

Los Angeles Regional Water Quality Control Board

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

AMENDMENT TO
CLEANUP AND ABATEMENT ORDER NO. R4-2011-0046
(REVISED APRIL 30, 2015)
REQUIRING

SHELL OIL COMPANY
AND
BARCLAY HOLLANDER CORPORATION

TO CLEANUP AND ABATE WASTE
DISCHARGED TO WATERS OF THE STATE
PURSUANT TO CALIFORNIA WATER CODE SECTION 13304
AT THE FORMER KAST PROPERTY TANK FARM
CARSON, CALIFORNIA
(SCP NO. 1230, SITE ID 2040330)
(FILE NO. 97-043)

**APPROVAL OF REMEDIAL ACTION PLAN AND AMENDMENT OF CLEANUP AND
ABATEMENT ORDER TO INCORPORATE TIME SCHEDULE FOR IMPLEMENTATION OF
REMEDIAL ACTION PLAN**

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 or Order) 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 has been amended occasionally, and most recently, on April 30, 2015, the Regional Board issued a Revised CAO that identified Barclay Hollander Corporation as a responsible party. Shell and Barclay Hollander Corporation are hereafter referred to as “Discharger”. The CAO requires the Discharger to prepare and implement a remedial action plan (RAP), that at a minimum, will achieve site-specific cleanup goals that are based on residential (i.e., unrestricted) land use and applicable water quality objectives in the Regional Board’s Water Quality Control Plan and that will comply with State Water Resources Control Board Resolutions 68-16 (“Statement of Policy with Respect to Maintaining High Quality Waters in California”, also called the “Anti-degradation Policy”) and Resolution 92-49 (“Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304”).

In response to the CAO, Shell submitted the *Remedial Action Plan* and the companion *Feasibility Study* and *Human Health Risk Assessment*, dated March 14, 2014. On April 28, 2014, the Regional Board

directed Shell to revise the documents. Subsequently, Shell submitted a *Revised Remedial Action Plan* (RAP), *Revised Feasibility Study* (FS) and *Revised Human Health Risk Assessment Report* (HHRA), dated June 30, 2014, and *Addendum to Revised Remedial Action Plan* (Addendum) dated October 15, 2014.

In compliance with the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.), and the State CEQA Guidelines, the Regional Board prepared a Draft Environmental Impact Report (EIR) evaluating the potentially significant environmental impacts associated with the implementation of the RAP, provided a 64-day public comment period (exceeding the required 45 days), and prepared a response to comments on the Draft EIR. On July 10, 2015, the Regional Board certified the Final EIR and associated documents, and adopted a Mitigation Monitoring and Reporting Program and a Statement of Overriding Considerations.

Concurrently with the public comment period for the Draft EIR, the Regional Board provided a 64-day public comment period (exceeding the required 30 days) on the proposed revised RAP, FS, and HHRA and Addendum consistent with California Water Code section 13307.5. The Regional Board prepared responses to comments on the revised RAP, FS, and HHRA, and Addendum, which are contained in the Response to Documents that is part of the Final EIR.

The Regional Board hereby approves the Revised RAP as modified by the Addendum with conditions set forth in this amendment to CAO No. R4-2011-0046 (Revised April 30, 2015), amends the CAO to include a time schedule for implementation of the RAP, and requires implementation of the Revised RAP, as modified by the Addendum, in accordance with the time schedule.

The Regional Board hereby finds:

BACKGROUND

1. The Revised RAP and the companion documents were prepared following extensive multimedia investigations at the Site from 2008 to present. To date, the work completed at the Site includes: (a) an extensive delineation of chemicals of concern (COCs) present in all media, both onsite and offsite associated with site activities; (b) investigations of 96 % of the on-site individual residential properties, including soil, sub-slab vapor, and indoor air testing; (c) an evaluation of risks to public health; (d) an assessment of environmental impacts and feasibility of removal of residual concrete reservoir slabs; (e) pilot testing to evaluate different potential remedies for Site impacts; and (f) development of Site-Specific Cleanup Goals (SSCGs).
2. The Site has been impacted with petroleum hydrocarbons associated with crude oil storage during the period prior to residential redevelopment. Total petroleum hydrocarbons (TPH) impacts occur in shallow and deep soils together with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs), and some metals. VOCs, including benzene, and methane resulting from degradation of petroleum hydrocarbons are present in soil vapor; dissolved-phase VOC and TPH impacts are present in groundwater; and Liquid Non-Aqueous Phase Liquid (LNAPL) consisting of crude oil is locally present underlying a portion of the Site. In addition to hydrocarbon-related impacts, the Site is also locally impacted by chlorinated solvents, such as tetrachloroethene (PCE), trichloroethene (TCE), and trihalomethanes (THMs).
3. The Revised RAP identifies and describes recommended full-scale remedial actions for impacted shallow soil and other media at the Site in accordance with requirements of the CAO and directives in the Regional Board's January 23 and April 30, 2014 letters. The Revised RAP also summarizes the remedial alternative evaluation process provided in the companion Revised FS and proposes the most

appropriate remedial technology to cleanup all environmental media (such as soil, soil vapor, indoor air, and groundwater) impacted by the discharges of the COCs that meets the Regional Board approved cleanup goals.

4. In the Revised FS, remediation technologies were screened and then assembled into remedial alternatives that led to the selection of the preferred alternative and proposed remedial action approach. The Revised FS evaluates available options including proposed selected methods for remediation and includes a comparative analysis of applicable remedial alternative technologies for removing impacted soils to a maximum depth of 10 feet and removal of reservoir concrete slabs encountered within the uppermost 10 feet, including areas beneath residential houses and public streets.
5. The Revised HHRA estimates the potential human health risks associated with COCs detected in soil, sub-slab soil vapor, and soil vapor at the Site. It also evaluates potential human health impacts to onsite residents and onsite construction and utility maintenance workers. The findings of the Revised HHRA are used as a basis for remedy evaluation, and remedial action planning. The Regional Board consulted with the Office of Environmental Health Hazard Assessment (OEHHA) in evaluating the human health risk assessment at the site. OEHHA completed the review of the Revised HHRA and issued a memorandum dated October 2, 2014.

SUMMARY OF REVISED REMEDIAL ACTION PLAN

6. The Revised RAP identifies remedial options and outlines their feasibility, and recommends and describes a preferred conceptual remediation plan, a performance monitoring plan, and where appropriate, requirements for ongoing site management. The remediation technologies evaluated for applicability to achieve remedial goals for the COCs and type of media being addressed by this RAP included excavation and disposal, soil vapor extraction (SVE), bioventing, and sub-slab vapor mitigation and continued LNAPL removal and monitored natural attenuation of the groundwater.
7. Shell proposes in the Revised RAP, as modified by the Addendum, to implement Alternative 4D¹, which is evaluated in the Revised FS. Alternative 4D consists of excavation of Site soils to 5 feet below ground surface (bgs) from both landscaped areas and areas beneath residential hardscape at 207 properties; targeted deeper excavation to 10 feet bgs for mass removal in the front yard, back yard or in some cases both yards at 85 of the above 207 properties; maintenance of existing institutional controls, such as Grading Permit required by the City of Carson for excavations deeper than 3 feet; implementation of SVE/bioventing at residential properties and near streets to reduce petroleum hydrocarbons in subsurface soils; installation of sub-slab mitigation systems at 28 residences and any others upon request; continuing to remove LNAPL in groundwater; implementation of groundwater monitored natural attenuation and potentially supplemental remediation; and conducting long-term monitoring.
8. Shell proposes in the Revised RAP to obtain all applicable permits and approvals from regulatory agencies, to implement confirmation sampling during excavation activities and other types of monitoring to assure compliance with regulatory requirements, and conduct post construction monitoring. The Revised RAP identifies numerous reports and plans to be prepared during the course

¹ Note that Alternative 4D is referred to in the Final EIR as Alternative 2.

of the remediation, including the Site-Wide Remedial Design and Implementation Plan (RDIP) Report, property-specific remediation plans (PSRPs), and Quarterly Remediation Progress Reports.

9. The scope of work proposed in the Revised RAP is summarized in detail in **Attachment 1**.

CALIFORNIA ENVIRONMENTAL QUALITY ACT CERTIFICATION

10. The Regional Board is the lead agency pursuant to CEQA for the project and, in compliance with CEQA and the State CEQA Guidelines, conducted scoping and prepared a Draft EIR evaluating the potentially significant environmental impacts associated with the implementation of the RAP. In accordance with State CEQA Guidelines section 15085, upon completion of the Draft EIR, a Notice of Completion and Availability (NOCA) as well as CD copies of the Draft EIR were submitted to the State Clearinghouse, Governor's Office of Planning and Research, for distribution to state agencies. The Draft EIR was circulated for a 64-day public review, exceeding the 45-day comment period required under section 15105(a) of the State CEQA Guidelines. The public comment period began on November 7, 2014 and ended on January 9, 2015. The Draft EIR and CDs of the Draft EIR were distributed to approximately 780 public agencies and other interested persons. In addition, the NOCA was mailed to owners of property and occupants of property in the Carousel Tract and to properties near the Carousel Tract. The NOCA was also published in newspapers of general circulation in the area and copies of the Draft EIR and associated documents were placed at the Carson Public Library at 151 E. Carson Street, Carson and the Regional Board, Los Angeles Region, 320 W. 4th Street, Suite 200, Los Angeles. The Draft EIR was also available for review on the State Water Resources Control Board's and the Regional Board's websites.
11. Concurrently with the public comment period for the Draft EIR, the Regional Board provided a 64-day public comment period for the Revised RAP, FS, and HHRA and Addendum to the Revised RAP. The Regional Board received approximately 30 comment letters regarding the Revised RAP and associated documents and the Draft EIR. The Regional Board prepared written responses to these comments. Those responses are contained in Chapter 2.0 of the Final Certified EIR.
12. On July 10, 2015, the Regional Board adopted Findings, Statement of Overriding Considerations, and Certification of Environmental Impact Report (**Attachment 2**) The Final Certified EIR contains a Mitigation Monitoring and Reporting Program (**Attachment 3**). The Final Certified EIR identifies the preferred project, which includes project design features (PDFs) that have been incorporated into the project to minimize the significance of potential environmental effects and identifies mitigation measures that reduce the impacts to less than significant. In implementing the RAP, the Discharger is required to implement the PDFs and mitigation measures, which are listed in the Mitigation Monitoring and Reporting Program. If the Discharger proposes to modify any PDF or mitigation measure, approval by the Regional Board is required.

APPROVAL OF REVISED REMEDIAL ACTION PLAN

13. Taking into consideration the environmental documentation, the Regional Board has reviewed the Revised RAP and Addendum and associated documents, and other relevant documents in the Board's files based on the requirements of the CAO and applicable state plans and policies, including State Water Resources Control Board Resolution 92-49. The Regional Board approves the Revised RAP, as modified by the Addendum, and finds that the Revised RAP, specifically Alternative 4D set forth

in the Revised FS, will have a substantial likelihood to achieve compliance, within a reasonable time frame, with the site-specific cleanup goals and objectives, and finds that implementation of the Revised RAP, specifically Alternative 4D, will ensure that the Discharger will clean up the waste and abate the effects of the discharges of waste consistent with Resolution 92-49, Section III. G, and the CAO. On January 23, 2014, the Regional Board approved Site-Specific Cleanup Goals (SSCGs) for the Site. Implementation of the Revised RAP, as modified by the Addendum, will substantially eliminate or reduce concentrations of waste in soil and soil vapor to achieve SSCGs for the site. Attainment of SSCGs will result in the abatement of the nuisance conditions and provide for unrestricted (i.e., residential) land uses at the properties and will result in cleanup of waste sufficient to promote attainment of water quality objectives in the groundwater to protect beneficial uses. The time period necessary to achieve SSCGs is reasonable considering the scope and site specific circumstances at the Site.

14. Amendments to CAO R4-2011-0046 are set forth under REQUIRED ACTIONS. Those actions include a modification to the Revised RAP to add an additional residence to the list requiring installation and operation of a sub-slab depressurization system, addition of specific requirements regarding certain PDFs, revision to the due dates for submittal of groundwater monitoring reports, and compliance with a time schedule to implement the approved Revised RAP.
15. The tasks set forth in Table 4: Target Schedule in CAO No. R4-2011-004 as issued on March 11, 2011, are largely satisfied, therefore Table 4 is hereby rescinded and replaced by "Time Schedule For Implementation of the Remedial Action Plan" (Attachment 4).

REVIEW OF ORDER

16. Any person aggrieved by this action of the Regional Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, Title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions will be provided upon request or may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

REQUIRED ACTIONS

THEREFORE, IT IS HEREBY ORDERED, pursuant to California Water Code section 13304 and 13267, that the Discharger shall cleanup the waste and abate the effects of the discharge, including, but not limited to total petroleum hydrocarbons (TPH) and other TPH-related wastes discharged to soil and groundwater at the Site in accordance with CAO R4-2011-0046, as amended, and directs the Discharger to:

1. Implement the Revised RAP, as modified by the Addendum, consistent with the Final Certified EIR (SCH# 2014031053) and with the following revision:
 - a. Install a sub-slab depressurization (SSD) system at 24503 Marbella Avenue.
2. Implement the project design features (PDFs) and mitigation measures and comply with the Mitigation Monitoring and Reporting Program (MMRP) set forth in Chapter 4.0, of the Final

Certified EIR and the following directives for the identified PDF or Mitigation Measure set forth in the MMRP:

- a. PDF GEO-5 and GEO-6: Geology and Soils - Imported backfill material should be in accordance with the Department of Toxic Substances Control (DTSC) guidance document titled *Information Advisory – Clean Imported Fill Material* (October 2001).
 - b. PDF AQ-1 through AQ-12 Air Quality: Provide detailed information of the control measures to minimize VOCs, nuisance and fugitive dust emissions during soil excavation, soil loading and trenching operations in the Site-Wide Remedial Design and Implementation Plan (RDIP).
 - c. PDF AQ-4: Provide a detailed account of the SVE system design and construction (vapor extraction well installation, trenching, system piping, manifold installation, type and placement of remediation equipment) in the RDIP.
3. Obtain all necessary permits and approvals from appropriate agencies in a timely manner prior to implementation of the Revised RAP and comply with those permits. Permits and other approvals are anticipated to include, but may not be limited to, those listed in Table 2-5 of the Final Certified EIR. The Discharger shall provide notice to the Regional Board within 3 business days of receipt of the permit or approval and include a copy of each approved permit or approval in the subsequent Quarterly Remediation Status Report submitted to the Regional Board.
 4. Install, operate, and monitor the SSD systems in accordance with the DTSC document titled Vapor Intrusion Mitigation Advisory (October 2011).
 5. **Time Schedule for Implementation of RAP:** The Discharger shall submit all required work plans and reports and complete work within the schedule set forth in **Attachment 4**, attached hereto and incorporated herein by reference, which may be revised by the Executive Officer.
 6. **Implementation of Work Plans:** Implement all work plans in accordance with the approved work plan and schedule approved by the Executive Officer.
 7. **Groundwater Monitoring Reports:** Submit groundwater monitoring reports semi-annually containing the information required by the Regional Board.
 8. The State Water Resources Control Board adopted regulations requiring the electronic submittals of information over the internet using the State Water Board GeoTracker data management system. The Discharger is required to upload all reports and correspondence prepared to date on to the GeoTracker data management system. The text of the regulations can be found at the URL:

http://www.waterboards.ca.gov/ust/electronic_submittal/docs/text_regs.pdf
 9. In the event compliance cannot be achieved within the terms of this Order, the Discharger has the opportunity to request, in writing, an extension of the time specified. The extension request shall include an explanation why the specified date could not or will not be met and justification for the requested period of extension. Any extension request shall be submitted as soon as the situation is recognized and no later than the compliance date. Extension requests not approved in writing with reference to this Order are denied.

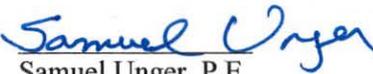
10. The Regional Board, under the authority given by Water Code section 13267(b)(1), requires a Discharger to include a perjury statement in all reports submitted under this Order. The perjury statement shall be signed by a senior authorized representative (not by a consultant). The perjury statement shall be in the following format:

"I, [NAME], certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision, in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. The Regional Board may revise this Order as additional information becomes available. Upon request by the Discharger, and for good cause shown, the Executive Officer may defer, delete or extend the date of compliance for any action required of the Discharger under this Order. The authority of the Regional Board, as contained in the California Water Code, to order investigation and cleanup, in addition to that described herein, is in no way limited by this Order.
12. Reference herein to determinations and considerations to be made by the Regional Board regarding the terms of the CAO shall be made by the Executive Officer or his/her designee. Decisions and directives made by the Executive Officer in regards to this Order shall be as if made by the Regional Board.

Failure to comply with the terms or conditions of the CAO may result in imposition of civil liabilities, imposed either administratively by the Regional Board or judicially by the Superior Court, in accordance with sections 13268, 13304, 13308, and/or 13350 of the California Water Code, and/or referral to the Attorney General of the State of California.

Ordered by:


Samuel Unger, P.E.
Executive Officer

Date: July 10, 2015

Attachments:

1. Summary of Scope of Work For Revised RAP (June 30, 2014) and Addendum (October 15, 2014).
2. Los Angeles Regional Water Quality Control Board Findings, Statement of Overriding Considerations, and Certification of Environmental Impact Report, dated July 10, 2015.
3. Mitigation Monitoring and Reporting Program (MMRP) (Chapter 4 of EIR), June 2015 (SCH No. 2014031053)4.
4. Time Schedule for Implementation of RAP.

