intermediate waste products that will continue to pose risks to residents of the Carousel Tract. Further, institutional controls may need to be implemented during this lengthy period.

SVE and bioventing will require off-gas treatment. The FS does not adequately discuss requirements or feasibility of obtaining a permit to operate a SVE and bioventing system at the Site. It is not clear that such permits are available in residential areas of the South Coast Air Quality Management District. If permits for SVE and bioventing are not available, the effectiveness of the proposed alternative is decreased and issues of long term effectiveness due to the lengthy time frame to reach the SSCGs are exacerbated. Additionally, the permanence of bioventing is questionable as intermediate wastes may be generated as hydrocarbons are degraded by bioventing.

Time to Achieve SSCGs

The proposed preferred alternative of excavation to three feet bgs leaves significant waste mass on the Site which must be addressed by bioventing and SVE to achieve SSCGs. This issue is discussed above in the evaluation of the RAP and it is relevant to the discussion of the FS. Achievement of SSCGs will take a significantly longer time when relying on excavation to three feet bgs than would excavation to deeper depths that will remove a greater mass of waste. The RAP alternative would not be as protective of groundwater quality as alternatives that remove greater mass of waste, since waste will continue to leach from soil to groundwater for a longer time frame. Resolution 92-49 favors cleanups that are permanent and do not require ongoing maintenance and monitoring. The FS fails to consider these factors in its evaluation of alternatives.

The FS assesses excavation to three feet to be more implementable than alternatives that involve deeper excavations because fewer properties would be excavated than excavation to depths greater than three feet bgs. The FS notes that cleanup of fewer properties would reduce the time frame of excavation. However, as noted above and by the UCLA Expert Panel, excavation to a lesser depth will prolong the overall length of time to achieve SSCGs. This rationale confuses a less difficult and less extensive cleanup with greater implementability.

The FS considers SVE/bioventing as an effective technology for removing and reducing the concentrations of waste that are left after excavation. However, the Bioventing Pilot Test Report determined that time frames of up to 80 years may be required to reduce hydrocarbon concentrations to the SSCGs necessary to protect groundwater at the Site. Resolution 92-49 directs the Regional Board to concur with remedies which the discharger demonstrates, and the Regional Board concurs with, to have a substantial likelihood to achieve compliance within a reasonable time frame. Achieving the SSCGs in a time frame of up to 80 years is not a reasonable time frame because remedial actions would be required to continue in a residential neighborhood for decades, the exposure and nuisance potentials would persist for decades, and waste could continue to leach to groundwater for decades. Resolution 92-49 directs the Regional Board to consider cleanup proposals that implement permanent cleanup and abatement solutions that do not require ongoing maintenance, wherever feasible. The FS does not sufficiently consider alternatives that achieve a permanent remedy that avoids long-term monitoring and maintenance.

The FS consideration of Overall Protection of Human Health and the Environment is based on long term effectiveness and permanence of the remedy. However, the FS does not estimate the

waste mass to be removed and the waste mass left on-site as it affects protection of human health and the environment. As discussed above, the waste mass is a key determinant of the period that soil vapor will be generated and the period that soil vapor extraction and bioventing will be required to operate to meet the SSCGs. These technologies may generate COCs to which residents might be exposed over a long time frame. Consequently, sub-slab mitigation and SVE may need to be operated for a long time frame that is not reasonable. The FS fails to note that Resolution 92-49 favors remedies that are permanent and do not require lengthy time frames of monitoring and maintenance which will be required for SVE and bioventing.

In order for the Regional Board to concur with cleanups that attain water quality that is less than background, the alternative cleanup levels must "Be consistent with maximum benefit to the people of the state; not unreasonably affect present and anticipated beneficial use of such water, and not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and the Regional Water Boards." The FS fails to correctly evaluate consistency with Resolution 92-49 with respect to the effect on groundwater. The FS states that there is no current or future use of the Shallow Zone and Gage aquifer at or near the Site. However, the shallow zone overlays the Gage aquifer in the general area of the Site and the groundwater beneath the Site, which is designated in the Basin Plan with the beneficial use of Municipal and Supply (MUN). As such, impacts on the designated beneficial uses must be addressed in the remedy.