Los Angeles Regional Water Quality Control Board

Attachment 1

SUMMARY OF SCOPE OF WORK
REVISED RAP JUNE 30 2014 AND ADDENDUM OCTOBER 15 2014
SUBMITTED BY SHELL OIL PRODUCTS US

1. Retain Alternative 4D as the most feasible method to remediate soils and vapor at the site. Alternative 4D consist of excavation of Site soils to 5 feet below ground surface (bgs) from both landscaped areas and areas beneath residential hardscape; targeted deeper excavation to 10 feet bgs for mass removal; existing institutional controls; SVE/bioventing; sub-slab mitigation; removal of LNAPL; groundwater MNA and potentially supplemental remediation; and long-term monitoring.
2. Conduct excavation of shallow soils to a minimum depth of 5 feet bgs at landscaped and hardscaped areas of the front, side and back yards at 207 properties (see Revised Table 6-1: Addendum to Revised Remedial Action Plan);
3. Conduct targeted deeper excavations to a depth of 10 feet bgs in the front yard, back yard or some cases both yards at 85 of the above 207 properties (see Revised Table 6-1: Addendum to Revised Remedial Action Plan);
4. Collect post-excavation soil samples as follows:
 - a. Two locations per side wall location of the excavation (8 samples per yard excavation locations, 16 samples total) and from two locations at the bottom of each excavation in the back and front yards (4 samples), yielding a total of 20 samples per property; and
 - b. Samples analyzed only for total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), total petroleum hydrocarbons as motor oil (TPHmo), and VOCs.
5. Backfill the lower part of the excavation slot trenches with 2-sack slurry and the upper 3 feet of excavations with certified clean imported soil.
6. Install sub-slab vapor mitigation system (sub-slab depressurization system (SSD)) at 28 properties; offer installation of a sub-slab mitigation system to any of the homeowners in the Carousel Tract (see Revised Table 6-1: Addendum to Revised Remedial Action Plan). Based on a series of diagnostic testing, the SSD system will be considered effective once vacuum conditions are established beneath the slab.
7. Implement SVE/bioventing as follows:

- a. Install 63 triple-nested wells with screen intervals of 5 to 10 feet bgs, 15 to 25 feet bgs, and 30 to 40 feet bgs for the shallow, intermediate, and deep zones, respectively, with an average spacing of approximately 125 feet;
 - b. Install additional 65 shallow zone wells between the nested wells in the streets of the Site to provide increased vapor extraction coverage within the shallow zone; the additional wells are based on the estimated radius of vacuum influence (ROVI) of 50 feet for the shallow zone from the SVE pilot test;
 - c. Install approximately 472 shallow zone residential wells or two shallow zone wells on each residential property identified for SVE/bioventing. The distribution and numbers of wells to be installed on each property will be determined during the design phase in individual Property-specific Remediation Plan (PSRP) and will take into account areas of properties and locations available for well installation;
 - d. Operate SVE/bioventing system cyclically (pulsed) to extract soil vapor and introduce oxygen to the subsurface to stimulate biodegradation;
 - e. Consider use of multiple treatment technologies in a staged approach that includes thermal or catalytic treatment and granular activated carbon (GAC); and
 - f. Use a system or systems rated for a combined 3,000 standard cubic feet per minute (scfm) at up to 12 inches of mercury (in-Hg) vacuum.
8. Implement Surface Containment and Soil Management Plan to soils remaining below 5 feet bgs and impacted soils beneath City streets and sidewalks;
9. Restore hardscape and landscape features to like conditions or as agreed to with each homeowner;
10. Continue the monthly removal of LNAPL from wells MW-3, MW-12 and MW-18; recovery would be initiated if LNAPL thickness of greater than 0.5 feet to the extent technologically and economically feasible;
11. Groundwater source reduction and MNA:
- a. Conduct semi-annual monitoring of both shallow zone and Gage wells;
 - b. Perform MNA evaluation using parameters that include oxidation-reduction potential, dissolved oxygen, pH, nitrate, iron, sulfate, and methane; and
 - c. If after five years, the groundwater plume is not stable or decreasing, conduct a contingency in-situ groundwater remediation of oxidant injection in areas where Site-related COCs exceed 100x MCL.
12. Post-construction long-term monitoring and sampling plan includes:
- a. Monitor SVE/Bioventing system effectiveness as follows:

- i. Install 16 multi-depth soil vapor monitoring wells/probes screened at depths of approximately 1.5, 5, 7.5, 20, and 35 feet bgs;
 - ii. Collect soil vapor samples from each of the vapor wells following system startup:
 - quarterly for a period of 2 years;
 - semi-annually for a period of 3 years;
 - annually for a period of 5 years; and
 - every 5 years thereafter.
 - iii. Monitor probes using hand-held instruments (landfill-gas meter (Landtec GEM-2000 or equivalent), flame ionization detector (FID) and a photo ionization detector (PID)):
 - monthly for a period of 1 year;
 - quarterly for a period of 4 years; and
 - annually thereafter.
 - b. Monitor sub-slab vapor probes at properties where SSD systems are installed as follows:
 - i. One sampling event per year for years 1 through 5 following system installation;
 - ii. One sampling event every other year for years 5 through 15;
 - iii. One sampling event every five years for years 15 through 30, or until site conditions demonstrate it is no longer necessary; and
 - iv. Each sampling event would consist of checking sub-slab soil vapor probes for pressure/vacuum, and sampling two or three sub-slab soil vapor probes.
13. Obtain all necessary permits as part of the RDIP process and as PSRPs.
 - a. Grading Permits from the City of Carson Department of Building and Safety (DBS);
 - b. Traffic Management Plan, and Excavation and Encroachment Permit from the City of Carson;
 - c. South Coast Air Quality Management District (SCAQMD) permits for Rule 1166 Contaminated Soil Mitigation Plan;
 - d. SCAQMD Permit to Construct/Operate SVE/bioventing equipment;
 - e. SCAQMD Permits for Sub-slab Depressurization Systems
 - f. SCAQMD Permit for Asbestos Notifications/Abatement;
 - g. General Construction Stormwater National Pollutant Discharge Elimination System (NPDES) permit from State Water Resources Control Board, including Stormwater Pollution Prevention Plan (SWPPP);

Other permits: Occupational Safety and Health Administration (OSHA) Trenching Permit, Plumbing and Electrical Permits, Masonry Permit, Landscaping Permit, City of Carson electrical, building, and construction permits.

14. The proposed RDIP process includes the following:

- a. Installation of soil vapor extraction/bioventing cluster wells on public streets and residential properties, trenching and piping and construction of an off-site treatment system to be completed in approximately 5.6 years.
- b. Construction of an off-site treatment system that consist of a manifold, and treatment systems in an enclosed structure with sound attenuation insulation. The estimated operating time of the offsite treatment system is approximately 30 to 40 years;
- c. Installation of SVE/bioventing wells, piping, backfilling, installation of a sub-slab vapor mitigation system, and site restoration at residential properties to be completed in approximately 5.3 years.
- d. Installation of sub-slab depressurization (SSD) systems with monitoring and maintenance plans at a minimum of 28 properties, and at every house in the Carousel Tract if requested by the owner;
- e. Manage impacted soil generated during the implementation of the excavation, monitoring of SVE and bioventing systems, and monitoring of the excavation face and the SVE perimeter.
- f. Prepare project-specific Site-specific Health & Safety Plan (HSP);
- g. Prepare an Emergency Response Plan that will update the existing Carousel Tract Pilot Testing Emergency Response Plan will be prepared.
- h. Temporary Relocation Program;
 - i. During remedial excavation, backfill and restoration work, residents of the properties where excavation is conducted will be temporarily relocated;
 - ii. Approximately 10 weeks to complete a phase of eight contiguous properties; and
 - iii. Provisions for assistance with temporary living arrangements, and outlines guidelines for a Temporary Relocation Program payment
- i. Optional Real Estate Program.
 - The Optional Real Estate Program is a program that ensures that participating homeowners who elect to sell their houses will receive fair market value as determined through an appraisal process summarized in the Program.

15. Prepare Site-wide RDIP. The Site-wide RDIP will provide non-property specific elements of the remedial design, including general excavation methodologies, identification of suitable backfill criteria, surveying, traffic plans, notifications and site preparation, proposed odor, dust, and noise control measures.

16. Prepare property-specific remedial plans (PSRPs) for each property where excavation, SVE/bioventing, or sub-slab vapor mitigation is planned. The PSRPs will be submitted to the Regional Board for initial review. Preparation of these plans will extend throughout the implementation period.
17. Conduct remedial action planning for 12 homes, including access, sampling and data evaluation.
18. The preliminary conceptual schedule for RAP implementation (Gantt chart attached) and a preliminary reporting schedule are as follows:
 - a. RDIP: 12 weeks following approval of the RAP;
 - b. Remediation Progress Reports: quarterly;
 - c. PSRPs: as completed;
 - d. Property Specific Remedial Action Completion Reports (RACRs): 45 days following completion of remedial actions;
 - e. Groundwater monitoring: semi-annually;
 - f. LNAPL removal: Removal monthly, semi-annual reporting within Groundwater Report;
 - g. Monitoring of existing soil vapor probes at nine onsite probe locations and one offsite location in the streets: quarterly
 - h. Monitoring of 69 onsite and offsite utility vaults: quarterly
 - i. SCAQMD Permit monitoring: in accordance with the schedule set forth in the Permit to Construct and Operate
 - j. SVE/bioventing mass removal estimates: annually
 - k. Annual inspections of the SSD systems: reported in the quarterly progress reports
 - l. Sub-slab soil vapor probes sampling: reported in the quarterly progress reports
 - m. Periodic monitoring of street soil vapor probes and soil vapor sampling to confirm effectiveness of the SVE/bioventing system: reported semi-annually with semi-annual groundwater monitoring data.
 - n. System optimization and performance evaluation report: initial 5-year review report to be submitted five years after SVE system start-up, and subsequent SVE system operational review reports submitted on a 5-year basis.
 - o. Initial mobilization for excavation, mitigation system installation, on-property SVE/bioventing well installation, and/or SSD installation will occur approximately six months after RAP approval.
 - p. Approximately 10 weeks to complete eight homes per phase, the suite of residential remedial construction activities including excavation, on-property SVE/bioventing well and piping installation, backfill, sub-slab vapor mitigation, and site restoration. Expedited implementation option is pending evaluation by contractors whether the pace of excavation work can be increased by working on two blocks of eight properties simultaneously.

Table 6-1 (REVISED September 2014 for RAP and FS)
 Property Addresses for Consideration in Remedial Planning

Address	Shallow Excavation		SVE/Bioventing	Targeted Excavation for >5 to ≤10 ft bgs depth interval			Sub-Slab Soil Vapor Mitigation
	Exceeds HH Criteria or Leaching to GW SSCGs < 5 ft bgs	Exceeds HH Criteria or Leaching to GW SSCGs >5 to <10 ft bgs	Exceeds in either ≤ 5ft or >5 to ≤10 ft bgs depth interval	Front Yard	Back Yard	Both Yards	Identified in HHRA based on > 1 E-6 Risk Level
24402 NEPTUNE AVE	X	X	X		X		
24402 PANAMA AVE	X		X				
24402 RAVENNA AVE	X	X	X		X		
24403 NEPTUNE AVE	X	X	X	X	X	X	
24403 RAVENNA AVE		X	X				
24406 MARBELLA AVE	X	X	X		X		
24406 NEPTUNE AVE		X	X				X
24406 PANAMA AVE	X		X				
24406 RAVENNA AVE	X	X	X				
24409 NEPTUNE AVE	X	X	X	X	X	X	
24409 RAVENNA AVE		X	X				
24411 MARBELLA AVE	X		X				
24411 PANAMA AVE	X	X	X		X		
24412 MARBELLA AVE	X	X	X	X	X	X	X
24412 RAVENNA AVE	X	X	X				
24413 NEPTUNE AVE	X	X	X	X	X	X	
24413 RAVENNA AVE		X	X				
24416 MARBELLA AVE	X	X	X	X	X	X	
24416 NEPTUNE AVE	X		X				
24416 RAVENNA AVE	X	X	X				X
24417 MARBELLA AVE	a	a	a				
24417 PANAMA AVE		X	X				
24419 NEPTUNE AVE	X	X	X	X	X	X	
24419 RAVENNA AVE		X	X				
24420 PANAMA AVE	X		X				
24421 PANAMA AVE	X	X	X	X			
24422 MARBELLA AVE	X	X	X				
24422 NEPTUNE AVE		X	X				
24422 RAVENNA AVE	X	X	X				
24423 MARBELLA AVE	a	a	a				
24423 NEPTUNE AVE	X	X	X	X	X	X	X
24423 RAVENNA AVE	X	X	X				
24426 MARBELLA AVE	X	X	X	X	X	X	
24426 NEPTUNE AVE		X	X				
24426 PANAMA AVE	X		X				
24426 RAVENNA AVE	X		X		X		
24427 PANAMA AVE		X	X				
24429 NEPTUNE AVE	X	X	X	X	X	X	X
24429 RAVENNA AVE	X	X	X				
24431 PANAMA AVE	X	X	X				
24432 MARBELLA AVE	X	X	X		X		
24433 MARBELLA AVE	X		X				X
24436 PANAMA AVE	X		X				
24502 MARBELLA AVE	X	X	X				
24502 NEPTUNE AVE		X	X				
24502 RAVENNA AVE	X	X	X		X		
24503 NEPTUNE AVE	X	X	X	X	X	X	
24503 PANAMA AVE	X	X	X				
24503 RAVENNA AVE		X	X				

Table 6-1 (REVISED September 2014 for RAP and FS)
Property Addresses for Consideration in Remedial Planning

Address	Shallow Excavation		SVE/Bioventing	Targeted Excavation for >5 to ≤10 ft bgs depth interval			Sub-Slab Soil Vapor Mitigation
	Exceeds HH Criteria or Leaching to GW SSCGs < 5 ft bgs	Exceeds HH Criteria or Leaching to GW SSCGs >5 to <10 ft bgs	Exceeds in either ≤ 5ft or >5 to ≤10 ft bgs depth interval	Front Yard	Back Yard	Both Yards	Identified in HHRA based on > 1 E-6 Risk Level
24506 MARBELLA AVE	X	X	X	X			X
24508 NEPTUNE AVE	X	X	X		X		
24508 RAVENNA AVE	X	X	X	X			
24509 NEPTUNE AVE	X	X	X				
24509 PANAMA AVE	X	X	X	X	X	X	
24509 RAVENNA AVE	X	X	X	X			
24512 MARBELLA AVE	X	X	X	X	X	X	
24512 NEPTUNE AVE	X	X	X		X		
24512 RAVENNA AVE	X	X	X	X			
24513 NEPTUNE AVE		X	X				
24513 PANAMA AVE	X	X	X	X	X	X	
24513 RAVENNA AVE		X	X				X
24516 MARBELLA AVE	X	X	X		X		
24517 MARBELLA AVE	X		X				
24518 NEPTUNE AVE	X	X	X	X			
24518 RAVENNA AVE	X	X	X	X	X	X	
24519 NEPTUNE AVE	X	X	X				
24519 PANAMA AVE	X	X	X		X		
24519 RAVENNA AVE	X	X	X				
24522 MARBELLA AVE	X	X	X	X			
24522 NEPTUNE AVE	X	X	X				
24522 RAVENNA AVE	X	X	X				
24523 NEPTUNE AVE	X	X	X		X		
24523 RAVENNA AVE	X	X	X	X			
24526 MARBELLA AVE	X	X	X		X		
24528 NEPTUNE AVE	X	X	X				
24529 NEPTUNE AVE	X	X	X		X		
24529 RAVENNA AVE	X	X	X				
24532 MARBELLA AVE	X	X	X		X		
24532 PANAMA AVE	X	X	X				
24533 NEPTUNE AVE *	X	X	X				
24533 PANAMA AVE	X		X				
24602 MARBELLA AVE		X	X				
24602 PANAMA AVE		X	X				
24603 MARBELLA AVE	X		X				X
24603 NEPTUNE AVE	X	X	X				
24603 PANAMA AVE	X		X				
24603 RAVENNA AVE	X	a	X				
24606 MARBELLA AVE	X	X	X		X		
24607 MARBELLA AVE		X	X				
24608 NEPTUNE AVE	X	X	X				
24608 PANAMA AVE	X	X	X				
24608 RAVENNA AVE	X	X	X				
24609 NEPTUNE AVE	X	X	X	X	X	X	
24609 PANAMA AVE	X	X	X				X
24609 RAVENNA AVE	X		X				
24612 MARBELLA AVE	X	X	X	X	X	X	
24612 NEPTUNE AVE	X	X	X	X	X	X	
24612 PANAMA AVE	X	X	X				

Table 6-1 (REVISED September 2014 for RAP and FS)
Property Addresses for Consideration in Remedial Planning

Address	Shallow Excavation		SVE/Bioventing	Targeted Excavation for >5 to ≤10 ft bgs depth interval			Sub-Slab Soil Vapor Mitigation
	Exceeds HH Criteria or Leaching to GW SSCGs < 5 ft bgs	Exceeds HH Criteria or Leaching to GW SSCGs >5 to <10 ft bgs	Exceeds in either ≤ 5ft or >5 to ≤10 ft bgs depth interval	Front Yard	Back Yard	Both Yards	Identified in HHRA based on > 1 E-6 Risk Level
24612 RAVENNA AVE	X		X				
24613 MARBELLA AVE	a	a	a				
24613 NEPTUNE AVE	X	X	X	X	X	X	
24613 PANAMA AVE	X	X	X				X
24613 RAVENNA AVE	X	X	X				
24616 MARBELLA AVE	X	X	X	X	X	X	
24617 MARBELLA AVE	X	a	X				
24618 NEPTUNE AVE	X	X	X	X	X	X	
24618 PANAMA AVE	X	X	X				
24618 RAVENNA AVE	X		X				
24619 NEPTUNE AVE	X	X	X	X	X	X	
24619 PANAMA AVE	X	X	X				
24619 RAVENNA AVE		X	X				
24622 MARBELLA AVE	X	X	X	X	X	X	
24622 NEPTUNE AVE	X	X	X	X	X	X	
24623 MARBELLA AVE	X	X	X				X
24623 NEPTUNE AVE	X	X	X	X	X	X	
24627 MARBELLA AVE	X	X	X	X			
24628 MARBELLA AVE	X	X	X	X	X	X	
24628 NEPTUNE AVE		X	X				
24629 NEPTUNE AVE	X	X	X	X	X	X	X
24632 NEPTUNE AVE ^b	X	X	X	X	X	X	X
24633 MARBELLA AVE	X		X				
24700 MARBELLA AVE	X	X	X	X			
24702 NEPTUNE AVE	X	X	X	X	X	X	
24702 PANAMA AVE	X	X	X				
24703 MARBELLA AVE	X		X				
24703 NEPTUNE AVE	X	X	X	X			
24703 PANAMA AVE	X	X	X				
24703 RAVENNA AVE	X	X	X	X	X	X	
24706 MARBELLA AVE	X	X	X	X			
24706 RAVENNA AVE	X		X				
24708 PANAMA AVE	X	X	X				
24709 NEPTUNE AVE	X	X	X		X		X
24709 PANAMA AVE	X	X	X		X		
24709 RAVENNA AVE	X	X	X		X		
24710 MARBELLA AVE	X	X	X	X	X	X	
24712 NEPTUNE AVE	X	X	X	X	X	X	X
24712 PANAMA AVE	X	X	X				
24712 RAVENNA AVE	X		X				
24713 PANAMA AVE	X	X	X				
24713 RAVENNA AVE	X	X	X		X		
24715 NEPTUNE AVE	X	X	X	X	X	X	
24716 MARBELLA AVE	X	X	X				
24716 RAVENNA AVE	X		X				
24717 MARBELLA AVE	X		X				
24718 NEPTUNE AVE	X	X	X	X			
24718 PANAMA AVE	X	X	X				
24719 NEPTUNE AVE	X	X	X	X			

**Table 6-1 (REVISED September 2014 for RAP and FS)
Property Addresses for Consideration in Remedial Planning**

Address	Shallow Excavation		SVE/Bioventing	Targeted Excavation for >5 to ≤10 ft bgs depth interval			Sub-Slab Soil Vapor Mitigation
	Exceeds HH Criteria or Leaching to GW SSCGs < 5 ft bgs	Exceeds HH Criteria or Leaching to GW SSCGs >5 to <10 ft bgs	Exceeds in either ≤ 5ft or >5 to ≤10 ft bgs depth interval	Front Yard	Back Yard	Both Yards	Identified in HHRA based on > 1 E-6 Risk Level
24719 PANAMA AVE	X	X	X				
24719 RAVENNA AVE	X	X	X		X		
24722 MARBELLA AVE	X		X				
24722 PANAMA AVE	X		X				
24722 RAVENNA AVE	X		X				
24723 MARBELLA AVE	X		X				X
24723 RAVENNA AVE	X	X	X				
24726 RAVENNA AVE	X		X				
24727 MARBELLA AVE	X		X				
24728 NEPTUNE AVE	X	X	X				
24728 PANAMA AVE	X	X	X				
24729 NEPTUNE AVE	X		X				
24732 MARBELLA AVE	X		X				
24732 NEPTUNE AVE	X	X	X		X		
24732 RAVENNA AVE	X		X				
24733 MARBELLA AVE	X		X				
24733 PANAMA AVE	X		X				
24733 RAVENNA AVE	X	X	X				
24735 NEPTUNE AVE	X		X				
24736 RAVENNA AVE	X	X	X	X			
24737 MARBELLA AVE	X	X	X				
24738 NEPTUNE AVE	X	X	X	X	X	X	X
24738 PANAMA AVE	X		X				
24739 NEPTUNE AVE	X		X				
24739 PANAMA AVE	X	X	X				
24739 RAVENNA AVE	X	X	X	X	X	X	
24740 MARBELLA AVE	X		X				
24743 RAVENNA AVE	X	X	X	X	X	X	
24744 MARBELLA AVE	X		X				X
24748 RAVENNA AVE	X	X	X				
24749 RAVENNA AVE	X	X	X	X	X	X	X
24752 RAVENNA AVE	X	X	X				
24802 PANAMA AVE	X		X				
24803 NEPTUNE AVE	X		X				
24803 PANAMA AVE	X	X	X				
24806 PANAMA AVE	X		X				
24809 NEPTUNE AVE	X	X	X				
24809 PANAMA AVE	X	X	X	X	X	X	
24812 PANAMA AVE	X		X				
24813 PANAMA AVE	X	X	X				
24815 NEPTUNE AVE	X	X	X				
24818 PANAMA AVE	X		X				
24819 PANAMA AVE	X	X	X		X		
24822 PANAMA AVE	X	X	X				
24823 PANAMA AVE	X	X	X	X			
24828 PANAMA AVE	X	X	X				
24829 PANAMA AVE	X	X	X				
24832 PANAMA AVE	X	X	X				
24833 PANAMA AVE	X	X	X				

Table 6-1 (REVISED September 2014 for RAP and FS)
 Property Addresses for Consideration in Remedial Planning

Address	Shallow Excavation		SVE/Bioventing	Targeted Excavation for >5 to ≤10 ft bgs depth interval			Sub-Slab Soil Vapor Mitigation
	Exceeds HH Criteria or Leaching to GW SSCGs < 5 ft bgs	Exceeds HH Criteria or Leaching to GW SSCGs >5 to <10 ft bgs	Exceeds in either ≤ 5ft or >5 to ≤10 ft bgs depth interval	Front Yard	Back Yard	Both Yards	Identified in HHRA based on > 1 E-6 Risk Level
24838 PANAMA AVE	X		X				
24904 NEPTUNE AVE		X	X				
24912 NEPTUNE AVE		X	X				
305 244TH ST	X	X	X				
311 244TH ST	X	X	X				
317 244TH ST	X		X				X
321 244TH ST	a	a	a				
331 244TH ST	a	a	a				
344 249TH ST	X		X				
345 249TH ST	X	X	X	X			
348 248TH ST	X	X	X	X			X
348 249TH ST	X	X	X				
351 244TH ST	X		X				
352 249TH ST		X	X				X
353 249TH ST	X	X	X				
354 248TH ST	X	X	X	X	X	X	
357 244TH ST	X		X				
357 249TH ST		X	X				
358 249TH ST	X		X				
360 248TH ST	X	X	X	X			
363 249TH ST	X	X	X	X			
364 248TH ST	X	X	X				
367 244TH ST	X		X				
367 249TH ST	X	X	X				
368 249TH ST	X	X	X				
373 249TH ST	X	X	X	X			
374 248TH ST	X	X	X		X		
374 249TH ST	X	X	X	X			
377 249TH ST	X	X	X	X			
378 249TH ST	X	X	X				X
383 249TH ST	X	X	X				X
402 249TH ST	X		X				
412 249TH ST	X	X	X				

"X" - Property Selected For Remediation based on results of Human Health Risk Assessment or additional considerations such as targeted mass removal (Excavation at some properties > 5 to ≤10 feet bgs) or risk management considerations (For subslab depressurization systems)



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

FINDINGS, STATEMENT OF OVERRIDING CONSIDERATIONS, AND CERTIFICATION OF ENVIRONMENTAL IMPACT REPORT FOR THE FORMER KAST PROPERTY TANK FARM SITE REMEDIATION PROJECT

The Los Angeles Regional Water Quality Control Board (Regional Board) is the lead agency for the preparation of the Draft EIR for the Remedial Action Plan (RAP) for the Former Kast Property Tank Farm Site. As such, this document reflects the determinations of the Regional Board relative to the Environmental Impact Report and the RAP for the site.

FINDINGS

INTRODUCTION

Public Resources Codes Section 21081 and the State CEQA Guidelines Section 15091 provide that no public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that will occur if a project is approved or carried out unless the public agency makes one or more of the following findings:

- A. Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects identified in the EIR.
- B. Such changes or alterations are within the responsibility of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
- C. Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the EIR.

For projects with that will generate at least one significant and unavoidable impact, the Lead Agency must issue a "Statement of Overriding Considerations." Where a project will cause unavoidable significant impacts, the Lead Agency may still approve the project where its

CHARLES STRINGER, CHAIR | SAMUEL UNGER, EXECUTIVE OFFICER

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benefits outweigh the adverse impacts. As discussed below, significant and unavoidable impacts would occur with implementation of the proposed Remedial Action Plan (RAP) for the Former Kast Property Tank Farm Site Remediation Project (the "Project"), as reflected in the Final Environmental Impact Report (EIR) for the Project. Thus, a Statement of Overriding Considerations is required for the Project.

PROJECT BACKGROUND

Historically, prior to development of many existing residential uses, the local project vicinity was primarily an industrial area inclusive of numerous oil refinery and other chemical-related facilities, many of which have documented hazardous materials releases. The site was developed in 1923 by Shell Company of California with three concrete oil storage reservoirs and was used as an active oil storage facility until the 1950s, when the site was used only on a standby reserve basis. In 1966, the oil storage reservoirs were removed from the site. Construction of existing on-site homes as part of the Carousel Tract began in 1967 and was completed by the early 1970s. The site has remained residential since that time and includes 285 single-family residences.

In 2008, environmental investigations were conducted in connection with an adjacent industrial chemical facility (former Turco Products Facility). During those investigations, contamination by petroleum hydrocarbons at sample locations was discovered within the site. The Department of Toxic Substances Control (DTSC) communicated these findings to the Los Angeles Regional Water Quality Control Board [Regional Board] in March 2008, and in April 2008 the Regional Board sent an inquiry to Shell regarding the status of any environmental investigations at the site. This inquiry was followed by the Regional Board's California Water Code (CWC) Section 13267 Order to Conduct an Environmental Investigation at the former Kast Property issued to Shell Oil Company (Shell) on May 8, 2008. Shell conducted a series of extensive site multimedia sampling and investigations, monitoring, pilot studies, and other environmental evaluations of the site in response to that Order and subsequent 13267 Orders issued on October 1, 2008 and November 18, 2009, Section 13304 Order dated October 15, 2009, and Cleanup and Abatement Order R4-2011-0046 (CAO) dated March 11, 2011, as amended. All of the investigations have occurred under Regional Board approval and oversight, following work plans reviewed and approved by the Regional Board. Results of the investigations show that the site has been impacted with petroleum hydrocarbons associated with former crude oil storage during the period prior to residential redevelopment. In addition to hydrocarbon-related impacts, impacts are also locally present from chlorinated solvents related to on- and offsite sources. Because of the impacted soils by petroleum hydrocarbons, methane gas also occurs beneath the site, although at non-hazardous levels in the shallow subsurface.

Shell prepared a RAP and Feasibility Study (FS) in March 2014 and submitted it to the Regional Board in accordance with the CAO and in response to the Regional Board letter dated January 23, 2014 directing Shell to submit a RAP and Human Health Risk Assessment (HHRA)

pursuant to California Water Code Section 13304. The Regional Board reviewed the RAP, FS, and HHRA and in a letter dated April 30, 2014 provided comments and directives to Shell on these documents. On June 30, 2014 Shell submitted a revised RAP, FS, and HHRA addressing the comments and directives contained in the Regional Board's April 30, 2014 letter. In October 2014 Addenda to the RAP, FS, and HHRA were submitted to the Regional Board. The RAP, FS and HHRA are the basis for the EIR.

PROJECT OBJECTIVES

As set forth in the EIR, the Project is intended to achieve a number of objectives (the "Project Objectives"), as provided below. The underlying Project purpose of the proposed RAP is to remediate the site in compliance with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies.

1. Implement a RAP that complies with the CAO and meets the media-specific (i.e. soil, soil vapor, and groundwater) Remedial Action Objectives (RAOs) developed for the site. (See below for a list of the RAOs for the site.)
2. Maintain the residential land use of the site and avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community.
3. Minimize short-term disruption to residents.
4. Allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into shallow site soils (i.e., landscaping, hardscape, gardening, etc.) on their properties.
5. Limit or minimize environmental impacts associated with the cleanup activities.

The Regional Board approved the following numerical Site Specific Cleanup Goals (SSCGs) for the constituents of concern (COCs) developed for the site and the media-specific (i.e. soil, soil vapor, and groundwater) RAOs have been developed to achieve the numerical SSCGs.

- RAO #1. Prevent human exposures to concentrations of COCs in soil, soil vapor, and indoor air such that total (i.e., cumulative) lifetime incremental carcinogenic risks are within the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) risk range of 1×10^{-6} to 1×10^{-4} and noncancer hazard indices are less than 1 or concentrations are below background, whichever is higher. Potential human exposures include on-site residents and construction and utility maintenance workers. For on-site residents, the lower end of the NCP risk range (i.e., 1×10^{-6}) and a noncancer hazard index less than 1 are used. Prevent direct contact exposure to COCs at concentrations

above applicable risk-based SSCGs in soil for on-site residents and construction and utility maintenance workers.

- RAO #2. Prevent fire/explosion risks in indoor air and/or enclosed spaces (e.g., utility vaults) due to the accumulation of methane generated from the anaerobic biodegradation of petroleum hydrocarbons in soils. Eliminate methane in the subsurface to the extent technologically and economically feasible.
- RAO #3. Remove or treat LNAPL to the extent technologically and economically feasible, and where a significant reduction in current and future threat to groundwater will result.
- RAO #4. Reduce COCs in groundwater to the extent technologically and economically feasible to achieve, at a minimum, SSCGs and the water quality objectives in the Regional Board Basin Plan to protect the designated beneficial uses, including municipal supply.

DESCRIPTION OF PROJECT

The RAP consists of the following multi-media components to remediate the site:

- Excavation of soil would be conducted at impacted residential properties where RAOs are not met under existing conditions. Excavation would be conducted in both landscaped and hardscaped areas of residential yards. Exceptions to excavation beneath hardscape may include patios covered by structures and roofs, swimming pools and pool decking surrounding swimming pools. No excavation for the purposes of direct soil removal remediation would occur beneath City streets and sidewalks or beneath houses. Excavation would be to a depth of five (5) feet bgs and targeted excavation where practicable to 10 feet bgs at properties where significant hydrocarbon mass in soil can be reduced. The excavation would also remove residual concrete slabs if encountered during excavation, where practicable and where the slabs can be removed safely. Following excavation, hardscape and landscaping would be restored to like conditions.
- SVE/bioventing would be used to address petroleum hydrocarbons, VOCs, and methane in soil and soil vapor and to promote degradation of residual hydrocarbon concentrations where RAOs are not met following soil excavation activities. A SVE system with SVE wells in City streets and on residential properties would be installed and operated. Bioventing in concert with SVE would be used to increase oxygen levels in subsurface soils and promote microbial activity and degradation of longer-chain petroleum hydrocarbons. Bioventing would be integral with SVE via cyclical operation of SVE wells. After installation and startup of the SVE/bioventing system, periodic monitoring of the SVE/bioventing system would be conducted. Results of the monitoring and analyses, in conjunction with measured flow rates, field readings and time of operation,

would be used to estimate the mass of VOCs removed from the subsurface, degradation of longer-chain hydrocarbons, and as a basis for optimizing and eventual shutdown of SVE operations and switching from the SVE/bioventing to bioventing mode of operations.

- Sub-slab vapor mitigation would be implemented at properties where RAOs for soil vapor would not be met based on potential exposure due to vapor intrusion of petroleum hydrocarbons or chlorinated ethenes (e.g. PCE and TCE) from soil vapor to indoor air, and where detected methane concentrations in sub-slab soil vapor probe samples exceed the upper methane site-specific cleanup goal (SSCG). In addition, the RP would install a sub-slab mitigation system at any residence at which a homeowner requests such a system.
- LNAPL recovery would continue from wells MW-3 and MW-12 on a monthly basis, and if LNAPL is detected in other wells, monthly LNAPL recovery would be initiated on these wells if LNAPL accumulates at a measureable thickness to the extent technologically and economically feasible and where a significant reduction in current and future risk to groundwater would result. LNAPL recovery would be conducted using a dedicated submersible pump if LNAPL thickness of greater than 0.5 feet occurs.
- Groundwater Source Reduction and Monitored Natural Attenuation – Chemicals of concern (COCs) in groundwater would be reduced to the extent technologically and economically feasible via source reduction and MNA. If, based on a 5-year review following initiation of SVE system operation, groundwater plumes are not stable or declining and site COCs in groundwater do not show a reduction in concentration, an evaluation of additional groundwater treatment technologies would be conducted and implemented as needed.

For soil less than 5 feet bgs and sub-slab soil vapor, potential exposures would be addressed in the short term. Deeper soil, soil vapor, and groundwater risk reduction would be implemented over a longer period of time through SVE/bioventing and MNA. SVE/bioventing would be installed after the excavation of the soils, but before final backfill and re-landscaping for properties where both activities are scheduled to occur.

There are 12 properties for which access has not been granted and the required sampling has been completed at 86 percent of the residences including two rounds of indoor air sampling as of October 17, 2014. If access is granted to these properties during implementation of the RAP, sampling would be conducted, and the results would be analyzed consistent with the approach described above to determine what remedial measures, if any, would be taken.¹

¹ For purposes of the environmental impacts, these additional properties are assumed to require remedial actions so as to provide a conservative or worse-case analysis. While the remedial actions for these properties are still

Impacted soil would be excavated from 219 residential properties where results of the previous site assessments indicate that RAOs and the more stringent of the health risk-based or leaching to groundwater criteria are not met under existing conditions. Soils would be excavated to a depth of 5 feet bgs at 219 properties (410 yards) with targeted excavated to 10 feet bgs at 97 of the properties at selected yards (146 yards). (These numbers include the 12 properties for which no soils data exist.) Excavation would occur from both landscaped areas and areas currently covered by hardscape, including walkways, driveways, patio areas, and hardscape associated with landscaping. In general, the lateral extent of the excavation would be up to the back of the City sidewalk and up to the houses, subject to required setback distances.

On average, a conservative estimate of approximately 611 cubic yards (CY) of soils would be excavated from each of the 122 properties identified for 5 foot excavation, and approximately 867 CY from each of the 97 properties identified for targeted 10-foot excavation. Approximately 161,700 CY plus a 10 percent contingency of 16,170 CY for a total of 177,870 CY of soils would be removed from residential excavations. This estimate assumes that soils would be excavated to a depth of 5 feet from the front, side, and back yards of each property; targeted deeper excavation to 10 feet would occur only in front and/or back yards of identified properties. During the preparation of the Property-Specific Remediation Plans (PSRPs), the specific excavation areas for each property would be identified. In some cases, the volume of soil to be excavated for each property would be less or more than the average value.

Implementation of remediation activities would potentially commence in Fall 2015 and would be implemented in phases of eight properties. Based on approximately eight to ten weeks to complete a cluster of eight properties, with some overlapping of remediation activities, the suite of residential remedial construction activities including excavation, installation of SVE/bioventing well and piping, backfill, installation of sub-slab vapor mitigation, and site restoration, implementation of the RAP is estimated to take approximately six years. This estimate of time needed to complete these activities is dependent upon obtaining access to the properties in a timely manner and does not include loss of time due to inclement weather or other delays that might occur outside of the RPs control.

EXPEDITED IMPLEMENTATION OPTION

Based on experience in the field during the initial implementation of the RAP, it is possible that the number of properties being remediated at one time could be increased. This would only occur if it is feasible and determined to be safe for residents and workers. Under the Expedited Implementation Option, the number being actively remediated could be incrementally increased with up to 16 properties active at one time, compared to up to 8 properties under the

to be determined, the description of the RAP's components will not materially change by these determinations. Since these properties are included in the analyses, should all or a portion of these properties require remedial actions, the associated environmental impacts would not change.

base remedy. Given the overlap in activity with the clusters there could be up to 32 properties in some stage of remediation or restoration at one time. The Expedited Implementation Option would result in an increase in the number of workers and number of properties active at one time on the site, which would reduce the overall time frame necessary for the implementation of the RAP. This approach would not modify the construction hours but rather the amount of activity occurring at one time on the site. As with the RAP, the Expedited Implementation Option would begin in 2015. However, with the concentrated effort, it is anticipated that the remediation would be completed in 2019 within an approximately four-year time frame.

EFFECTS DETERMINED TO BE LESS THAN SIGNIFICANT/NO IMPACT IN THE INITIAL STUDY

The Regional Board issued a Notice of Preparation (NOP) and conducted an Initial Study to determine the potential environmental effects of the Project. The NOP and Initial Study are contained in Appendix A of the Draft EIR. In the course of this evaluation, the Project was found to have no impact or a less than significant impact in certain impact categories because a Project of this type and scope would not create such impacts or because of the absence of Project characteristics producing effects of this type or due to existing regulatory requirements. The following effects were determined not to be significant or to be less than significant for the reasons set forth in the Initial Study (Appendix A of the Draft EIR), and therefore were not analyzed further in the Draft EIR, except where noted for related environmental issues.

AESTHETICS

- The Project will not impact scenic vistas as there are no scenic vistas in the area.
- The Project will not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- The Project will not degrade the existing visual character or quality of the site and its surrounding.
- The Project will not generate new sources of light and glare.

AGRICULTURAL AND FORESTRY RESOURCES

- The Project will not impact farmland, agricultural resources, and forest land as the Project is located within an existing residential subdivision.

BIOLOGICAL RESOURCES

- The Project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species

in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

- The Project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- The Project will not have a substantial adverse effect on federally protected wetlands through direct removal, filling, hydrological interruption, or other means.
- The Project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- The Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- The Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

CULTURAL RESOURCES

- The Project will not cause a substantial adverse change in the significance of a historical or archaeological resource.
- The Project will not destroy unique paleontological resources or geologic feature.
- The Project will not disturb any human remains.

GEOLOGY AND SOILS

- The Project will not expose people or structures to substantial adverse effects resulting from landslides given that the site is relatively flat.
- The Project will not have soils capable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater since the residential subdivision is already served by sewers.

HAZARDS AND HAZARDOUS MATERIALS

- The Project will not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.
- The Project will not be located within two miles of a public airport or within the vicinity of a private airstrip.
- The Project will not impair implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan.
- The Project will not expose people or structures to significant risk of loss, injury or death involving wildland fires.

HYDROLOGY AND WATER QUALITY

- The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- The Project will not place housing within a 100 year floodplain or impede or redirect flood flows as the site is developed with a residential subdivision.
- The Project will not expose people or structures to a significant risk or loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- The Project will not be exposed to inundation by seiche, tsunami, or mudflow.

LAND USE AND PLANNING

- The Project will not physically divide an established community.
- The Project will not conflict with local land use plans and applicable policies.
- The Project will not conflict with an applicable habitat conservation plan or natural community conservation plan.

MINERAL RESOURCES

- The Project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

- The Project will not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

POPULATION AND HOUSING

- The Project will not induce substantial population growth in an area either directly or indirectly.
- The Project will not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- The Project will not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

PUBLIC SERVICES

- The Project will not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services including:
 - Fire protection
 - Police protection
 - Schools
 - Parks
 - Other governmental services (including roads)

RECREATION

- The Project will not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- The Project will not require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

TRAFFIC/CIRCULATION

- The Project will not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

- The Project will not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections or incompatible uses (e.g., farm equipment)).
- The Project will not result in inadequate emergency access.
- The Project will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

UTILITIES AND SERVICE SYSTEMS

- The Project will not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- The Project will not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- The Project will not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- The Project will not result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.

IMPACTS FOUND NOT TO BE SIGNIFICANT PRIOR TO MITIGATION IN THE ENVIRONMENTAL IMPACT REPORT

The Regional Board found that the Project would have a less than significant impact without mitigation measures, either directly or cumulatively, with respect to a number of environmental topics discussed in the EIR. For some of these topics, compliance with applicable regulatory requirements is assumed, as discussed in the EIR, which would ensure that impacts remain less than significant. In addition, for some issues, project design features ("PDFs") would be incorporated into the implementation of the RAP, which effectively ensure impacts would be less than significant. The PDFs are included in the Mitigation Monitoring and Reporting Program (MMRP) to ensure their implementation as a part of the Project. A less than significant environmental impact determination was made for each topic area listed below. Applicable PDFs are listed within the issue area.

A. AIR QUALITY

(1) Air Quality Plan Conflicts

Short-Term Impacts

Implementation of the RAP would utilize equipment meeting stringent emission standards. In addition, implementation of the RAP would be temporary in nature and would not result in a permanent increase in employment. Therefore, the Project would not conflict with the applicable growth projections and control strategies in the Air Quality Management Plan (AQMP). Projects that are consistent with the applicable growth projections and control strategies used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD's project-level recommended thresholds. Therefore, short-term and long-term impacts associated with implementation of the RAP would not conflict with or obstruct implementation of the applicable air quality plan and impacts would be less than significant. PDFs AQ-1 to AQ-12 would prevent the occurrence and/or minimize the significance of potential impacts.

Project Design Features

- PDF AQ-1** All off-road diesel construction equipment remaining on-site for more than 15 work days will meet USEPA Tier 3 off-road emission standards, if commercially available locally. Use of Tier 3 engines results in a substantial reduction in NO_x emissions compared to similar Tier 2 or lower engines, and has been shown to increase fuel economy over similar Tier 2 engines.² Documentation of all off-road diesel construction equipment on-site including Tier 3 certification will be maintained and made available to the Regional Board for inspection upon request.
- PDF AQ-2** All on-road waste haul trucks exporting soil to the appropriate receiver facility will be model year 2007 or newer or retrofitted to comply with USEPA Year 2007 on-road emissions standards. Documentation of all on-road trucks exporting soil will be maintained and made available to the Regional Board for inspection upon request.
- PDF AQ-3** The contractor will prohibit the idling of on- and off-road heavy duty diesel vehicles for more than five minutes at a time. This project design feature is consistent with California regulations and laws as well as CARB ATCM requirements.