CONCLUSION AND DIRECTIVE

Based on the comments above, the Regional Board cannot concur with the proposed RAP. State Water Board Resolution 92-49 directs the Regional Board to concur with remedies which the discharger demonstrates and the Regional Board finds to have a substantial likelihood to achieve compliance, within a reasonable time frame. For the reasons stated above, the Regional Board does not concur with the RAP and FS as currently proposed.

Shell shall submit a revised RAP that:

1. Utilizes approved SSCGs set forth in the Regional Board's letter of January 23, 2014, including attenuation factors for soil vapor;
2. Provides estimates of mass proposed to be left in place and bases for estimating the time and cost to reduce the concentrations of constituents of concerns;
3. Provides plans for continued monitoring of the Site, including indoor air quality as appropriate if waste is proposed to be left in place;
4. Provides a concept rendering of how the cleanup infrastructure will be placed at a typical individual residence;
5. Provides a contingent location for SVE/bioventing treatment facility should an on-site location not be available;
6. Revises the calculation of the sub-slab to indoor air attenuation factor and re-identifies properties exceeding the lower bound of risk range of 1x10-6 or a hazard index of 1, based on the more protective SSCG for soil vapor and sub-slab soil vapor for consideration of sub-slab mitigation; and

7. Includes an appropriate confirmation sampling plan, with a schedule, of soil, soil vapor, and groundwater to verify the performance of the proposed activities (i.e., Soil Vapor Extraction, Bioventing and Excavation) to document achievement of the Regional Board approved SSCGs for all COCs.

Shell shall submit a revised FS that:

1. Provides a detailed review of remedial excavation methods that are effective in restricted (i.e. small) areas and can reach depths of ten feet bgs;
2. Evaluates alternative active groundwater treatment technologies for site-related COCs should the combination of SVE, bioventing, and MNA prove not to be effective;
3. Identifies institutional controls that are effective in protecting residents from gardening or small project excavations that may encounter waste left in place;
4. Evaluates incremental costs in relation to incremental reduction in waste concentrations in accordance with Resolution 92-49;
5. Provides details on post cleanup monitoring for alternatives that leave waste in place; and
6. Provides off site locations for SVE/bioventing treatment areas.

The Regional Board concurs with the comments provided by OEHHA and the UCLA Expert attached to this letter. Revisions to the RAP, FS, and HHRA shall address the OEHHA and UCLA Expert Panel comments.

The Revised RAP, FS and HHRA Report are due to the Regional Board by 5:00 pm on **June 16, 2014.**

Pursuant to section 13350 of the California Water Code, failure to comply with the requirements of Order No. R4-2011-0046 by the specified due date may result in civil liability administratively imposed by the Regional Board in an amount up to five thousand dollars ($5,000.00) for each day of failure to comply.

The State Water Board adopted regulations requiring the electronic submittals of information over the Internet using the State Water Board GeoTracker database. You are required not only to submit hard copy reports required in this Order but also to comply by uploading all reports and correspondence prepared to date and additional required data formats to the GeoTracker system. Information about GeoTracker submittals, including links to text of the governing regulations, can be found on the Internet at the following link:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal

Please note that, the Regional Board requires you to include a perjury statement in all reports submitted under the CAO. The perjury statement shall be signed by a senior authorized Shell representative (and not by a consultant). The statement shall be in the following format:

" I, [NAME], do hereby declare, under penalty of perjury under the laws of State of California, that I am [JOB TITLE] for Shell Oil Company that I am authorized to attest to the veracity of the information contained in [NAME AND DATE OF REPORT] is true and correct, and that this declaration was executed at [PLACE], [STATE], on DATE]."

If you have any questions, please contact the project manager, Dr. Teklewold Ayalew at (213) 576-6739 (tayalew@waterboards.ca.gov) or Ms. Thizar Tintut-Williams, Site Cleanup Unit III Chief, at (213) 576-6723 (twilliams@waterboards.ca.gov).