² *Komatsu Technical Report, Development of Tier 3 Engine ecot3, Vol. 52, No. 157, http://www.komatsu.com/CompanyInfo/profile/report/pdf/157-03_E.pdf. 2006. Accessed August 2014.*

- PDF AQ-4** The contractor will install SVE and bioventing systems to address petroleum hydrocarbons, VOCs, and methane in soil vapor and to promote degradation of residual hydrocarbon concentrations that do not meet Remedial Action Objectives (RAOs), or are not removed by excavation. The SVE and bioventing systems will require a permit from the SCAQMD. Periodic monitoring will be conducted as specified in the SCAQMD Permit.
- PDF AQ-5** Sub-slab vapor mitigation will be installed at 28 identified properties (27 based on RAO exceedance for potential vapor intrusion and 1 based on SSCG exceedance for methane). Sub-slab vapor mitigation will also be installed at any additional properties within the Carousel Tract where the homeowner requests a sub-slab mitigation system. The system will use sub-slab depressurization (SSD), which will create a negative pressure below the slab of the residence using a fan to remove air from below the slab and exhausting it above the building.
- PDF AQ-6** The project will comply with applicable SCAQMD rules that govern the control of air pollutant emissions from the site, including: SCAQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil.
- Submit a Mitigation Plan in accordance with Attachment A of SCAQMD Rule 1166, and obtain approval from the SCAQMD. VOC suppression measures shall include water mist as a first level of vapor and odor control. Care will be taken to ensure that the soil is not over-saturated, which could generate runoff that would need to be managed and increase the weight of soil to be disposed. Based on monitoring data or odor perception, vapor and odor control will be implemented on an as needed basis. Based on experience from the excavation pilot test, Rusmar AC-565 Long Duration Foam was found to be most effective at controlling vapors and odors. This type of foam, or equivalent, and necessary support equipment will be staged and ready for application at locations where remedial excavations are conducted and there is the potential for odor releases. A copy of the approved plan will be on-site during the entire excavation period.
 - Monitor for the presence of VOC, and implement the approved mitigation plan when VOC-contaminated soil, as defined in Rule 1166, is detected.
 - If required, obtain a SCAQMD Permit for project activities, and provide a copy of said Permit to the Regional Board.
- PDF AQ-7** The project will implement fugitive dust control measures consistent with SCAQMD rules and regulations. The dust control measures will consist of various elements including: proper maintenance and watering of internal haul roads; water spraying of soil excavated and placed for cover

or soil reconsolidation; and applying water on intermediate soil cover areas. This project design feature is consistent with SCAQMD Rule 403 requirements.

- PDF AQ-8** Exposed surfaces and active excavation sites will be controlled with water and/or suppressants certified by CARB, the SCAQMD, or other air pollution control agency, to control fugitive dust, vapors, and odors. Such suppressants include foams (e.g., Rusmar AC-565 Long Duration Foam), nontoxic binders, or other suppressants to reduce fugitive dust emissions and to control vapors and odors. Logs of water purchase or usage and suppressant application (including brand/manufacturer, date of application, area treated and amount applied) will be maintained by the RP and made available to the Regional Board and SCAQMD for inspection upon request.
- PDF AQ-9** Prior to leaving the site, each haul truck, and other delivery trucks that come in contact with site waste, will be inspected and put through procedures, such as brushing, to remove loose debris from tire wells and on the truck exterior. Haul truck operators (drivers) will be required to have the proper training and registration by the State and as applicable to the material they will be hauling. Trucks transporting hazardous waste are required to maintain a hazardous waste manifest that describes the content of the materials. These manifests will be supplied by the waste receiver facility and prepared by the contractor or trucking company and the Kast Property RP representative(s) prior to export off-site. The contracted trucking company will be a certified hazardous waste transportation contractor, if the material is profiled as hazardous. A log of manifest data will be maintained by the RP and made available to the Regional Board for inspection upon request.
- PDF AQ-10** Waste haul trucks and soil delivery trucks entering and exiting the site will be required to follow the approved traffic plan that establishes the trucking route, days and hours of truck operation, and various requirements to provide traffic, pedestrian and bicycle safety. Truck operators will be provided with a trucking route map and hours of operation allowed.
- PDF AQ-11** In order to minimize traffic congestion at or near the site, construction worker parking will be provided at a nearby off-site location. Shuttles and/or vans will be provided to transport construction workers from the off-site parking location to the site.
- PDF AQ-12** To the maximum practical extent, recyclable materials, including non-hazardous construction and demolition debris, will be reused or recycled.

- PDF AQ-13** Under the Expedited Implementation Option, the contractors shall require that two clusters under active remediation and restoration are separated by a minimum distance of 64 meters (210 feet) as measured from the closest site boundary of each cluster.

Long-Term Impacts

Implementation of the RAP would result in restoration of affected properties and infrastructure (e.g., yards, landscaping, hardscape, fencing, streets) to like conditions. Long-term emissions from the SVE/bioventing system, sub-slab vapor mitigation system, and from periodic monitoring and maintenance activities would be negligible. The RAP would not result in a change in long-term population and would result in a small number of jobs for the continuation of monitoring and maintenance. The RAP would not be considered inconsistent with the assumptions upon which the AQMP was based. Because the project would not be inconsistent with the growth projections (jobs and housing) used in the development of the AQMP and emissions associated with periodic monitoring and maintenance activities would be negligible, the RAP (Base Case and Expedited Implementation Option) would not conflict with or obstruct implementation of the AQMP, and impacts would be less than significant.

(2) Violation of Air Quality Standards

Short-Term – Regional Impacts

Implementation of the RAP would result in short-term emissions through the use of heavy-duty construction equipment and through vehicle trips generated from haul trucks, vendor trucks, and construction workers and visitors traveling to and from the site. Criteria pollutant emissions were calculated for the activities associated with the implementation of the RAP, including average daily and peak daily activity and taking into account the overlap of activities that would occur. Regional emissions were also calculated for trucks traveling to a likely material receiver facility within the Mojave Desert Air Basin (MDAB). Results of the dispersion modeling analysis indicate that implementation of the RAP will not result in concentrations of pollutants in the ambient atmosphere that will exceed applicable air quality standards or contribute to an existing or projected air quality violation. Thus, implementation of the RAP (Base Case and Expedited Implementation Option) would result in a less than significant short-term impact with regard to violation of air quality standards.

The Los Angeles County portion of the South Coast Air Basin (SoCAB) is designated nonattainment for ozone, PM₁₀ (state only), and PM_{2.5}. Emissions from the Project would not exceed the applicable mass emission thresholds for regional NO_x, PM₁₀, and PM_{2.5}. Therefore, implementation of the RAP (Base Case and Expedited Implementation Option) would not result in a cumulatively considerable net increase of a criteria pollutant for which the region is non-attainment, and impacts would be less than significant.

Long-Term – Regional Impacts

Regional air pollutant emissions associated with long-term operations would be generated by long-term activities, including operation of the SVE/bioventing system and worker commute trips to support monitoring and maintenance activities. The number of daily trips to the site would be negligible. Criteria pollutant emissions from the SVE/bioventing system would consist of small amounts of VOCs that would not exceed the VOC emission levels determined under the short-term impacts. As a result, long-term emissions would not exceed the thresholds and impacts related to regional emissions from long-term operations of the proposed RAP (Base Case and Expedited Implementation Option) would be less than significant. In addition, no trucking would occur after the implementation of the RAP and therefore long-term regional emissions would not occur in the MDAB.

(3) Exposure to Substantial Pollutant Concentrations

Short-Term – Localized Impacts

During implementation of the RAP, active areas undergoing demolition, excavation, trenching, equipment installation, and restoration would occur on up to 16 properties at one time. Emissions of NO_x are generated by the combustion of diesel fuel in the equipment needed to implement the RAP. The particulate matter emissions resulting in the PM₁₀ and PM_{2.5} emissions are a combination of dust created by the earthmoving and associated activities needed to remove materials and the exhaust of Diesel Particulate Matter (DPM) from the combustion of fuel in the equipment on-site. Equipment associated with the SVE/bioventing system could be located off-site; however, impacts associated with off-site equipment installation would be similar to or less than the emissions from other activities. PDFs would be implemented to reduce emissions of NO_x, PM₁₀, and PM_{2.5}, which includes USEPA Tier 3 complaint off-road equipment (PDF AQ-1), dust suppressants (PDFs AQ-7 and AQ-8), and enhanced track-out prevention devices (PDF AQ-10).

The analysis is based on the most conservative screening criteria using the closest sensitive receptor distance provided in the *Localized Significance Threshold Methodology*. The maximum localized emissions would not exceed the localized thresholds for NO_x, CO, PM₁₀, and PM_{2.5}. Therefore, with respect to localized short-term emissions, implementation of the RAP (Base Case and Expedited Implementation Option) would not expose on-site or off-site sensitive receptors to short-term emissions that exceed the localized thresholds and impacts would be less than significant.

Long-Term – Localized Impacts

Implementation of the RAP would not result in a long-term increase in localized ambient air quality pollutant levels for NO_x, CO, PM₁₀, and PM_{2.5}. As a result, the project would result in a less than significant impact with regard to localized long-term impacts. With regard to

exposure of sensitive receptors to high levels of CO, the project would not result in a large number of vehicle trips after the excavation and installation of the SVE/bioventing system, and long-term operation of the project would not likely result in a CO hotspot. As a result, the project would result in a less than significant long-term impact with regard to CO hotspots. Therefore, long-term impacts regarding exposure of sensitive receptors to substantial pollutant concentrations would be less than significant.

(4) Odors

Short-Term Construction

Odor generating compounds may be released during excavation when soils containing petroleum hydrocarbons are exposed during excavation. Implementation of the RAP would include several measures to minimize the release of odorous compounds, including water mist that would be used to provide the first level of vapor and odor control. Based on excavation pilot testing completed at the site, additional odor and vapor control was determined to be achievable during excavation activities by using long-acting vapor suppressant foam (e.g., Rusmar foam) when odorous soils are encountered. Implementation of these measures is anticipated to effectively minimize odor impacts. Emissions and odors during implementation of the RAP (Base Case and Expedited Implementation Option) would be controlled to the maximum extent possible and odor-related impacts would be less than significant.

Long-Term

The proposed RAP does not include any uses identified by the SCAQMD as being associated with odors. Implementation of the RAP would result in restoration of affected properties and infrastructure (e.g., yards, landscaping, hardscape, fencing, streets) to like conditions. The remediation equipment would employ thermal oxidation, catalytic oxidation, and/or GAC treatment, as appropriate as concentrations decrease over time, to treat lighter volatile-range petroleum hydrocarbons and VOCs before discharge to the atmosphere. Therefore, the long-term activities of the proposed RAP (Base Case and Expedited Implementation Option) would not be a substantial source of odors, and potential odor impacts would be less than significant.

(5) Cumulative Impacts - Air Quality

With respect to the short-term air quality emissions and cumulative SoCAB-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to Federal CAA mandates. Implementation of the RAP would comply with SCAQMD Rule 403 and Rule 1166 requirements as well as applicable AQMP emissions control measures. These same requirements would also be imposed on construction projects SoCAB-wide. Implementation of the RAP would result in short-term regional emissions that would not exceed the significance thresholds and impacts would be less than significant. As

such, cumulative short-term impacts to regional air quality during proposed RAP implementation would also be less than significant.

With regard to long-term impacts, a significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant. Implementation of the RAP would not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the AQMP. Nonetheless, SCAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. Long-term emissions would not exceed the SCAQMD regional significance thresholds. Therefore, the long-term emissions of non-attainment pollutants and ozone precursors would be cumulatively less than significant.

With respect to potential odor impacts, neither the project nor any of the related projects (which are primarily institutional, general office, mixed-use, residential, industrial/commercial uses) have a high potential to generate odor impacts. Implementation of the RAP would include several measures to minimize the release of odorous compounds such as water mist and long-acting vapor suppressant foam (e.g., Rusmar foam) when odorous soils are encountered. Any related project that may have a potential to generate objectionable odors would be required by SCAQMD Rule 402 (Nuisance) to implement BACT to limit potential objectionable odor impacts to a less than significant level. Thus, potential odor impacts from the project and related projects are anticipated to be less than significant individually and cumulatively.

B. GEOLOGY AND SOILS

(1) Seismic and Geologic Stability Hazards

Short-Term

Implementation of the RAP would require grading within proximity of residences. However, no excavation would occur under structures. Nonetheless, excavation at the site could result in substantial damage to structures or cause or accelerate geologic hazards that would expose people to substantial risk of injury if a seismic event were to occur during implementation of the RAP. Project design features, including PDFs GEO-1 through GEO-3, which apply to the required geotechnical report, would ensure that final grading designs would incorporate adequate support of cuts (if needed), excavation methods, or setbacks from building foundations during excavation to avoid adverse effects of seismic ground shaking on adjacent buildings during the site remediation. Monitoring of the Site would also occur on a regular basis throughout the construction activities and if conditions are encountered that are different than anticipated corrective action would be taken in accordance with PDF GEO-4. In addition, Project construction activities would be subject to regulations of the City of Carson Municipal Code. With the incorporation of the PDFs, the RAP (Base Case and Expedited Implementation

Option) would not cause a seismic event to result in substantial damage to structures or cause or accelerate geologic hazards that would expose people to substantial risk of injury.

Project Design Features

- PDF GEO-1** Prior to issuance of a grading permit, a final geotechnical investigation and remedial excavation grading plan with final design recommendations applicable to every excavated area will be prepared by a California-registered geotechnical or civil engineer and submitted to the LACDPW and City of Carson for review. The geotechnical report will describe the characteristics of underlying natural or fill soils, including expansive soils, potential differential settlement and varying soils strength and the placement of backfill. The geotechnical report will contain recommendations for any needed cut slopes or compaction of fill materials. The remedial excavation grading plan will detail the excavation and backfill design details based on the findings and recommendations of the geotechnical report.
- PDF GEO-2** The geotechnical report and remedial excavation grading plans will include site-specific design criteria related to the excavation activities in proximity to foundations and footings.
- PDF GEO-3** Pre-excavation and post-excavation surveys of the existing structures and improvements at the site and at adjacent properties that have granted access will be conducted to document pre-excavation conditions and any changes in those conditions following excavation. Documentation will consist of written notes, digital photographs, and videos. Existing cracks or other distress present in structures or concrete will be documented and measured. Cracks will be monitored by direct measurement using a dial caliper capable of measuring distances to approximately ± 0.001 inch, or using commercially available crack monitoring devices installed on the existing cracks, such that any potential change of crack size during implementation of the RAP can be monitored and documented.
- PDF GEO-4** Full time observation should be provided by qualified technical staff working under the responsible charge of a licensed engineer. Any conditions encountered within the field that are different than those anticipated (i.e. irrigation water seepage, localized loose soils, clean sand, etc.) will be brought to the immediate attention of the geotechnical engineer for corrective measures.
- PDF GEO-5** Clean soil will be imported for backfill of excavations from an offsite source. Before importing the backfill soil to the site, samples of the proposed import soil will be submitted for laboratory geotechnical and

chemical characterization analysis. Geotechnical tests include gradation, plasticity index (PI), maximum density and optimum moisture, and corrosivity tests. The geotechnical engineer will approve the backfill soil prior to its import, placement, and compaction at the site.

PDF GEO-6 Upon completion of excavation, concrete removal and environmental sampling (as appropriate), excavated areas will be backfilled as soon as possible. Backfill soils would be moisture conditioned to near optimal moisture content and compacted to at least 90 percent relative compaction, or as determined by the Geotechnical Engineer and approved by Los Angeles County Department of Public Works (LACDPW) and the City of Carson. Borings from auger excavation would be backfilled with controlled low strength material (CLSM, also referred to as flowable fill or sand/cement slurry) the same day they are excavated. Where slot trenching is used for 5-foot excavations or for targeted deeper excavations to 10 feet, the lower part of the slot trenches would also be backfilled with CLSM. The upper 3 feet of excavations would be backfilled with certified clean imported soil. Backfill soil would be free of deleterious organic matter (i.e., vegetation) and cobbles larger than four inches in diameter, and would be approved by the Geotechnical Engineer. The upper foot of soil backfill within landscaped areas would be topsoil suitable for vegetation growth and would be compacted to not more than 85 percent relative compaction.

Long-Term

Any potential long-term impacts would be associated with changes that would result in increased ground shaking during a seismic event. The replacement of existing stable soils with unconsolidated or poor quality soils could increase amplification or other geologic hazards. The implementation of PDF GEO-6 provides that, upon completion of excavation, excavated areas would be backfilled as soon as possible with moisture conditioned soils and compacted to a relative compaction of at least 90 percent, for soils placed from 3 feet bgs to one foot bgs. Adequate compaction of backfill would ensure that the site would be returned to its existing stable condition and would not present a potential geologic hazard resulting from ground shaking. Therefore, the RAP (Base Case and Expedited Implementation Option) would result in a less than significant impact.

(2) Unstable Soils

Short-Term

Excavation activities would not affect soils and materials below 5 or 10 feet bgs or underlying geologic units. In terms of geologic stability, excavations to 5 bgs or deeper would require shoring of the cut area, setbacks from structures, sloped excavation sidewalls, and/or slot

trenching in accordance the requirements of the geotechnical report for engineered grading. Placement of clean fill would need to meet compaction requirements under the City of Carson Code. Because of the shallow depth of excavation (5 to 10 feet) and setbacks from building foundations, the excavation of soil would not alter underlying geologic units or the character of existing soil beneath existing foundations. Surface soil would be replaced by appropriately placed backfill that would meet County Building Code Section J107.4 to prevent fill material containing organic, frozen, or other deleterious materials that could contribute to instability. Implementation of PDF GEO-5 requires that imported clean soil would be tested for suitability (stability, non-corrosive properties, etc.) as fill materials. Under PDF GEO-6, backfill would begin upon completion of excavation and installation of other remedial elements.

Los Angeles County Building Code Sections J105.3, Field Engineer Inspection, and J105.4, Soils Engineer Inspection, as well as PDF GEO-4 and PDF GEO-6, require observation during grading, testing for required compaction and safety of structures due to any slippage or settlement of the completed grading, and to ensure that conditions in approved engineering reports are implemented. The project site is essentially level and no landsliding is anticipated. With implementation of County Building Code requirements and project design features, the RAP (Base Case and Expedited Implementation Option) would avoid lateral spreading, subsidence, liquefaction, or collapse during construction and impacts would be less than significant.

Long-Term

Any potential long-term impacts would be associated with changes that would cause or increase instability and potentially result in lateral spreading, subsidence, liquefaction, or collapse. Adequate compaction of backfill would ensure that the site would be returned to its existing stable condition and would not present a potential long-term geologic hazard resulting from ground shaking. In addition, project design features would ensure that stable soil conditions would be achieved and maintained. In addition, PDF GEO-3, which would provide a data baseline against which future structural changes could be measured, would indicate any geologic instability and, thus, provide a means by which potential geologic hazards could be addressed. With the implementation of project design features, the project would avoid or address adverse geologic conditions, such as poor soil consolidation that could cause lateral spreading, subsidence, liquefaction, or collapse. The impact of the RAP (Base Case and Expedited Implementation Option) with respect to landslide, lateral spreading, subsidence, liquefaction, or collapse would be less than significant impact.

(3) Soil Erosion

Short-Term

During construction activities associated with implementation of the RAP, soils and fill soils imported to the Site could be exposed to rain and wind, thus allowing for possible erosion. The RAP would result in the removal of approximately 177,870 CY of soil from residential sites (including a 10 percent contingency), approximately 8,100 CY from street excavations, and 725 CY for well preparation, for a total of approximately 186,945 CY. Although surface soils would be removed from the residential properties, the removal of these materials would not constitute a substantial loss of topsoil. The Storm Water Pollution Prevention Plan (SWPPP) and Wet Weather Erosion Control Plans (WWECP), which would be prepared in accordance with the County Building Code, Appendix J, and the Statewide General Construction Stormwater Permit would require best management practices for the control of runoff and potential transport of sediment or soil erosion during excavation and backfill operations. The excavated soil would be replaced by backfill, which with PDF GEO-5, would be tested for gradation, plasticity, maximum density and optimum moisture, and corrosivity. Thus, topsoil in landscaped areas would be replaced in like condition and with PDF GEO-7 landscaping would be restored to “like conditions” or as agreed to with the homeowners. Under the Expedited Implementation Option, overall activity at any one time would be increased and the quantity of soil exposed to potential erosion forces would be greater. As with the Base Case, the PDFs and Best Management Practices (BMPs) would be applicable to all areas where soil is exposed under the Expedited Implementation Option thereby minimizing soil erosion. Therefore, there would be no significant loss of top soil associated with the RAP (Base Case and Expedited Implementation Option).

Long-Term

Long-term erosion has the potential to occur in areas of exposed backfill soils. However, PDF GEO-7 requires that properties be restored to like condition, including topsoil in landscaped and softscape areas. With the restoration of landscaping and any removed hardscape, backfill soils would be covered and the potential for erosion would be substantially reduced. Therefore, the long-term impact of the RAP (Base Case and Expedited Implementation Option) with respect to erosion and loss of top soil would be less than significant.

Project Design Feature

PDF GEO-7 Landscaping of backfilled properties would be restored to “like conditions” or as agreed to with the homeowners, as allowable under current state and local regulations.

(4) Cumulative Impacts – Geology and Soils

Geology and soils impacts are generally site-specific and there is typically little, if any, cumulative relationship between the implementation of a project and development/remedial activities within a larger cumulative area. Adherence to all relevant plans, codes, and regulations with respect to project design and construction would reduce project-specific and cumulative geologic impacts to a less-than significant level. Therefore, since geologic hazards are site-specific, the RAP, in combination with other past, present, and reasonably foreseeable future projects, would not create a potentially significant cumulative impact on geological resources.

Impacts from erosion and loss of topsoil from site development and operation can be cumulative in effect within a watershed. The West Coast Basin of the Los Angeles Coastal Plain encompasses the immediate watershed region and forms the geographic context for cumulative erosion impacts. Development throughout the watershed would be subject to State and local runoff and erosion prevention requirements, including the applicable provisions of the general construction permit, BMPs, and Phases I and II of NPDES, as well as implementation of fugitive dust control measures of SCAQMD Rule 403. These measures are implemented as conditions of approval of project development and subject to continuing enforcement. As a result, it is anticipated that cumulative impacts on the West Coast Basin due to runoff and erosion from cumulative development activity would be less than significant.

C. GREENHOUSE GAS EMISSIONS

(1) Greenhouse Gas Emissions

Short-Term

Implementation of the RAP has the potential to generate short-term greenhouse gas (GHG) emissions through the use of heavy-duty construction equipment and through vehicle trips generated from export and import of materials, visitors and workers traveling to and from the project site. Project design features implemented during the remedial activities that would limit, minimize, and reduce short-term GHG emissions include: utilizing construction equipment meeting the USEPA Tier 3 off-road emission standards (PDF AQ-1); utilizing on-road export waste haul trucks that at a minimum comply with the USEPA 2007 on-road emissions standards (PDF AQ-2); utilizing low carbon fuels as required by state law (PDF GHG-1); use of shuttles and/or vans to transport some of the workers from the off-site parking locations to the site (PDF AQ-11) and, to the maximum practical extent, recycling or reusing viable materials, including non-hazardous construction and demolition debris (PDF AQ-12). Implementation of the RAP would result in the net increase of short-term GHG emissions during construction activities. However, the net increase in short-term GHG emissions would not exceed SCAQMD's applicable threshold of significance for annual GHG emissions. Thus, short-term GHG emissions associated with implementation of the RAP would result in a less than significant impact.

Under the Expedited Implementation Option, with the increase in the number of properties being remediated at one time the GHG emissions occurring in a single year would increase as a result of the use of additional heavy-duty construction equipment, and increased numbers of haul trucks, vendor trucks, and construction worker trips. With the implementation of the PDFs that would limit, minimize, and reduce short-term GHG emissions during remedial activities, the short-term GHG emissions would not exceed SCAQMD's 10,000 MTCO₂e per year threshold.

Project Design Features

- PDF AQ-1** All off-road diesel construction equipment remaining on-site for more than 15 work days will meet USEPA Tier 3 off-road emission standards, if commercially available locally. Use of Tier 3 engines results in a substantial reduction in NO_x emissions compared to similar Tier 2 or lower engines, and has been shown to increase fuel economy over similar Tier 2 engines.³ Documentation of all off-road diesel construction equipment on-site including Tier 3 certification will be maintained and made available to the Regional Board for inspection upon request.
- PDF AQ-2** All on-road waste haul trucks exporting soil to the appropriate receiver facility will be model year 2007 or newer or retrofitted to comply with USEPA Year 2007 on-road emissions standards. Documentation of all on-road trucks exporting soil will be maintained and made available to the Regional Board for inspection upon request.
- PDF AQ-3** The contractor will prohibit the idling of on- and off-road heavy duty diesel vehicles for more than five minutes at a time. This project design feature is consistent with California regulations and laws as well as CARB ATCM requirements.
- PDF AQ-11** In order to minimize traffic congestion at or near the site, construction worker parking will be provided at a nearby off-site location. Shuttles and/or vans will be provided to transport construction workers from the off-site parking location to the site.
- PDF AQ-12** To the maximum practical extent, recyclable materials, including non-hazardous construction and demolition debris, will be reused or recycled.
- PDF GHG-1** The project will comply with the use of low carbon vehicle fuels as required under State law.

³ *Komatsu Technical Report, Development of Tier 3 Engine ecot3, Vol. 52, No. 157, http://www.komatsu.com/CompanyInfo/profile/report/pdf/157-03_E.pdf. 2006. Accessed August 2014.*

Long-Term

Long-term emissions of GHGs would be generated by worker commute trips to support monitoring and maintenance activities. The number of vehicle trips to the site would be negligible and annual long-term GHG emissions would be several orders of magnitude smaller than the short-term GHG emissions. While methane was detected at one property from biodegradation of residual petroleum hydrocarbons at very low concentrations (less than 0.01 percent), no methane exceedances were found at this property during the indoor air screening, and methane was not detected in indoor air samples analyzed by a laboratory. Thus, methane emissions from the SVE/bioventing system would be negligible. As a result, impacts related to GHG emissions from long-term operations of the proposed RAP would be less than significant.

(2) Conflicts with Greenhouse Gas Reduction Plans

The State has promulgated regulations and programs for the purpose of reducing GHG emissions. The GHG emissions analysis in the EIR was performed in accordance with SCAQMD and CARB guidance developed in compliance with, and as a result of, those regulations and programs. The result of the analysis of the project's potential impacts in terms of GHG and global climate change indicates that the short-term and long-term GHG emissions from the project alone would not be expected to cause a direct physical change in the environment. Therefore, the RAP (Base Case and Expedited Implementation Option) would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHG and impacts would be less than significant.

(3) Cumulative Impacts – Greenhouse Gas Emissions

The project would cause a temporary increase in GHG emissions in the short-term, but is not expected to exceed the applicable significance threshold. The project would minimize short-term GHG emissions by using newer, cleaner, and energy efficient equipment as available. Long-term GHG emissions would be relatively minimal and consistent with applicable GHG reduction strategies. Accordingly, the project would not cause a cumulatively considerable impact and cumulative impacts would be less than significant.

D. HAZARDOUS MATERIALS

(1) Incremental Increase in Cumulative Lifetime Cancer Risk/Chronic or Acute Non-Cancer Hazard

Short-Term

During excavation activities, COCs contained in the soil would be released to the atmosphere in the form of fugitive dust and volatile gases. In addition, heavy equipment and trucks operating on-site would release diesel particulate matter (DPM). The COCs and DPM

released as a result of the RAP may pose a hazard to the public occupying the site or the environment.

Sensitive receptors analyzed in the health risk assessment (HRA) include on-site residential receptors and off-site receptors including residential uses, students, staff and visitors to Wilmington Middle School to the southwest of the site as well as workers located to the west of the site. As cancer and chronic health risk impacts are based on long-duration exposure times, receptors at which individuals may reside at for long periods of time (>8-hours per day) were analyzed for cancer and chronic health risk impacts. These receptors include residential, the middle school, and workers. Because acute risk impacts are based on short-duration exposure times (<1-hour), all receptors (residential, school, worker) were analyzed for acute health risk impacts

The HRA was conducted assuming the combined impact from the various chemicals that would be emitted from implementation of the RAP. In addition, in order to identify the health risk impact contribution by each source and chemical, receptors with the maximum impact were further analyzed to identify source and chemical contribution. Based on the HRA the maximum cancer risk at the on-site residential receptor, off-site residential receptor, school receptor, and workers would not exceed the threshold of one in one million. Chronic and acute HIs are less than 1. Therefore, implementation of the RAP would result in a less than significant impact with regard to cancer, chronic, and acute risk.

While the Expedited Implementation Option would increase the level of daily activity on the site, the total amount of demolished materials and excavated soils would be the same as under the Base Case. Therefore, long-term impacts (cancer and chronic risk) would remain the same as the base remedy. Short-term impacts (acute risk) may be doubled in comparison to the base remedy as these impacts are evaluated on a maximum hourly throughput. However, acute risk under the Expedited Implementation Option would remain below significance thresholds.

Long-Term

In addition to the physical removal of COC-impacted soil and back fill with non-impacted soil, the use of SVE/bioventing would further reduce COC concentrations beneath existing paved areas, City sidewalks, and concrete foundations of the homes. Property-Specific Remediation Plans (PSRPs) will be prepared for properties requiring excavation, sub-slab mitigation, and/or SVE/bioventing. The PSRP will identify venting wells and piping locations for the SVE/bioventing system. The SVE/bioventing locations would be directed away from on-site sensitive receptors to the furthest extent possible.

SVE/bioventing equipment will be constructed under a Site-specific SCAQMD Permit to Construct/Operate. The SSD system will also require SCAQMD permits. The RDIP and SCAQMD permitting requirements will limit impacts to sensitive receptors. Therefore, impacts

to off-site sensitive receptors would be minimal. In addition, if homeowners do not allow the removal of hardscape for soil excavation, a Land Use Restriction (deed restriction) may be recorded with the County Recorder's Office advising of the presence of impacted soil beneath hardscaped areas. In addition, the City of Carson Municipal Code requires a grading permit to be obtained for excavations deeper than 3 feet. The Responsible Parties would implement a community outreach program to inform and educate residents of the community of residual impacted soil. Therefore, the RAP (Base Case and Expedited Implementation Option) would result in less than significant long-term health risk to on-site and off-site residents.

(2) Methane Concentrations Within Residences

Short-Term

During remediation activities, methane would be released to the atmosphere during excavation of yards and trenching of public streets, but would not be allowed to accumulate in building interiors. Thus, this scenario does not warrant further evaluation.

Long-Term

The site contains small amounts of methane resulting from degradation of petroleum products, which is flammable over a narrow range of concentrations (5-15 percent) in air.⁴ Sub-slab vapor mitigation systems would be installed at residences where methane levels exceed SSCGs or where a homeowner requested one. In order to keep vapors emanating from the soil below from entering a building a SSD system would be used. Because the SSD systems would be operated in an active mode using a fan to create a vacuum, the SSD systems would be permitted by the SCAQMD.

Under the RAP, LNAPL recovery would continue from wells MW-3 and MW-12 on a monthly basis, and if LNAPL is detected in other wells, monthly LNAPL recovery would be initiated on these wells if LNAPL accumulates at a measurable thickness to the extent technologically and economically feasible and where a significant reduction in current and future risk to groundwater would result. LNAPL recovery would be conducted using a dedicated submersible pump if LNAPL thickness of greater than 0.5 feet occurs.

The installation of the SSD system would actively reduce the amount of methane allowed to accumulate within building interiors. Recovery of LNAPL would prevent the generation of methane by removing liquid wastes. Therefore, long-term impacts of the methane generated from the Project would be less than significant.

⁴ U.S. Environmental Protection Agency, *Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities*, EPA-600/R-05/123a, September 2005.

(3) Accidental Release

Short-Term

An accidental release could result from the use of heavy-duty equipment. The site specific HASP would include measures to appropriately handle an on-site accidental release of fuel or other material from the equipment, and as such, this scenario does not warrant further evaluation.

Some of the COCs, such as benzene and arsenic, are classified as acutely hazardous materials (AHM) by the Office of Emergency Services (OES) because they can pose an immediate threat in an upset or accidental release scenario if found in their pure form or at high concentrations. AHMs are subject to CalARP requirements, if present in volumes above threshold quantities (TQs). CalARP requirements apply to stationary sources and not trucks; however, for the purposes of CEQA, this analysis relied on the CalARP methodology to assess impacts relative to this impact criterion. The analytical data show that any AHMs present at the site are at concentrations below TQs.

While not all of the impacted soil to be transported and treated off-site is likely to contain AHMs, to provide a conservative analysis it was assumed trucks would haul material that could contain AHMs. Based on the analysis, the risk of a spill resulting in a release of this material to the environment is so low that it falls within the “acceptable (as is)” or “acceptable (with controls)” risk ranges. Drivers of waste hauling trucks are required to be trained to respond to and contain releases, and appropriate controls are in place. Therefore, the risks posed by the potential hypothetical release of contaminated materials or other materials to the environment through upset conditions or accidental release during the transport of materials off-site and on-site implementation of the RAP are acceptable, and the project results in less than significant impacts.

Long-Term

After implementation of the RAP the use or storage of acutely hazardous materials on-site above minimal amounts such as consumer packages of solvents for cleaning would not occur. Thus, the Project would result in a less than significant impact with regard to accidental release of hazardous materials in the long term.

(4) Hazardous Emissions or Handling of Hazardous Materials Near a School

Short-Term

Wilmington Middle School is located approximately 600 feet southwest of the site (i.e., the distance from the southwest corner of the site to the edge of the school parking lot). Excavation and soil handling would occur throughout the entire site including portions closest to

the school. In addition, haul trucks would enter within 600 feet of the school and would exit the site travelling on Lomita Boulevard past the school. Trucks exiting the site would be decontaminated and inspected before being allowed to leave. Implementation of the PDFs and the safety measures included in the RAP would ensure that impacts on school staff, attendees and visitors from emissions related to handling site materials would remain at, or be reduced to, a less than significant level.

The HRA prepared for implementation of the RAP addressed impacts on off-site receptors and supports this conclusion. The HRA estimated, based on upper confidence limit potency values, that the maximally exposed receptor at the school would experience an unmitigated cancer incidence risk of 0.29 in one million based on five year exposure duration. The estimated risk for school receptors is below the significance threshold of one in one million. The HRA prepared for the EIR shows hazard indices of 0.03 for non-cancer effects of chronic exposure and 0.12 for non-cancer effects of acute exposure at the maximally exposed school receptor. Both hazard indices are well below the significance threshold of 1.00. Short-term cancer risks at the school receptor would not exceed significance thresholds. In addition, the acute and chronic HI for the school receptor would remain below the significance threshold of 1. Overall, the Project would result in a less than significant impact with regards to a release or handling of hazardous materials within one-quarter mile of a school.

The Expedited Implementation Option would increase the number of properties actively remediated at one time, decreasing the duration but not increasing the amount of material excavated site-wide. Therefore, lifetime cancer risks and chronic health risks from implementation of the RAP under the Expedited Implementation Option would remain the same as the Base Case and result in a less than significant impact. Acute risks would increase incrementally in comparison to the Base Case, but would not exceed threshold levels and would be less than significant.

Long-Term

The SVE/bioventing systems, sub-slab vapor mitigation systems, LNAPL collection, natural attenuation groundwater recovery, would serve to reduce COCs present on site and limit the release of hazardous emissions. During catalytic oxidation of the COCs from the SVE/bioventing system, VOCs are thermally destroyed. Therefore, minimal VOC emissions, within applicable criteria specified by the AQMD permit, would result. The design of the SVE system potentially would include use of multiple treatment technologies in a staged approach, depending on inlet concentrations. The remediation equipment would provide the flexibility to transition from thermal oxidation to catalytic oxidation followed by GAC treatment, when the concentrations have decreased sufficiently. If the treatment system utilizes GAC, spent activated carbon would be transported off-site for treatment/regeneration or disposal. The likelihood of accidental release of spent activated carbon would be very low due to periodic maintenance trips to the site that ensure proper functioning of the treatment system. In addition, any release of

spent activated carbon would not result in emissions since the VOCs would be bound to the GAC. All systems will be permitted and properly maintained and documented. Long-term impacts would also be the same as the base remedy as the site will implement the same SVE/bioventing systems, LNAPL collection and other systems to limit the release of hazardous emissions. Long-term operation of the project would not emit hazardous emissions within one-quarter mile of a school and would be less than significant.

(5) Cumulative Impacts – Hazardous Materials

Short-Term

The site is located in an area with a slightly below average cancer risk due to regional airborne toxins. Based on a conservatively estimated incremental increase of less than one-half of 1 percent (~1/500) over the area-wide risk of average of 1,260 in a million, the cumulative impact with regard to cancer risk, the project would have a less than significant impact with regard to short-term impacts.

Accidental release incidents are typically based on individual incidents and would not be affected by cumulative conditions. The chance of accidental release due to transport of hazardous waste is based on vehicle miles travelled by the individual operator. Accidental release of on-site materials would also be dependent upon site conditions and would not be influenced by cumulative conditions. Therefore, the project would have no short-term cumulative impacts with regard to accidental release or upset conditions.

Long-Term

Health risk impacts from long-term implementation of the project would be minimal. The SVE/bioventing, sub-slab vapor systems, LNAPL system, and groundwater natural attenuation system would be installed to collect and treat contaminated media and prevent additional release of gases. Occasionally, maintenance vehicles would drive to the site for maintenance of the system and sampling activities. Therefore, the project would have a less than significant impact with regard to long-term cumulative impacts. Accidental release incidents would also be based on site conditions and not cumulative conditions, as is the case with short-term impacts. Therefore, the project would have no long-term cumulative impacts with regard to accidental release or upset conditions.

E. HYDROLOGY AND WATER QUALITY

(1) Surface Water Quality

Short-Term

Surface water quality could be adversely affected by grading activities if direct contact between contaminated materials and surface waters occurred. PDF H/WQ-1 and PDF H/WQ-2

shall prevent erosion and discharge of pollutants in soils in surface runoff during grading activities through the implementation of specific surface runoff and dust control measures. As described under PDF H/WQ-1, BMPs must demonstrate that eroded sediments and other pollutants would be retained on site and not transported from the site via sheetflow, swales, area drains, natural drainage courses, or wind. In addition, sediments and other materials shall not be tracked from the site by vehicle traffic, the construction entrance roadways shall be stabilized so as to inhibit sediments from being deposited into the public way, and accidental depositions must be swept up immediately and shall not be washed down by rain or other means.

Typical BMPs, which must be detailed on all grading plans, would include silt fences, fiber rolls, stockpile management, spill prevention and control, and the use of protective sheeting or tarps prior to any rain event on exposed soils incidental to construction. PDF H/WQ-2 would require the monitoring of visible dust and provide measures to reduce the migration of dust. With the implementation of PDFs and compliance with the requirements of the Los Angeles County Building Code, short-term impacts on surface water from the RAP (Base Case and Expedited Implementation Option) related to grading would be less than significant.

Project Design Features

PDF H/WQ-1 The Responsible Party will provide a Surface Containment and Soil Management Plan to permitting agencies prior to the start of RAP implementation. This document will provide measures for surface containment and management of residual soils containing COCs above SSCGs and will serve as part of the grading permit process. In addition, in compliance with the General Construction NPDES Permit, the Responsible Party will provide specific stormwater BMPs as part of proposed grading plans to reduce the potential for sediments within discharge of runoff into the storm drain system during grading. In accordance with the Los Angeles County Building Code, BMPs must demonstrate that eroded sediments and other pollutants will be retained on site and not transported from the site via sheetflow, swales, area drains, natural drainage courses, or wind; stockpiles of earth and other construction-related materials will be protected from being transported from the site by the forces of wind or water; fuels, oils, solvents, and other toxic materials will be stored in accordance with their listing and will not contaminate the soil and surface waters; spills will be cleaned up immediately and disposed of in a proper manner and not washed into the drainage system; non-stormwater runoff from equipment. Vehicles will be dry decontaminated before leaving the site to avoid water runoff. Excess or waste concrete will not be washed into the public way or any other drainage system and provisions will be made to retain concrete wastes on site until they can be disposed of as solid waste; sediments and other materials will not be tracked from the site by vehicle traffic, construction entrance roadways will be stabilized so as to inhibit sediments from being

deposited into the public way, and accidental depositions will be swept up immediately and will not be washed down by rain or other means. Site-specific BMPs will be submitted to the Los Angeles County Department of Building and Safety (reviewing agency for the City of Carson) for review and approval. For areas of one-acre or greater, the RP shall prepare a SWPPP that describes all structural and non-structural BMPs. BMPs must be reviewed and approved by the Los Angeles County Department of Building and Safety prior to issuance of a grading permit. In accordance with Los Angeles Building Code, Appendix J, Section J111.3 a Wet Weather Erosion Control Plans (WWECP) for each storm season will be submitted for all active grading projects.

PDF H/WQ-2 Dust monitoring will be conducted for all excavations. If visible dust is encountered, periodic watering of the active excavation areas will be recommended throughout the excavation and backfill activities. Watering will be monitored to prevent off-site runoff.