Sincerely,

Samuel Unger, PE
Executive Officer

Attachments: I. OEHHA Memorandum dated April 29, 2014
II. UCLA Expert Panel Comments dated April 29, 2014
III. Regional Board Memorandum dated March 20, 2014

cc Janice Hahn, Honorable Congresswoman, US House of Representatives, California's 44th District
Isadore Hall, III, Assembly member, 64th Assembly District
Mark Ridley-Thomas, Supervisor, Second District County of Los Angeles
Jim Dear, Mayor of Carson
Michael Lauffer, Office of Chief Counsel, State Water Resources Control Board
Frances McChesney, Office of Chief Counsel, State Water Resources Control Board
James Carlisle, Office of Environmental Health Hazard Assessment
Robert Romero, Department of Toxic Substances Control
Alfonso Medina, Los Angeles County Department of Health
Angelo Bellomo, Los Angeles County Department of Health
Bill Jones, Los Angeles County Fire Department
Barry Nugent, Los Angeles County Fire Department
Shahin Nourishad, Los Angeles County Fire Department
Miguel Garcia, Los Angeles County Fire Department
Kim Clark, Los Angeles County Fire Department
Cyrus Rangan, Los Angeles County Department of Health
Angelo Bellomo, Los Angeles County Department of Health
Jackie Acosta, Carson Acting City Manager
Ky Truong, City of Carson
Karen A. Lyons, Shell Oil Products US
Alison Abbott Chassin, Shell Oil Products US

Roy Patterson, URS Corporation
Chris Osterberg, URS Corporation
Michelle Vega, Edelman
Robert Ettinger, Geosyntec
Mark Grivetti, Geosyntec
Thomas V. Girardi, Girardi and Keese Lawyers
Robert W. Bowcock, Integrated Resource Management, LLC
Deanne L. Miller, Morgan, Lewis & Bockius LLP
Patrick Dennis, Gibson Dunn

Water Boards

Los Angeles Regional Water Quality Control Board

April 30, 2014

Mr. Douglas Weimer
Shell Oil Products, United States
Environmental Services Company
20945 S. Wilmington Avenue
Carson, CA 90810

Certified Mail
Return Receipt Requested
Claim No. 70123460000021663324

SUBJECT: NOTICE OF VIOLATION FOR DEFICIENT REMEDIAL ACTION PLAN PURSUANT TO CLEANUP AND ABATEMENT ORDER NO. R4-2011-0046 AS AMMENDED BY REGIONAL BOARD CORRESPONDENCE DATED AUGUST 21, 2013 AND JANUARY 23, 2014

SITE/CASE: FORMER KAST TANK FARM, CARSON, CA (SITE CLEANUP NO. 0075, SITE ID NO. 204830 AND CLEANUP AND ABATEMENT ORDER NO. R4-2011-0046; FILE NO. 97-0043

Dear Mr. Weimer:

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is the public agency with primary responsibility for the protection of ground and surface water quality for all beneficial uses within major portions of Los Angeles and Ventura Counties.

The Regional Board is the lead agency overseeing the environmental investigation and cleanup of the Former Kast Property Tank Farm Site (Site) under the authority of the Porter-Cologne Water Quality Control Act (Cal. Water Code §§13000 et seq.) and other applicable laws and regulations. Pursuant to Water Code sections 13304 and 13267, the Regional Board issued Cleanup and Abatement Order No. R4-2011-0046 (CAO) on March 11, 2011, requiring Shell Oil Products US (SOPUS) on behalf of Shell Oil Company (collectively, Shell) to investigate and clean up discharges of waste in soil and groundwater at the Site.

The CAO required Shell to completely delineate the extent of waste discharged in soil, soil vapor, and groundwater both on and off the Site. The investigation of the Site was summarized in the Site Delineation Report on April 29, 2011. The Site Delineation Report concluded that total petroleum hydrocarbons (TPH) in soil extend below properties to depths of at least 10 feet.

Paragraph 3.c.II.of the CAO, as amended, required Shell to submit a remedial action plan (RAP) designed to cleanup all constituents of concern to levels protective of residential (i.e., unrestricted) land use and to achieve the applicable water quality objectives in the Regional Board's water quality control plan (Basin Plan).

Exhibit 2

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On February 22, 2013, Shell submitted a Site-Specific Cleanup Goal Report (Report) to the Regional Board. The Report proposed site specific cleanup goals (SSCGs) for the constituents of concern.

On August 21, 2013, in correspondence to Shell, the Regional Board rejected the proposed SSCGs and directed Shell to revise the SSCGs in accordance with comments and directives contained in the letter, comments from the UCLA Expert Panel (convened to provide input to the Regional Board regarding site cleanup), and comments from the Office of Environmental Health Hazard Assessment.

On October 21, 2013, Shell submitted a revised SSCG Report (Revised Report) that included revised SSCGs. The Regional Board reviewed the Revised Report and determined that the revised SSCGs failed to meet the Regional Board's directives listed in the August 21, 2013 letter. The Regional Board concluded that the revised SSCGs proposed by Shell did not adequately address TPH leaching to groundwater from soil or the potential for soil vapor to intrude into residences.

On January 23, 2014, the Regional Board issued Shell a letter approving modified SSCGs to address TPH and soil vapor and directed Shell to submit a RAP and updated Human Health Risk Assessment (HHRA) in accordance with the modified SSCGs by March 10, 2014.

On March 10, 2014, as required by the CAO, Shell's consultant, URS Corporation, submitted a proposed RAP which included a Feasibility Study and HHRA.

On April 30, 2014, the Regional Board provided Shell with comments on the proposed RAP with a directive to submit a revised RAP by May 30, 2014. The Regional Board determined the proposed RAP was inadequate as it was not based on all of the SSCGs as approved by the Regional Board in its January 23, 2014 letter, as follows:

- The RAP is not based on the approved SSCGs for TPH that protect groundwater as required by the CAO.
    - Shell did not base the RAP on the SSCGs for TPH in soil as modified and approved in the Regional Boards' January 23, 2014 letter. Rather, Shell based the RAP on SSCGs for TPH in soils using the Regional Board's "Interim Site Assessment Cleanup Guidebook, 1996".

- The RAP is not based on the approved SSCGs that protect residential (i.e. unrestricted) land use as required by the CAO .
    - Shell did not base the RAP on the SSCGs for soil vapor using an attenuation factor of 0.002 for indoor air concentrations to outdoor air concentrations as modified and approved in the Regional Board's January 23, 2014 letter. Rather, Shell applied the 0.002 attenuation factor for indoor air to sub-slab soil gas concentrations.

- The RAP is not based on boundaries from the Site Delineation Report as directed in the Regional Board's Jan. 23, 2014 letter.
    - The Regional Board's January 23, 2013 letter required Shell to use the results in the Site Delineation Report and the results in the property-by-property investigations in developing the RAP. Shell used only the results of the property-by-property investigations in developing the RAP.

YOU ARE HEREBY NOTIFIED that you are in violation of Cleanup and Abatement Order No. R4-2011-0046 issued pursuant to the California Water Code (CWC) section 13304 on March 11, 2011 by the Regional Board Chief Deputy Executive Officer and amended by the Executive Officer in correspondence to Shell dated August 21, 2013 and January 23, 2014 by failing to submit a RAP based on SSCGs for TPH and soil vapor and on the findings in the Site Delineation Report by the required deadline of March 10, 2014.

You are required to comply with the requirements of Cleanup and Abatement Order No. R4-2011-0046, as amended, by submitting a revised RAP by June 16, 2014 that is based on the approved SSCGs and consistent with the comments set forth in the Regional Board's letter of April 30, 2014.

Compliance with the action set forth in this Notice of Violation does not affect the Regional Board's authorization to take enforcement action against you for any of the violations noted herein.

Pursuant to CWC §13350 (e), you are subject to penalties of up to $5.000 for each day in which the violation occurs or $10 for each gallon of waste discharged, but not both. These civil liabilities may be assessed by the Regional Board for failure to comply, beginning with the date that the violations first occurred, and without further warning. The matter may be referred to the Attorney General for further enforcement. The Regional Board reserves its right to take any further enforcement action authorized by law.

If you have any questions, please contact Tekylwold Ayalew at (213) 576-6623 (tawalew@waterboards.ca.gov) or Thizar Williams at (213) 57803 or (twilliams@waterboards.ca.gov).