Long-Term

Surface flow (runoff) across the site from irrigation water, rainfall, and domestic activities such as car washing and hosing of driveways and sidewalks, has the potential to transport COCs that occur in on-site soils. Implementation of the RAP would reduce waste concentrations and attain the SSCGs for residual soils. Because implementation of the RAP would remove COC-containing soils as feasible, and residual soils would be treated by SVE/bioventing to reduce COCs, potential exposure of surface water to COCs would be greatly reduced. Therefore, long-term surface water quality impacts would be less than significant.

(2) Groundwater Water Quality - Flow

Short-Term

Grading activities have the potential to move soils from one location to another, or spread soils and, thus, cause wastes to spread. Measures that reduce the exposure of soils to the environment, such as PDF H/WQ-3, which requires that impacted soil be directly loaded into approved waste containers, would reduce the potential for soils to be accidentally transported or moved through the forces of erosion to a broader area. With the implementation of PDFs, short-term impacts on groundwater related to the rate or change of COCs in groundwater would be less than significant.

Project Design Features

PDF-H/WQ-3 Impacted soil will be directly loaded into approved waste containers (such as drums, bins, or directly into trucks) for off-site transport. The RP will provide suitable containers based on the nature of the excavation work being conducted. In the event that it is necessary to temporarily stockpile

soil onsite before loading, soils will be placed upon plastic sheeting and covered with plastic until they can be loaded into approved waste containers to be provided by the RP.

Long-Term

The Project would incorporate PDFs that would provide for the decrease in COCs in the groundwater. PDF H/WQ-4 requires that LNAPL be recovered where it has accumulated in monitoring wells to the extent technologically and economically feasible and where a reduction in current and future risk to groundwater could result. PDF H/WQ-5 provides that a stable or decreasing plume of site-related COCs will be maintained beneath the site through MNA of COCs in groundwater and reduction of COCs in soils through SVE and bio-venting. The reduction in COCs in the soil would result in the reduction in COCs entering groundwater via on-site soils.

PDF H/WQ-6 requires groundwater monitoring to continue as part of the remedial action. After a five-year monitoring period following initiation of the SVE system operation, PDF H/WQ-6 provides for the evaluation and implementation of additional groundwater treatment technologies if the extent of groundwater plumes are not stable or declining, and on-site COCs do not show a reduction in concentration. PDF H/WQ-7 requires that the Shallow Zone and Gage aquifer will be returned to background levels for site-related benzene and naphthalene through natural biodegradation. With the implementation of PDFs, long-term impacts to groundwater quality would be less than significant.

Project Design Features

- PDF H/WQ-4** LNAPL will be recovered where it has accumulated in monitoring wells to the extent technologically and economically feasible, and where a reduction in current and future risk to groundwater will result.
- PDF H/WQ-5** A stable or decreasing plume of site-related COCs will be maintained beneath the site. This will be achieved through reduction of COCs in soils through soil vapor extraction (SVE) and bio-venting, which would reduce COCs entering groundwater via on-site soils, removal of wastes in soil, and monitored natural attenuation (MNA) of groundwater.
- PDF H/WQ-6** Periodic groundwater monitoring will continue as part of the remedial action. If, based on a five-year review following soil excavation and initiation of the SVE/bioventing system operation, the groundwater plume is not stable or declining, an evaluation of additional groundwater treatment technologies will be conducted and implemented as needed.

PDF H/WQ-7 The Shallow Zone and Gage aquifer will be returned to background levels for site-related benzene and naphthalene through natural biodegradation.

(3) Groundwater Water Quality Standard

Short-Term

Groundwater quality could be adversely affected by grading activities if surface runoff from grading activities were to transport impacted soils to off-site locations or into the City's drainage system. With the implementation of PDF H/WQ-1 and PDF H/WQ-2, the RAP (Base Case and Expedited Implementation Option) would not cause existing COCs to spread or migrate into groundwater in the surrounding area. Because grading activities would be regulated through the Building Code and would comply with BMP requirements and with PDFs, the RAP would not result in discharges that would create pollution, contamination or nuisance as defined in CWC Section 13050 or would cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Basin Plan for the receiving water body. Therefore, short-term impacts on groundwater related to grading would be less than significant.

Long-Term

The RAP would remove COC-containing soils or reduce COCs in residual soils and provide for LNAPL removal and monitoring of groundwater and future action if necessary. Because the RAP would reduce COCs that would potentially enter groundwater, it would not create pollution, contamination or nuisance as defined in CWC Section 13050 or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water. Therefore, long-term groundwater quality impacts would be less than significant.

(4) Cumulative Impacts – Hydrology and Water Quality

The study area considered for the cumulative impact is the hydrologic area that could be affected by the remediation activities of the RAP. Water quality and groundwater resources are protected by existing state and local regulations in compliance with the CWA. Cumulative effects on water quality would be greatest during excavation and soil replacement because of exposure of soils to rainfall. However, as with the RAP, large development projects would be required to implement BMPs through mandated, site-specific SWPPPs. All large development projects are subject to existing Code and policies and regulations related to the protection of water quality for surface water and groundwater. In addition, related projects having hazardous materials components, as with the RAP, are subject to State Water Board or DTSC regulations for the protection of water quality. The enforcement of existing regulations would ensure that cumulative impacts on water quality would be less than significant. Because the RAP is intended to improve groundwater quality, it would not contribute to long-term, cumulatively adverse groundwater conditions.

F. NOISE

(1) Implementation of the RAP – Off-Site Sensitive Receptors in the City of Los Angeles

Noise monitoring was performed during the pilot studies and was used in the analyses contained in the EIR. PDFs would be implemented under the Base Case and the Expedited Implementation Option. PDFs would include properly operating and maintained noise mufflers on construction machinery and equipment (PDF NOISE-1), limit the idling (PDF NOISE-2), specified construction hours (PDF NOISE-3), and the use of acoustical attenuation blankets (PDF NOISE-5). Lomita Boulevard is the jurisdictional boundary between the City of Carson and the City of Los Angeles. Two noise measurement locations (R3 and R4) were located south of the site within the City of Los Angeles, representing the Wilmington Middle School and single family residences, respectively. With the PDFs, implementation of the RAP (Base Case and Expedited Implementation Option) would not exceed the applicable City of Los Angeles threshold at the sensitive receptors (residences and school) located in the City of Los Angeles (R3 and R4) during any of the phases of remedial activity.

Project Design Features

- PDF NOISE-1** The project contractor(s) will equip all construction machinery and equipment, fixed or mobile, with properly operating and maintained noise mufflers, consistent with manufacturers' standards.
- PDF NOISE-2** Engine idling from construction equipment such as excavators and haul trucks will be limited, to the extent feasible.
- PDF NOISE-3** Expected hours for construction equipment use on-site will be 7:30 A.M. to 4:30 P.M. Monday through Friday, with hauling activities from 8:00 A.M. to 4:00 P.M.
- PDF NOISE-5** During excavation, acoustical attenuation blankets approximately 12 feet in height will be installed between the excavation site and adjacent occupied houses provided that this can be done without creating a safety hazard, to reduce community noise exposure from stationary sources of substantial noise, such as generators and water buffalos (trailer).

(2) Off-Site Roadway Noise

During implementation of the RAP, there would be a maximum of 90 haul truck trips, an average of nine visitors, and a maximum of approximately 32 workers per day. However, the project would strive for the truck traffic and employee traffic not to occur during the same hour. PDF NOISE-4 requires that the haul trucks use a specified haul route. The maximum increase in

project-related traffic noise levels over existing traffic noise levels would be 0.1 dBA, which would occur along Sepulveda Boulevard, between Figueroa Street and Main Street, Wilmington Avenue, between Sepulveda Boulevard and Lomita Boulevard, Lomita Boulevard, between Neptune Avenue and Lagoon Avenue, Lomita Boulevard, between Lagoon Avenue and Avalon Boulevard, Lomita Boulevard, between Lagoon Avenue and Avalon Boulevard, Lomita Boulevard, between Avalon Boulevard and Wilmington Avenue, and Main Street, between Sepulveda Boulevard and Lomita Boulevard. In general a change in sound level of 3 dBA is considered barely perceptible by the human ear, and a change of 5 dBA is considered a significant impact. Activities associated with the project would be required to comply with the City's allowable hours as described above and would be temporary in nature. Because the noise levels associated with implementation of the project would be 0.1 dBA increase, which is well below the 5 dBA significance threshold, off-site traffic related noise would result in a less than significant noise impact.

The Expedited Implementation Option would result in a greater level of activity on the site on a given day but would not change the level of activity at an individual property. An average of approximately 118 trucks per day would be used to transport materials during residential excavation and related activities, street trenching/pipe installation, and well installation. On a peak excavation day, approximately 151 trucks per day would be used. During street paving, approximately 24 trucks per day would be used. PDFs would be the same under the Expedited Implementation Option as under the project. The maximum increase in project-related traffic noise levels over existing traffic noise levels would be 0.2 dBA, which would occur along Sepulveda Boulevard, between Figueroa Street and Main Street, Lomita Boulevard, between Neptune Avenue and Lagoon Avenue, Lomita Boulevard, between Avalon Boulevard and Wilmington Avenue, and Main Street, between Sepulveda Boulevard and Lomita Boulevard. Because the noise levels associated with implementation of the Expedited Implementation Option would be 0.2 dBA increase, which is well below the 5 dBA significance threshold, off-site traffic related noise would result in a less than significant noise impact.

Project Design Features

PDF NOISE-4 Project-related heavy truck traffic will be limited to specific routes.

(3) Cumulative Impacts - Noise

Noise is by definition a localized phenomenon, and significantly reduces in magnitude as the distance from the source increases. Therefore, only projects and growth due to occur in the immediate project area would be likely to contribute to cumulative noise impacts. The nearest related project is situated over 5,000 feet from the site. Therefore, cumulative noise impacts on sensitive receptors in the vicinity of the site from concurrent construction of the other development projects would be less than significant. Thus, the RAP would not contribute to a cumulative construction noise impact on nearby sensitive receptors.

The site and surrounding area have been developed with uses that have previously generated, and would continue to generate, noise from a number of community noise sources including vehicle travel, railroad train traffic, mechanical equipment (e.g., HVAC systems), and lawn maintenance activities. Each of the identified related projects that have been identified within the general project vicinity would also generate stationary-source and mobile-source noise due to ongoing day-to-day operations. All related projects are of a residential, retail, commercial, or institutional nature, and these uses are not typically associated with excessive exterior noise; however, each project would produce traffic volumes that are capable of generating a roadway noise impact. As discussed previously, traffic volumes from the RAP and related projects, combined with ambient growth traffic would result in a maximum increase of 1.4 dBA, L_{eq} along the segment of Wilmington Avenue, between Sepulveda Boulevard and Lomita Avenue for the project and the Expedited Implementation Option. As this noise level increase would be below the 5-dBA significance threshold, roadway noise impacts due to cumulative traffic volumes would be less than significant.

Due to the City of Carson's Municipal Code provisions that limit stationary-source noise from items such as mechanical equipment, noise levels would be less than significant at the property line for each related project. For this reason on-site noise produced by any related project would not be additive to project-related noise levels. As the project's composite operational stationary-source impacts would be less than significant, composite

G. TRAFFIC AND CIRCULATION

(1) Intersection Capacity

Implementation of the RAP would generate additional trips, including workers to and from the site and trucks moving material to and from the site. Half the workers (16) would travel directly to the site and half would park at an off-site location and travel to the site in shuttle vans. Workers would arrive as early as 7:00 A.M. and would depart as late as 5:00 P.M. An average of 66 trucks and a maximum of 99 trucks would travel to and from the site daily. Applying PCE methodology, in which one truck trip is equivalent to two passenger car trips, truck traffic would be equivalent to a maximum of 396 PCE trip ends on a peak day. Trucks would arrive no earlier than 8:00 A.M. and leave no later than 4:00 P.M. Therefore, the RAP would generate approximately 478 daily PCE trips, with 61 trips during both the A.M. and P.M. peak hours. The RAP would implement PDF TRAF-1 through PDF TRAF-4, which would require a Haul Route Plan and Construction Traffic Management Plan approved by the City of Carson, a shuttle service for construction workers parking off-site, and one-lane of traffic at all times. With the implementation of the PDFs, under the City of Carson's intersection traffic impact significance criteria, the RAP would not result in any significant impacts at any of the 14 study intersections.

Under the Expedited Implementation Option excavation activities would be accelerated, thereby incrementally increasing daily traffic. An average of 118 one-way truck trips, and

maximum of 151 one-way truck trips, would travel to the site daily. The Expedited Implementation Option would generate 790 total daily trips and 94 trips during both the A.M. and P.M. peak hours (compared to 61 under the basic project). Total daily PCE truck trips would be 604 (compared to 478 under the basic project) and A.M. and P.M. peak hour truck trips would be 57 (compared to 38 under the basic project). In accordance with City of Carson's intersection traffic impact significance criteria, even with incrementally greater peak hour traffic under the Expedited Implementation Option, the Expedited Implementation Option would not result in any significant impacts at any of the 14 study intersections.

Project Design Features

PDF TRAF-1 Prior to implementation of the RAP, the project contractor will submit a Haul Route Plan to the City of Carson for review and approval. The proposed haul route will be restricted to the City's designated truck route roadways and will be as shown in Figure 5.7-2 of this EIR.

PDF TRAF-2 Prior to implementation of construction activities specified in the RAP, the project contractor will prepare a Construction Traffic Management Plan that will be submitted to the City of Carson for review and approval prior to the start of any work. This plan will comprise site traffic control plans, including but not limited to such elements as the designation of haul routes for construction-related trucks, the sequencing of construction activities, any driveway turning movement restrictions, temporary traffic control devices, travel time restrictions for construction-related traffic, consolidation of construction truck deliveries, flag control, and designated staging and parking areas for workers and equipment.

Because the construction activities occur within a public street right-of-way, the following design features would also apply:

- A site-specific construction work site traffic control plan will be prepared and submitted to the City of Carson for review and approval prior to the start of any construction work. This plan will include such elements as the location and hours of any necessary lane closures, local traffic detours (if any), protective devices and traffic controls (such as barricades, cones, flag persons, lights, warning beacons, temporary traffic signals, warning signs), the location and hours of any necessary access limitations for abutting properties, and provisions to maintain emergency access through construction work areas.
- Generally accepted construction safety standards will be followed to separate pedestrians from construction activity through such measures as protection barriers and signage indicating alternative pedestrian access routes where existing facilities would be affected. This would include the sidewalks around the perimeter of an active excavation site.

- Advance notice of planned construction activities will be provided to any affected residents and property owners in the vicinity of the construction site.
 - The project contractor will coordinate with emergency service providers (police/sheriffs, fire, ambulance and paramedic services) to provide advance notice of ongoing construction activity and construction hours.
- PDF TRAF-3** One travel lane will be kept open at all times or detours will be provided during residential property remediation, well installation and street trenching phases.
- PDF TRAF-4** The project contractor will arrange for off-site parking within 5 miles of the site and will provide shuttle services to the site for approximately 50 percent of on-site workers.

(2) Regional Transportation System (Congestion Management Program)

The CMP arterial monitoring intersection nearest to the site is located at Figueroa Street and Sepulveda Boulevard, approximately one mile west of the site. Implementation of the RAP would result in a number of trips that is below the criteria of 50 vehicles per hour (“vph”) at any CMP arterial monitoring location during the A.M. or P.M. weekday peak hours. In addition, the total estimated project-related traffic in any direction during the weekday peak hour is projected to be 61 vph, which is below the minimum criteria of 150 vph at freeway monitoring locations. Therefore, the RAP would not meet the minimum trips required for analysis at CMP monitoring locations and would not exceed CMP guideline criteria. Impacts with respect to CMP monitoring locations would, thus, be less than significant.

Under the Expedited Implementation Option, the total estimated traffic in any direction during the weekday peak hour under the Expedited Implementation Option is projected to be 94 vph, which is below the minimum criteria of 150 vph at freeway monitoring locations. Because the Expedited Implementation Option would not meet the minimum trips required for analysis at CMP monitoring locations, it would not exceed CMP guideline criteria. Impacts with respect to CMP monitoring locations under the Expedited Implementation Option would be less than significant.

With regard to CMP transit, using the CMP transit guidelines standards, which assume 3.5 percent transit use for a work force, it is estimated that the project could add one new transit person trip in both the A.M. and P.M. peak hours. The project site is served by several established public transit routes which provide connectivity to public transit services throughout the surrounding area. Because of the low estimated ridership generated by the RAP and adequacy of the affected roadway system during construction (2015-2021) to serve existing transit, the RAP would not adversely affect existing transit facilities. In addition, no construction would occur along Lomita Boulevard or other truck route streets and, thus, no bus stops would be adversely

affected by construction activities. Therefore, the traffic and construction activities associated with the implementation of the RAP would not adversely affect the operation of these existing lines. Impacts with respect to CMP transit guidelines would be less than significant.

The Expedited Implementation Option would generate approximately 47 workers a day. Construction activities and traffic would not adversely affect street service levels or bus stops. Because of the low estimated ridership generated by the Expedited Implementation Option and adequacy of the affected roadway system during construction to serve existing transit, the RAP would not adversely affect existing transit facilities. Impacts with respect to CMP transit guidelines under the Expedited Implementation Option would be less than significant.

(3) Cumulative Impacts - Traffic and Circulation

Cumulative impacts associated with the RAP are based on year 2021 cumulative growth, which includes ambient yearly growth to 2021 and the addition of related projects. Four of the 14 study intersections are projected to operate at LOS E during the peak hour without the Project.

- Intersection No. 5: Main Street and Lomita Boulevard
- Intersection No. 7: Lagoon Avenue and Lomita Boulevard
- Intersection No. 8: Avalon Boulevard and Lomita Boulevard
- Intersection No. 14: Wilmington Avenue and Lomita Boulevard

The poor LOS calculated at study intersections No. 7, Lagoon Avenue and Lomita Boulevard and No. 14, Wilmington Avenue and Lomita Boulevard are the result of relatively high levels of delay on the most constrained approach, rather than the volume of vehicles traveling through these stop-controlled intersections. The difference between the “Future” and “Future Plus Project” represents the relative increase associated with the RAP. The increases under the RAP would not exceed City of Carson intersection capacity service thresholds at any of the 14 study intersections. Therefore, cumulative impacts under the RAP would be less than significant.

H. UTILITIES AND SERVICE SYSTEMS (SOLID WASTE)

(1) Implementation of the RAP

Implementation of the RAP would result in excavated soil being transported off site for treatment, demolition waste such as fencing, concrete, and cured asphalt, and green waste. Each of these represents a different waste stream and would be sent to different facilities for processing and/or disposal. Because impacted soils are COC-containing, they would be treated (cleaned) at the Soil Safe facility in Adelanto, California or similar facility. Because the soils

would be decontaminated and available for re-use, excavated soils would not require disposal at a solid waste facility. Soil Safe has sufficient capacity to treat the quantities that would result from implementation of the RAP even with the increase in daily volume that would occur under the Expedited Implementation Option. Therefore, impacts on the permitted capacity of disposal facilities with respect to impacted soils under the Base Case or Expedited Implementation Option would be less than significant.

The total generation of demolition debris would be 9,855 CY (219 properties x 45 CY) with a maximum daily generation of approximately 56 CY. The majority of inert waste would be concrete and asphalt debris, which would be processed at the Dan Copp crushing facility and re-used in roadbed and, thus, diverted from landfills. The project's maximum daily output would not exceed the daily capacity of the processing facility. Some inert waste would be disposed of at inert facilities in the County or processed at Inert Debris Engineered Fill Operation facilities (IDEFOs). The estimated volume of inert waste generated during the implementation of the RAP, which would be the same under the Base Case and the Expedited Implementation Option, would not exceed the County's permitted daily or long-term capacity. Because inert debris generated by the implementation of the RAP would not require disposal at a solid waste facility, impacts on the permitted capacity of disposal facilities with respect to construction and demolition debris and inert debris would be less than significant.

The implementation of the RAP would result in the removal of green waste from the site, with a maximum generation of approximately 60 CY per day. Green waste would be delivered to the Carson Transfer Station and Materials Recovery Management facility in the City of Carson and then transferred to a composting site. The maximum generated green waste would not exceed the daily capacity of the facility to manage green waste under the Base Case or the Expedited Implementation Option. The end product would most likely be re-used as composting material (although other re-uses are possible) and would not require disposal at a solid waste facility. Therefore, impacts on the permitted capacity of disposal facilities with respect to green waste would be less than significant.

Remediation activities would generate relatively small amounts of daily waste associated with recyclable and non-recyclable packaging materials from piping and construction supplies, debris from the restoration process (e.g., plant containers, pallets), employee lunches and other minor sources. Contractors would be responsible to arrange for appropriate trash removal from the site. Materials would be recycled to the extent feasible. Because of the minor volume of non-recyclable materials and short-term disposal demand, non-recyclable materials from the site are not anticipated to exceed the permitted capacity of Los Angeles County landfills. Therefore, these materials generated by the RAP (under the Base Case and the Expedited Implementation Option) would have a less than significant impact on landfill capacity.

(2) Cumulative Impacts – Solid Waste

The cumulative analysis evaluated the other projects in the study area. The Shell Revitalization Project involves excavations of tar and soil and the on- or off-site management of excavated soil.⁵ Off-site treatment of soils would be similar to that of the RAP, which involves cleaning at the Soil Safe facility in Adelanto, California or a similar facility. However, given the available capacity, the RAP in combination with other projects would not exceed the capacity of the Soil Safe facility.

With regard to inert debris from cumulative construction, the demand is not expected to exceed the County's permitted daily or long-term capacity to receive inert waste. The cumulative amount of green waste would not exceed the capacity of the facilities in the area. According to the Countywide Integrated Waste Management Plan 2011 Annual Report (published in August 2012), future disposal needs to 2027 which anticipates regional growth throughout the County, would be adequately met through the use of in-County and out-of-County facilities through a number of strategies that would be carried out over the years.⁶ Therefore, it is anticipated that the solid waste demand of the RAP in combination with the related projects would not exceed the capacity of disposal facilities and would not be cumulatively significant.

6.0 ENVIRONMENTAL IMPACTS FOUND TO BE LESS THAN SIGNIFICANT AFTER MITIGATION

The Regional Board found that noise from stationary sources would result in a significant impact and with the incorporation of mitigation measures the impact would be reduced to a less than significant level.

A. NOISE

(1) Stationary Source Noise

The SVE process involves inducing airflow in the subsurface with an applied vacuum, mechanical equipment capable of creating noise levels audible to sensitive land uses would be installed. Anticipated equipment include a 3,000 standard cubic feet per minute (scfm) positive displacement blower and oxidation equipment (such as a thermal propane or natural gas burner), and are expected to be operational 30 to 40 years, depending on the rate at which results are achieved. The SVE unit would be located on one of a few potential industrial sites adjacent to the Carousel Tract. The nearest distance to residential receptors would be 6 feet. There is an

⁵ *City of Carson, Carson Revitalization Project Specific Plan EIR (SCH No. 2010101015), February 2014, pages 3-25 to 3-26.*

⁶ *Los Angeles County Department of Public Works, Los Angeles County Integrated Waste Management Plan, 2012 Annual Report, August 2013, Page 31.*

existing approximately 30 feet sound wall separating the proposed SVE unit and the Carousel Tract.

Mechanical equipment (e.g., mechanical fans and pumps) for long-term use with the SVE/bioventing system would be housed inside a sound attenuated enclosure. Mechanical design documentation would be required once the SVE location is selected to demonstrate that noise generated from the mechanical fan and/or other related mechanical components would not exceed the measured ambient noise levels during daytime hours at each corresponding measurement location and 55 dBA during nighttime hours at each measurement location. The SVE/bioventing system has the potential to result in a significant noise impact.

Finding

- *Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.*

Facts in Support of Finding

Mitigation Measure NOISE-3, which would require a qualified acoustical engineer with expertise in design of sound isolations to evaluate to the design of the SVE/bioventing system (i.e., installation of building enclosure) so as to meet the City's exterior noise limits (55 dBA), is prescribed to ensure that the noise impacts associated with the operation of mechanical equipment would be less than significant.

Mitigation Measure

- MM NOISE-3** The RP shall either retain the services of a qualified acoustical engineer with expertise in design of sound isolations to ensure the noise from the SVE/bioventing system (i.e., installation of building enclosure) complies with the City's exterior noise limits (55 dBA) or provide documentation (e.g. manufacturer's specification sheet for an off-the-shelf product) to the satisfaction of the City, as applicable, that the design will achieve the standard.

7.0 ENVIRONMENTAL IMPACTS FOUND TO BE SIGNIFICANT AND UNAVOIDABLE

A. NOISE AND VIBRATION

(1) Implementation of the RAP – On-Site and Off-Site Sensitive Receptors in the City of Carson

Detailed noise monitoring was performed during the pilot studies and was used in the analyses contained in the EIR. PDFs would be implemented under the Base Case and the Expedited Implementation Option. PDFs would include properly operating and maintained noise mufflers on construction machinery and equipment (PDF NOISE-1), limit the idling (PDF NOISE-2), specified construction hours (PDF NOISE-3), and the use of acoustical attenuation blankets (PDF NOISE-5). With the PDFs, the applicable City of Carson threshold is expected to be exceeded at the sensitive receptors (residences) within the Carousel Tract and at off-site sensitive receptors (residences) located in the City of Carson (R5 and R7) during certain phases of remedial activity. Therefore, the RAP would result in a significant noise impact to sensitive receptors on site and to the north and east of the site within the City of Carson during certain phases of remedial activity.

Finding

- *Specific economic, legal, social, technological, or other considerations, make infeasible the mitigation measures or project alternatives identified in the final EIR.*

Mitigation Measures

MM NOISE-1 Residents of properties shall be offered noise mitigation measures (e.g., hearing protection, sound proofing, white noise machines, etc.) acceptable to the residents or relocation for the duration of nearby active remediation activities which may create ambient noise levels at their property in excess of 75 dBA, L_{eq} for 20 days or less or in excess of 65 dBA, L_{eq} for 21 days or longer. Based on the analyses presented in this EIR, this shall apply to residences located within approximately 90 feet of street trenching or 130 feet from an edge of residential remediation (i.e. a cluster of 4 to 8 homes); these distances may be revised by the Regional Board upon completion of additional monitoring and analysis which could be performed under the direction of an independent acoustician during the implementation of the RAP, or if the City of Carson agrees that the 75 dBA threshold is acceptable for the construction activities. Appendix F-8 includes 75 dBA and 65 dBA contours showing the impacted properties surrounding a hypothetical 8-property cluster.

MM NOISE-2 To the maximum extent feasible, the project shall provide noise blanket/temporary noise barriers between the active areas and occupied residential units during street trenching.

Facts in Support of Finding

During remediation of the residential clusters, fencing, landscaping, and hardscape would be removed so that access to impacted soil is unencumbered. Side yards are narrow, and homes are as close as 5 feet from the property line. As such it is infeasible to erect sound barriers to shield the adjacent homes, and traditional temporary sound barriers are not capable of reducing the noise levels sufficiently to levels below the City of Carson's threshold (65 dBA). Erecting noise barriers in the street or on public sidewalks for weeks at a time is not feasible, and those homes with direct line of site to a cluster are predicted to experience high levels of noise. With implementation of Mitigation Measure NOISE-1 for the project, the noise sensitive receptors (single-family residential uses) within 130 feet in all directions from the cluster and areas where noise from active remediation activities would exceed 65 dBA, L_{eq} based on additional noise monitoring during the implementation of the RAP would be offered relocation and, if accepted, those individuals would not be exposed to high noise levels from implementation of the project. However, since relocation is voluntary, residents may choose to remain and would potentially be exposed to noise levels in excess of the thresholds. Thus, the impact is conservatively assumed to remain significant and unavoidable even with implementation of the mitigation measure.

During the street trenching phase of RAP implementation, Mitigation Measure NOISE-2 would reduce noise levels by approximately 10 dBA. However impacts during this phase would remain above the 65 dBA thresholds, and are considered significant and unavoidable.

The No Project Alternative would not meet the underlying purpose of the project, which is to remediate the site in compliance with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. Therefore, the Regional Board finds that the No Project Alternative would conflict with the CAO and would not provide long-term remediation at the site that protects the public health, property or the environment and the No Project Alternative is rejected. Alternative 2 (Excavation Beneath landscape and Hardscape to 10 Feet Alternative) and Alternative 3 (No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative) would both result in the same daily activity as under the RAP and, as with the RAP, would intermittently exceed the significance threshold of 65 dBA, L_{eq} at noise-sensitive receptor locations. Therefore, these alternatives would not eliminate the significant unavoidable noise impact to on-site and off-site receptors within the City of Carson.

(2) Short-Term Ground-Borne Vibration

Different pieces of equipment would be used for the various stages. A jack hammer, which would be used to remove hardscape, would produce the maximum vibration velocities.

Residents would be located as close as 5 feet from adjacent remedial activities, and could be exposed to a near-constant vibration velocity of 0.0176 inches per second PPV from a small bulldozer during residential remediation at adjacent properties and periodic peak vibration velocity of 0.21 inches per second from jackhammering. Peak velocities fall below the perception threshold at approximately 10 feet for vibration resulting from the mini excavator and at 60 feet for vibration resulting from a jack hammer. As the peak value would exceed the 0.01 inches per second PPV significance threshold, human perception of vibration impacts associated with implementation of the RAP would be significant.

Under the Expedited Implementation Option, an increase in the number of properties being remediated at one time could occur. PDF AQ-13 requires that two clusters under active remediation and restoration would be separated by a minimum distance of 64 meters (210 feet) as measured from the closest site boundary of each cluster. At a distance of 5 feet, vibration velocities from jackhammering would be a maximum of 0.21 inches per second. Ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Thus, while both clusters could utilize a small bulldozer or a jack hammer, the separation distance would ensure that vibration levels at nearby residential structures would be similar to the levels for the Base Case and would not exceed the 0.5 inches per second PPV significance threshold for residential structures. As a result, vibration impacts with regard to building damage under the Expedited Implementation Option would be less than significant.

With respect to human perception impacts, the minimum separation distance of 64 meters (210 feet) between two clusters would minimize the combined vibration levels at any common sensitive receptor location. Nonetheless, the peak value would be similar to the levels described above for the RAP and would exceed the 0.01 inches per second PPV significance threshold. As a result, human perception of vibration impacts under the Expedited Implementation Option would be significant.

Finding

- *Specific economic, legal, social, technological, or other considerations, make infeasible the mitigation measures or project alternatives identified in the final EIR.*

Mitigation Measures

MM NOISE-1 Residents of properties shall be offered noise mitigation measures (e.g., hearing protection, sound proofing, white noise machines, etc.) acceptable to the residents or relocation for the duration of nearby active remediation activities which may create ambient noise levels at their property in excess of 75 dBA, L_{eq} for 20 days or less or in excess of 65 dBA, L_{eq} for 21 days or longer. Based on the analyses presented in this EIR, this shall apply to residences located within approximately 90 feet of street trenching or 130

feet from an edge of residential remediation (i.e. a cluster of 4 to 8 homes); these distances may be revised by the Regional Board upon completion of additional monitoring and analysis which could be performed under the direction of an independent acoustician during the implementation of the RAP, or if the City of Carson agrees that the 75 dBA threshold is acceptable for the construction activities. Appendix F-8 includes 75 dBA and 65 dBA contours showing the impacted properties surrounding a hypothetical 8-property cluster.

- MM VIB-1** Residents of properties located within 60 feet of the use of jack hammers on private property shall be offered relocation for the duration of jack hammer use.

Facts in Support of Finding

Peak velocities fall below the threshold for human perception at approximately 10 feet for vibration resulting from the mini excavator and at 60 feet for vibration resulting from a jack hammer. With the implementation of NOISE-1 during residential property remediation and VIB-1 during other phases involving the use of a jack hammer, vibration impacts could be mitigated to less than significant. However, since relocation is voluntary, residents may choose to remain and would potentially be exposed to vibration levels in excess of the thresholds. Thus, the impact is conservatively assumed to remain significant and unavoidable even with implementation of the Mitigation Measures under the project.

The No Project Alternative would not meet the underlying purpose of the project, which is to remediate the site in compliance with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. Therefore, the Regional Board finds that the No Project Alternative would conflict with the CAO and would not provide long-term remediation at the site that protects the public health, property or the environment and the No Project Alternative is rejected. Alternative 2 (Excavation Beneath landscape and Hardscape to 10 Feet Alternative) would be implemented using typical heavy-duty construction equipment such as excavators, dozers, and trucks. As with the RAP, residents immediately adjacent to a property with active remedial activity would experience vibration velocities in excess of the human annoyance threshold from the mini excavator. Alternative 3 (No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative) would not result in the removal of hardscape. Equipment that create substantial vibration velocities, such as jack hammers, hydraulic hammers, and the like, would not be used, lessening the peak vibration velocity experienced during residential property remediation. However, the use of a mini excavator within close proximity to neighboring properties would result in vibration velocities in excess of the human annoyance threshold. Thus, impacts would be lessened, but still remain significant for this Alternative, similar to the RAP.

8.0 FINDINGS ON THE ALTERNATIVES TO THE PROJECT

A wide range of alternatives were considered by the Regional Board as described in detail in Chapter 3.0, Description of Alternatives, of the EIR. The technologies evaluated in the FS fall into two categories: 1) interruption of the human health exposure pathway; and 2) removal of COC mass in addition to interruption of the human health exposure pathway. The technologies considered physical removal processes, such as excavation, as well as chemical and biological processes. Each technology that was retained after the initial screening would be capable of addressing a specific issue, but none of the technologies alone would constitute a complete approach to site cleanup. Therefore, technologies were combined to create seven (7) remedial alternatives that were further evaluated in the FS.

The Regional Board selected two action alternatives to evaluate in the EIR. In accordance with CEQA Guidelines Section 15126.6, an alternative was evaluated that would meet most of the basic objectives of the project and would avoid or substantially lessen the significant noise and vibration effects of the RAP. In addition the Regional Board analyzed the No Project Alternative as required by CEQA.

Chapter 3.0 of the EIR describes the development of alternatives and defines three alternatives that are evaluated within each of the issue areas contained in Chapter 5.0 of the EIR. Chapter 6.0, Comparison of Alternatives, provides a discussion whereby the alternatives are compared to the Project. A brief description of the three alternatives, a comparison of their environmental impacts to the Project, and the Regional Board's findings are provided below. In making the following alternatives findings, the Regional Board has independently reviewed and considered the information on alternatives provided in the Draft EIR, including the information provided in the comments on the Draft EIR and the responses thereto.

Based upon the above recitals and the entire record, including the RAP Final EIR, oral and written testimony and other evidence received at the public meetings held on the RAP and the RAP EIR and otherwise, upon studies and investigations made by the Regional Board, the Regional Board further finds that the Final EIR analyzes a reasonable range of project alternatives that would feasibly attain most of the basic objectives of the RAP Project but would substantially lessen any of the significant impacts of the Project, and adequately evaluates the comparative merits of each alternative. The Regional Board finds, as follows:

A. ALTERNATIVE 1: NO PROJECT ALTERNATIVE

Alternative 1, the No Project Alternative, is the baseline alternative because it represents a continuation of existing conditions. The No Project Alternative would mean that the RAP is not implemented at the site. No excavation would occur and no SVE wells and SVE/bioventing system or sub-slab mitigation would be installed. Monitoring of the site and LNAPL recovery would continue. All existing site features, such as residences, landscaping, hardscape, fences,

patios, and ancillary structures would remain. No relocation of residents would occur. In other words, the residential subdivision would remain as it currently exists today without remediation of site impacts.

Finding

The No Project Alternative would not meet the underlying purpose of the project, which is to remediate the site in compliance with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. Since the No Project Alternative would not result in remediation, the alternative would not meet the media-specific RAOs developed for the site. The No Project Alternative would not allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into site soils (i.e., landscaping, hardscape, gardening etc.) on their properties (Objective 4). While the No Project Alternative would maintain the residential land use of the site and would avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community (Objective 2), because the No Project Alternative would not provide for remediation on the site in accordance with the CAO, this Alternative would not meet the underlying purpose of the project.

In summary, the Regional Board finds that the No Project Alternative would conflict with the CAO and would not provide long-term remediation at the site that protects the public health, property or the environment. Therefore, the No Project Alternative is rejected.

Facts in Support of Finding

Table 1, *Summary of Comparison of Impacts Associated with the Expedited Implementation Option and the Alternatives Relative to Impacts of the RAP (Base Remedy)*, provides a qualitative comparison of the impacts associated with the Alternatives and the impacts of the RAP. (The comparison indicates if the potential impacts would be similar, less than or greater than the impacts identified for the RAP.) As shown therein, the No Project Alternative would generally avoid all of the Project's potentially significant short-term impacts, including the Project's significant and unavoidable impacts regarding noise and vibration. However, the No Project Alternative would generally result in greater long-term impacts such as hazardous materials (health risks, and accidental release conditions) and water quality since no cleanup would be undertaken. **Table 2**, *Summary Comparison of the RAP's and Alternatives' Ability to Meet Project Objectives*, illustrates the comparative ability of the various alternatives to meet the Project Objectives. Generally, as the primary objective provides for the remediation of the Site, the No Project Alternative would fail to meet the CAO and the Remedial Action Objectives (RAO) developed for the site. The No Project Alternative is in direct conflict with the Regional Board's CAO that requires remediation of the Site.

Table 1

Summary of Comparison of Impacts Associated with the Expedited Implementation Option and the Alternatives Relative to Impacts of the RAP (Base Remedy)

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option	No Project Alternative	Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
Air Quality					
Conflict with or obstruct implementation of the applicable air quality plan	Less than Significant	Similar (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Violate any air quality standard or contribute substantially to an existing or projected air quality violation	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Expose sensitive receptors to substantial pollutant concentrations	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Objectionable odors affecting a substantial number of people	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Conflict with or obstruct implementation of the applicable policies in the City of Carson General Plan Air Quality Element	Less than Significant	Similar (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)

Table 1 (Continued)

Summary of Comparison of Impacts Associated with the Option and the Alternatives Relative to Impacts of the Project

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option	No Project Alternative	Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
Geology and Soils					
Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death, involving: (1) Strong seismic ground shaking, or (2) Seismic-related ground failure, including liquefaction	Less than Significant	Similar (Less Than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Geologic unit or soil that is unstable, or that would become unstable	Less than Significant	Similar (Less Than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Soil erosion or loss of topsoil	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Greater (Less than Significant)	Less (Less than Significant)
Expansive soil	Less than Significant	Similar (Less Than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Greenhouse Gas Emissions					
Generate greenhouse gas emissions that would exceed 10,000 MTCO ₂ e per year	Less than Significant	Similar (Less Than Significant)	Less (No Impact)	Greater (Less than Significant)	Less (Less than Significant)
Conflict with the greenhouse gas emissions reductions goals and strategies of AB 32	Less than Significant	Similar (Less Than Significant)	Less (No Impact)	Greater (Less than Significant)	Less (Less than Significant)

Table 1 (Continued)

Summary of Comparison of Impacts Associated with the Option and the Alternatives Relative to Impacts of the Project

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option			
			No Project Alternative	Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
Hazardous Materials					
Result in an incremental increase in cumulative lifetime potential cancer risk from exposure to project-related TACs and COCs emitted as a direct result of implementation of the RAP in excess of one in one million (1×10^{-6}), or in excess of 10 in one million (1×10^{-5}) if Best Available Control Technologies (BACT) are implemented	Less than Significant	Similar (Less than Significant)	Less (No Impact)	Greater (Less than Significant with Mitigation Measures)	Less (Less than Significant)
Result in an incremental increase in cumulative lifetime potential cancer risk from exposure to COCs in soil, soil vapor, and indoor air for residences in excess of 1×10^{-6} and for on-site construction and utility maintenance workers an incremental increase in cumulative lifetime potential cancer risk outside of the NCP risk range of 1×10^{-6} to 1×10^{-4}	Less than Significant	Similar (Less than Significant)	Greater (Less than Significant)	Less (Less than Significant)	Greater (Less than Significant)
Result in a chronic or acute non-cancer hazard index (HI) of greater than 1.0	Less than Significant	Greater (Less than Significant)	Less (Less than Significant)	Greater (Less than Significant)	Less (Less than Significant)

Table 1 (Continued)

Summary of Comparison of Impacts Associated with the Option and the Alternatives Relative to Impacts of the Project

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option	No Project Alternative	Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
In accordance with the SSCGs, create conditions leading to, or otherwise allowing, building interiors to accumulate and or be exposed to methane concentrations exceeding 5 percent of the Lower Explosive Limit (LEL) for methane	Less than Significant	Similar (Less than Significant)	Greater (Less than Significant)	Less (Less than Significant)	Greater (Less than Significant)
Create a risk of accidental release which exceeds the “acceptable with controls” category through the routine transport, use, or disposal of hazardous materials	Acceptable Level of Risk	Similar (Acceptable Level of Risk)	Less (No Impact)	Greater (Less than Significant)	Less (Less than Significant)
Create a risk of accidental release which exceeds the “acceptable with controls” category through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	Acceptable Level of Risk	Similar (Acceptable Level of Risk)	Less (No Impact)	Greater (Less than Significant)	Less (Less than Significant)
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	Less than Significant	Similar (Less than Significant)	Less (Less than Significant)	Greater (Less than Significant)	Less (Less than Significant)