Sincerely,

Samuel Unger, P.E.
Executive Officer

Cc: Janice Hahn, Honorable Congresswoman, US House of Representatives, California's 44th District

23

Isadore Hall, III, Assembly member, 64th Assembly District
Mark Ridley-Thomas, Supervisor, Second District County of Los Angeles
Jim Dear, Mayor of Carson
Michael Lauffer, Office of Chief Counsel, State Water Resources Control Board
Frances McChesney, Office of Chief Counsel, State Water Resources Control Board
James Carlisle, Office of Environmental Health Hazard Assessment
Robert Romero, Department of Toxic Substances Control
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Cyrus Rangan, Los Angeles County Department of Health
Angelo Bellomo, Los Angeles County Department of Health
Jackie Acosta, Carson Acting City Manager
Ky Truong, City of Carson
Karen A. Lyons, Shell Oil Products US
Alison Abbott Chassin, Shell Oil Products US
Roy Patterson, URS Corporation
Chris Osterberg, URS Corporation
Michelle Vega, Edelman
Robert Ettinger, Geosyntec
Mark Grivetti, Geosyntec
Thomas V. Girardi, Girardi and Keese Lawyers
Robert W. Bowcock, Integrated Resource Management, LLC
Deanne L. Miller, Morgan, Lewis & Bockius LLP
Patrick Dennis, Gibson Dunn

Carousel Tract Environmental Investigation Timeline

Date	Significant Actions/Reports	Notes
March 11, 2008	DTSC informed LARWQCB about former Shell Oil Company Tank Farm	
May 2008	LAWRQCB initiated an environmental investigation	
December 2008	LAWRQCB approved proposed work plan submitted by Shell to investigate contaminates of concern	
December 31, 2008	LARWQCB issued California Water Code § 13267 Investigative Order	
October 15, 2009	Shell submitted Final Phase I Site Characterization Report	
March 2011	LARWQCB issued Cleanup and Abatement Order No. R4-201100046	
February 22, 2013	Shell submitted *Site-Specific Cleanup Goal Report*	
May 2013	LAWRQCB issued a fact sheet providing information and advising of comment period for *Site-Specific Cleanup Goal Report*	30-day comment period ending June 24, 2013
June 24, 2013	City submitted comments to *Site-Specific Cleanup Goal Report*	Forwarded reports by Everett & Associates and Soil/Water/Air Protection Enterprise
July 18, 2013	City Council conducted workshop to allow presentation by Mr. Sam Unger, Executive Director of LARWQCB	Presentation by Dr. Lorene Everett and James T. Wells PhD raising concerns related to environmental conditions
July 29, 2013	City Council adopted Resolution No. 13-081 declaring the existence of an emergency in the Carousel Tract	
July 30, 2013	Letters sent to the Governor, Attorney General, Los Angeles County Board of Supervisors and Mr. Unger	Requested immediate assistance due to emergency conditions in Carousel Tract
July 31, 2013	City staff, Mr. Bob Bowcock, Dr. Everett and Mr. Wells met with representatives of Los Angeles County Fire Department and Los Angeles County Department of Public Health	City Council declaration of emergency conditions discussed and copies of Everett & Associates reports transmitted for review

Exhibit 3

Carousel Tract Environmental Investigation Timeline

Date	Significant Actions/Reports	Notes
August 21, 2013	LARWQCB sent detailed letter to Shell denying proposed site-specific cleanup goals and requiring revisions to be submitted by October 21, 2013	LARWQCB incorporated OEHHA Memorandum dated July 22, 2013 and UCLA Expert Panel Interim Report dated July 24, 2013
September 11, 2013	City letter to Mr. Sam Unger	Expressing appreciation from City Council and community for response to *Site-Specific Cleanup Goal Report*
September 24, 2013	LARWQCB community open house CEQA scoping meeting	Request for input from community and public agencies related to evaluation of environmental impacts; comment period ends on October 8, 2013
September 30 – October 10, 2013	LARWQCB Public Participation Specialist to conduct office hours at Carson City Hall	Opportunity for LARWQCB to meet with residents and community stakeholders
October 8, 2013	CEQA scoping comments due to LARWQCB from September 9 through October 8, 2013	Comment letters sent by City of Carson and Bob Bowcock/Barbara Post
October 10, 2013	City staff arranging for a meeting with LARWQCB, LACoFD, Los Angeles County Department of Public Health, OEHHA, Mr. Bowcock, Dr. Everett and Mr. Wells PhD	Review of technical reports and discussion of public agencies responses and actions
October 21, 2013	Shell submitted a *Revised Site-Specific Cleanup Goal Report* to LARWQCB	Shell proposed to evaluate options that provide excavation in specific areas and does not include any further evaluation associated with the removal of homes
October 24, 2013	Los Angeles County Department of Public Health Letter to City of Carson	Letter states there is not an immediate health threat from site conditions

Carousel Tract Environmental Investigation Timeline

Date	Significant Actions/Reports	Notes
October 30, 2013	LARWQCB letter to Shell for review of *Community Outdoor Air Sampling and Analysis Report*	Based on statistical tests, LARWQCB concludes that outdoor air concentrations do not differ between the site and surrounding area. Shell is required to address OEHHA comments and to develop a work plan for an additional soil-vapor survey by November 29, 2013. LARWQCB determined on January 13, 2014 that no further evaluation required
October 31, 2013	LARWQCB notice on *Proposed Draft Revised Cleanup and Abatement Order No. R4-2011-0046*	The proposed draft order names Dole Food Company, Inc. as an additional responsible party. Comments and evidence must be submitted by 12:00 p.m. on December 6, 2013. Dole Food Company has requested an extension to January 2014 to provide comments. LARWQCB approved extension to January 13, 2014. On January 7, 2014, Regional Board approved extension to January 21, 2014
November 12, 2013	Letter to Carousel Tract Owners and Occupants advising of November 19, 2013 City Council Workshop	
November 19, 2013	City Council conducted workshop with Los Angeles County Department of Public Health and Los Angeles County Fire Department	
January 8, 2014	LARWQCB response to *Assessment of Environmental Impact and Feasibility of Removal of Residual Concrete Reservoir Slabs*	Directs Shell to either remove the residential concrete slabs as appropriate or isolate the residual concrete slabs beneath the foundation of the homes and paved areas using engineering techniques to the extent necessary to address long term health risks or nuisance concerns

Carousel Tract Environmental Investigation Timeline

Date	Significant Actions/Reports	Notes
January 13, 2014	LARWQCB response to *Revised Community Outdoor Air Sampling and Analysis Report*	LARWQCB concludes that outdoor air concentrations do not differ between the site and surrounding area. No further evaluation required
January 21, 2014	Dole response to *Proposed Draft Revised Cleanup and Abatement Order No. R4-2011-0046*	Dole requested to not be included in the Draft Order since their subsidiary, Barclay Hollander Corporation, did not discharge any of the contaminants of concern
January 23, 2014	Community meeting organized by Congresswoman Hahn	Meeting to hear from residents and discuss options for obtaining improved levels of response from the Regional Board
January 23, 2014	LARWQCB response to *Revised Site-Specific Cleanup Goal Report*	LARWQCB identified deficiencies in the Shell Revised Report and directed a remedial action plan, Human Health Risk Assessment and other environmental documents be submitted by March 10, 2014
February 10, 2014	LARWQCB clarification and revision to their January 8, 2014 letter (effective date of January 13, 2014) regarding the Residential Concrete Slab Report	LARWQCB removed reference to regulations for underground storage tanks
February 23, 2014	Shell submitted a Petition for Review and Request for Hearing to the State Water Resources Control Board in the matter of Cleanup and Abatement Order R4-2011-0046 (CAO)	The State Water Resources Control Board has not responded to Shell's petition
March 10, 2014	Shell submitted Remedial Action Plan (RAP), Human Health Risk Assessment (HHRA), and draft environmental documents to LARWQCB	LARWQCB set a tentative period of 30 day to review the documents and provide opportunity for public viewing
March 19, 2014	LARWQCB filed Notice of Preparation (NOP)	Preparation of a draft Environmental Impact Report in accordance to the California Environmental Quality Act (CEQA)

Carousel Tract Environmental Investigation Timeline

March 25, 2014	LARWQCB and PCR Service Corporation met with City's staff	As part of the draft Environmental Impact Report, staff discussed transportation, noise, and odor concerns with LARWQCB and PCR
April 18, 2014	LARWQCB received comments from LAUSD regarding the NOP	LARWQCB is reviewing LAUSD comments and will provide response
April 30. 2014	LARWQCB responded to Shell's RAP, FS, and HHRA	LARWQCB rejected Shell's proposed cleanup plan and revised RAP to be submitted by Shell by June 16, 2014 by 5 p.m.
April 30, 2014	LARWQCB issued notice of violation (NOV) to Shell for failure to submit a RAP based on approved site-specific cleanup goals	LARWQCB directed Shell to comply by June 16, 2014