Table 1 (Continued)

Summary of Comparison of Impacts Associated with the Option and the Alternatives Relative to Impacts of the Project

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option	No Project Alternative	Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
Hydrology and Water Quality					
Result in discharges that would create pollution, contamination or nuisance or cause regulatory standards to be violated.	Less than Significant	Greater (Less than Significant)	Less (Potentially Significant)	Similar (Less than Significant)	Less (Less Than Significant)
Affect the rate or change the direction of movement of existing COCs or expand the area affected by COCs	Less than Significant	Similar (Less Than Significant)	Greater (Potentially Significant)	Similar (Less Than Significant)	Similar (Less than Significant)
Increase level of concentrations of COCs in groundwater or violate any federal, state, or local groundwater quality standard, including the water quality objectives in the Basin Plan	Less than Significant	Similar (Less Than Significant)	Greater (Potentially Significant)	Similar (Less Than Significant)	Similar (Less than Significant)
Noise and Vibration					
Result in exposure of persons to or generation of noise levels in excess of local standards; result in a substantial permanent increase in ambient noise levels in the project vicinity above existing levels; or result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels	Significant and Unavoidable	Similar (Significant and Unavoidable)	Less (No Impact)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)

Table 1 (Continued)

Summary of Comparison of Impacts Associated with the Option and the Alternatives Relative to Impacts of the Project

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option			
Result in exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels	Significant and Unavoidable	Similar (Significant and Unavoidable)	Less (No Impact)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Traffic and Circulation					
Increase in traffic demand on a CMP facility by 2 percent of capacity (i.e., V/C increase of 0.02), causing LOS F (V/C > 1.00) or if the facility is already at LOS F when the project increases traffic demand on a CMP facility by 2 percent of capacity (i.e., V/C increase of 0.02).	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)
Increase in traffic demand on a CMP facility by 2 percent of capacity (i.e., V/C increase of 0.02), causing LOS F (V/C > 1.00) or if the facility is already at LOS F when the project increases traffic demand on a CMP facility by 2 percent of capacity (i.e., V/C increase of 0.02).	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Similar (Less Than Significant)

Table 1 (Continued)

Summary of Comparison of Impacts Associated with the Option and the Alternatives Relative to Impacts of the Project

Impact Threshold	RAP		Alternative 1	Alternative 2	Alternative 3
	Base Remedy	Expedited Implementation Option	No Project Alternative	Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
Utilities and Service Systems (Solid Waste)					
Generate solid waste in excess of the permitted capacity of the disposal facilities serving the project	Less than Significant	Greater (Less than Significant)	Less (No Impact)	Similar (Less Than Significant)	Less (Less than Significant)

Source: PCR Services Corporation, 2014

Table 2

Summary Comparison of the RAP's and Alternatives' Ability to Meet Project Objectives

Project Objective	Ability to Meet Project Objective			
	RAP (Project)	Alternative 1 No Project Alternative	Alternative 2 Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	Alternative 3 No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
1. Implement a RAP that complies with the CAO and meets the media-specific (i.e. soil, soil vapor, and groundwater) Remedial Action Objectives (RAOs) developed for the site. (See RAO #1 through RAO #4 below.)	Meets Objective	Does Not Meet Objective	Meets Objective (Better meets Objective than project)	Meets Objective (To lesser extent than project)
RAO #1. Prevent human exposures to concentrations of COCs in soil, soil vapor, and indoor air such that total (i.e., cumulative) lifetime incremental carcinogenic risks are within the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) risk range of 1×10^{-6} to 1×10^{-4} and noncancer hazard indices are less than 1 or concentrations are below background, whichever is higher. Potential human exposures include on-site residents and construction and utility maintenance workers. For on-site residents, the lower end of the NCP risk range (i.e., 1×10^{-6}) and a noncancer hazard index less than 1 are used. Prevent direct contact exposure to COCs at concentrations above applicable risk-based SSCGs in soil for on-site residents and construction and utility maintenance workers.	Meets Objective	Does Not Meet Objective	Meets Objective (Better meets Objective than project)	Meets Objective (To lesser extent than project)
RAO #2. Prevent fire/explosion risks in indoor air and/or enclosed spaces (e.g., utility vaults) due to the accumulation of methane generated from the anaerobic biodegradation of petroleum hydrocarbons in soils. Eliminate methane in the subsurface to the extent technologically and economically feasible.	Meets Objective	Does Not Meet Objective	Meets Objective	Meets Objective
RAO #3. Remove or treat LNAPL to the extent technologically and economically feasible, and where a significant reduction in current and future threat to groundwater will result.	Meets Objective	Does Not Meet Objective	Meets Objective	Meets Objective

Table 2 (Continued)

Summary Comparison of the Project’s and Alternatives’ Ability to Meet Project Objectives

Project Objective	Ability to Meet Project Objective			
	RAP (Project)	Alternative 1 No Project Alternative	Alternative 2 Excavation Beneath Landscape and Hardscape to 10 Feet Alternative	Alternative 3 No Excavation Beneath Hardscape – 5 Feet With Targeted 10 Feet Alternative
RAO #4. Reduce COCs in groundwater to the extent technologically and economically feasible to achieve, at a minimum, SSCGs and the water quality objectives in the Regional Board Basin Plan to protect the designated beneficial uses, including municipal supply.	Meets Objective	Does Not Meet Objective	Meets Objective (Better meets Objective than project)	Meets Objective (To lesser extent than project)
2. Maintain the residential land use of the site and avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community.	Meets Objective	Meets Objective	Meets Objective	Meets Objective
3. Minimize short-term disruption to residents.	Meets Objective	Meets Objective	Meets Objective (To lesser extent than project)	Meets Objective (Better meets objective than project)
4. Allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into shallow site soils (i.e., landscaping, hardscape, gardening, etc.) on their properties.	Meets Objective	Does Not Meet Objective	Meets Objective (Better meets objective than project)	Meets Objective (To lesser extent than project)
5. Limit or minimize environmental impacts associated with the cleanup activities.	Meets Objective	Meets Objective	Meets Objective (To lesser extent than project)	Meets Objective (to greater extent than project)

Source: PCR Services Corporation, 2014

B. ALTERNATIVE 2: EXCAVATION BENEATH LANDSCAPE AND HARDSCAPE TO 10 FEET ALTERNATIVE

The Excavation Beneath Landscape and Hardscape to 10 Feet Alternative would include the same remedial technologies as the project, but would excavate soils to a depth of 10 feet bgs (as compared to 5 feet with targeted excavation to 10 feet bgs under the project) beneath landscaped and hardscaped areas where human health or groundwater goals are exceeded. Excavation to 10 feet would occur in all the areas compared with 5 feet with targeted areas to 10 feet under the RAP. This alternative is estimated to take approximately 8.4 years, which is approximately 2.4 years longer than the project.

Data from sampling that occurred at ≤ 10 feet bgs would be used to identify properties for excavation. If sample data indicate that soils on a given property do not meet RAOs, the residential hardscape of the property would be removed and excavation would occur to remove exposed soils to the depth where the deepest detection took place. While the same remedial technologies implemented by the project would be included in this alternative, SVE/bioventing infrastructure may be modified for a 10-foot excavation depth.

Excavation under this alternative would occur at 241 properties, or an increase of 22 properties compared with the RAP. (An additional 22 properties would be excavated because while these properties meet RAOs from 0 to 5 feet they do not meet RAOs from 1 to 10 feet.) Similar to the project, sub-slab vapor mitigation system would be installed at approximately 28 houses and SVE/bioventing units would be installed at 236 properties.

Excavations to 10 feet bgs would require geotechnical investigations to support excavation design and establishment of necessary setbacks from buildings. Excavation to 10 feet would create challenges due to shoring of structures down to 10 feet and the shoring, setback and other protections required could limit the ability to reach a depth of 10 feet throughout the site. Excavations to 10 feet bgs either could be shored or done by slot trenches with vertical sidewalls. It is possible that vertical sidewalls would not be permitted at 10 feet as a result of geotechnical stability. In addition, leaving vertical sidewalls adjacent to structures overnight could result in slope failure and structure damage.

In some areas, a limited access bucket auger drilling rig would be used in conjunction with conventional excavation equipment. Conventional excavation using slot-trenching as necessary to protect structures or other features and open bulk excavation with appropriate sloping, setbacks, and/or shoring would be used where possible as the preferred excavation method. Auger excavation using a limited access rig would allow work in relatively tight spaces adjacent to structures to remove a column of soil.

The Excavate Beneath Landscape and Hardscape to 10 Feet Alternative would require on average, excavation of 1,222 CY of soil per property [compared to 611 to 867 CY per property under the RAP]. Approximately 277,400 CY of impacted soil would be excavated from the residential properties. With the 10 percent contingency and the 8,100 CY from street trenching,

approximately 35,840 CY of additional soil would be excavated from other areas on the site. This alternative would result in a total of approximately 313,240 CY of impacted soil hauled from the site in about 21,639 truckloads over the timeframe of the implementation of this alternative. Clean fill would be imported to the site in a similar quantity.

As with the RAP, excavation would occur around utilities, including water and gas, which are located about 3 to 3.5 feet inside the sidewalks in the front yards of approximately one-half of the properties in the Carousel Tract. These water pipes are of asbestos-cement (transite) construction and would need to be avoided during excavation.

Where it is possible to excavate to 10 feet in back yards, a long-reach excavator would be used. The overhead power lines would potentially need to be removed due to the potential for the excavator to hit the overhead utility lines, which could create an electrocution hazard for workers. The overhead power lines would be restored upon completion of the excavation.

Excavation of the upper 10 feet of soil and replacement with sand-cement slurry and clean soil would prevent most contact with impacted soils. The City of Carson Building Code Section 8105, which amends the L.A. County Building Code Section 7003.1, is an existing long-term regulatory control that would limit exposure to soils below 3 feet.

Finding

Alternative 2 would result in greater impacts than the RAP with respect to short-term impacts (i.e., greenhouse gas emissions, hazards, noise and vibration) associated with excavation and hauling since Alternative 2 would require a greater volume of excavation and would require a longer time period for completion than the project. Alternative 2 would not reduce or mitigate the significant and unavoidable noise and vibration impacts of the proposed RAP.

Alternative 2 would meet the underlying purpose of the project, which is to remediate the site in compliance with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. Alternative 2 would result in remediation that would meet the media-specific RAOs developed for the site. Alternative 2 would allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into site soils (i.e., landscaping, hardscape, gardening etc.) on their properties (Objective 4). Alternative 2 would maintain the residential land use of the site and would avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community (Objective 2). However, Alternative 2 would not meet some of the objectives of the project, such as Objective 3 to minimize short-term disruption to residents and Objective 5 to limit or minimize environmental impacts associated with the cleanup activities to the same extent as the RAP. While Alternative 2 would meet the objectives that apply to long-term environmental effects to a greater extent than the RAP, Alternative 2 would not meet the objectives to minimize short-term disruption or environmental impact associated with the cleanup activities to the same extent as the RAP.

Facts in Support of Finding

As shown in Table 1, Alternative 2 would result in a mix of “similar”, “greater”, and “less” impacts when compared to the Project. This Alternative would not avoid any of the Project’s significant and unavoidable noise and vibration impacts that would occur with the implementation of the RAP.

As demonstrated in Section 4.2, Geology and Soils, of the Draft EIR, although erosion control and implementation of approved grading plans would be the same as under the RAP and impacts would be less than significant, erosion impacts would be incrementally greater under Alternative 2 because of the longer remediation timeframe.

While daily activity levels under Alternative 2 would be the same as the RAP, remedial activities would occur for a greater number of days overall to account for the additional excavated material. Therefore, as demonstrated in Section 4.3, Greenhouse Gas Emissions, of the Draft EIR, GHG emissions under Alternative 2 would be greater than under the RAP. Although Alternative 2 would not exceed threshold standards pertinent to GHG and would have a less than significant impact related to GHG emissions, Alternative 2 would require the use of additional transportation fuels to transport the increased amounts of excavation and backfill materials to and from the site as compared to the RAP. From a transportation energy perspective, Alternative 2 would be less efficient than the RAP due to the need to transport materials that do not warrant excavation as per the SSCGs.

With regard to hazardous materials, Alternative 2 would result in a greater increase in short-term TAC emissions and potential for accidental release compared to the RAP because of the increase in materials to be excavated and hauled and the overall longer timeframe required for remediation. This Alternative would incorporate the same PDFs as the RAP, which would reduce short-term emissions from heavy equipment, trucks, fugitive dust and volatiles. However, Alternative 2 would result in an increase in short-term exposure thereby increasing lifetime cancer risks for sensitive receptors. Because of the greater volume of excavated soils and the duration of excavation and hauling, short-term impacts related to health risk under Alternative 2 would be greater than under the RAP. Given the increase in duration and activities, health risks resulting from Alternative 2 would be proportionally larger than those predicted under the RAP, and impacts would be potentially significant requiring the implementation of mitigation measures. MM HAZ-1 and MM HAZ-2, as described in Section 5.4, *Hazardous Materials*, of this EIR would reduce health risks resulting from Alternative 2 to less than significant levels.

As with the RAP, Alternative 2 would result in restoration of affected properties and infrastructure, including yards, landscaping, and streets. Following implementation of Alternative 2, negligible long-term emissions would result from the SVE/bioventing system, sub-slab vapor mitigation system, and from periodic monitoring and maintenance activities, as under

the RAP. Therefore, Alternative 2 would result in less than significant impacts with regard to hazards to the public or the environment. Impacts with regard to hazards would be less than the RAP, and Alternative 2 would result in a greater long-term beneficial effect than under the RAP.

With regard to noise and vibration, Alternative 2 would result in the same daily activity as under the RAP and would intermittently exceed the significance threshold of 65 dBA, L_{eq} at sensitive receptor locations. Therefore, noise and vibration levels associated with demolition of hardscape and excavation would be similar within close proximity of the excavation site as under the RAP and would be potentially significant. Mitigation measures involving the relocation of impacted residents would reduce noise and vibration levels to a less than significant level. However, because such relocation would be voluntary, the mitigation is not assured. Therefore, as with the RAP, noise and vibration impacts under Alternative 2 would be conservatively considered to be potentially significant and unavoidable.

As shown in Table 2, Alternative 2 would meet long-term objectives of the RAP, including Objective 1 to implement a RAP that complies with the CAO and meets the media-specific RAOs developed for the site; Objective 2 to maintain the residential land use of the site and avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community; and Objective 4 to allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into shallow site soils on their properties. Alternative 2 would result in greater short-term TAC emissions associated with excavation and haul trips, resulting in TAC emissions and potential accidental release, than under the RAP. Because of greater excavation activity, hauling, and duration of these activities than under the RAP, Alternative 2 would not meet Objective 3 to minimize short-term disruption to residents or Objective 5 to limit or minimize environmental impacts associated with the cleanup activities to the same extent as the RAP. However, Alternative 2 would better meet Objective 1 to implement a RAP that complies with the CAO and meets media specific RAOs and Objective 4 to allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into site soils to a greater extent than under the RAP.

C. ALTERNATIVE 3: NO EXCAVATION BENEATH HARDSCAPE – 5 FEET WITH TARGETED 10 FEET ALTERNATIVE

The No Excavation Beneath Hardscape -5 Feet With Targeted 10 Feet Alternative would include the same remedial technologies as the project, and would excavate soils to a depth of 5 feet bgs with targeted 10 feet excavation. Alternative 3 would excavate only under landscaped areas where human health or groundwater goals are exceeded and removal of hardscape would not occur. Excavation under this alternative would occur at 219 properties. Similar to the project, sub-slab vapor mitigation system would be installed at approximately 28 houses and SVE/bioventing units would be installed at 236 properties.

Excavations to 10 feet bgs would require geotechnical investigations to support excavation design and establishment of necessary setbacks from buildings. Excavation to 10 feet would create challenges due to shoring of structures down to 10 feet and the shoring, setback and other protections required could limit the ability to reach a depth of 10 feet throughout the site. Excavations to 10 feet bgs either could be shored or done by slot trenches with vertical sidewalls. It is possible that vertical sidewalls would not be permitted at 10 feet as a result of geotechnical stability. In addition, leaving vertical sidewalls adjacent to structures overnight could result in slope failure and structure damage.

In some areas where targeted excavation from 5 to 10 feet would be conducted, a limited access bucket auger drilling rig would be used in conjunction with conventional excavation equipment. Auger excavation using a limited access rig would allow excavation to be conducted in relatively tight spaces adjacent to structures to remove a column of soil. Auger excavation using a limited access rig would allow work in relatively tight spaces adjacent to structures to remove a column of soil.

The No Excavation Beneath Hardscape would require on average excavation of 330 CY of soil per property [compared to 611 to 867 CY per property under the RAP]. Approximately 76,300 CY of impacted soils would be excavated from the residential properties. With the 10 percent contingency and the 8,100 CY of soils that would be excavated from the street trenching, this alternative would result in a total of approximately 83,930 CY of impacted soil hauled from the site in about 5,450 truckloads over the timeframe of the implementation of this alternative. Clean fill would be imported to the site in a similar quantity.

Excavation would occur around utilities, including water and gas, which are located about 3 to 3.5 feet inside the sidewalks in the front yards of approximately one-half of the properties in the Carousel Tract. These water pipes are of asbestos-cement (transite) construction and would need to be avoided during excavation.

Under this alternative where it is possible to excavate to 10 feet in back yards, a long-reach excavator would be used. The overhead power lines would potentially need to be removed due to the potential for the excavator to hit the overhead utility lines, which could create an electrocution hazard for workers. The overhead power lines would be restored upon completion of the excavation.

As indicated above, under this alternative hardscape, such as walkways and driveways, would not be removed and no excavation would occur beneath the hardscape. The City of Carson does not require that homeowners obtain a permit or notify the City prior to removing residential hardscape from their property. Therefore, this alternative would include the development of long-term regulatory controls restricting removal of residential hardscape within the Carousel Tract in order to reduce the potential for human contact with impacted soils.

This alternative is estimated to take approximately 4.4 years, which is approximately 1.4 years shorter than the project.

Finding

Alternative 3 would require less excavation and a shorter time period for completion compared with the RAP since hardscape would not be removed. Thus, Alternative 3 would result in reduced level of noise, vibration and short-term hazards associated with excavation and hauling compared with the RAP. However, Alternative 3 would not reduce or mitigate all of the impacts of the proposed project and still would result in significant and unavoidable impacts with respect to noise and vibration. However, although Alternative 3 would result in less than significant impacts with regard to implementation of the cleanup, impacts would be greater (benefits would be less) than under the RAP because of removal of less COC-impacted soil.

Since Alternative 3 would require less intensive excavation than the RAP overall remediation impacts would be reduced and Alternative 3 would meet Objective 3 to minimize short-term disruption to residents; Objective 2 to maintain the residential land use of the site and avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community; and Objective 5 to limit or minimize environmental impacts associated with the cleanup activities to a greater extent than the RAP. Alternative 3 would meet the underlying purpose of the project, which is to remediate the site in compliance with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. Alternative 3 would result in remediation that would meet the media-specific RAOs developed for the site. Alternative 3 would also meet Objective 4, to allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into shallow site soils on their properties. However, Alternative 3 would not meet Objectives 1 and 4 to the same extent as the RAP.

Facts in Support of Finding

As shown in Table 1, Alternative 3 would result in a mix of "similar", "less", and "greater" impacts when compared to the Project. While Alternative 3 would primarily reduce the level of impacts compared with the RAP because of leaving the hardscape in place and less excavation and hauling of impacts soil, Alternative 3 would result in greater impacts to long-term health risk compared with the RAP. In addition, Alternative 3 would not avoid any of the Project's significant and unavoidable noise and vibration impacts that would occur with the implementation of the RAP.

While daily activity levels under Alternative 3 would be the same as the RAP, remedial activities would occur for less days overall due to reduced amount of excavation. Therefore, as demonstrated in Section 4.3, Greenhouse Gas Emissions, of the Draft EIR, GHG emissions under Alternative 3 would be less than under the RAP. As with the RAP, impacts associated with greenhouse gas emissions would be less than significant under Alternative 3.

With regard to hazardous materials, Alternative 3 would result in less short-term TAC emissions and potential for accidental release compared to the RAP because of the reduction in materials to be excavated and hauled and the overall shorter timeframe required for remediation. Because of the reduced volume of excavated soils and duration of excavation and hauling, short-term impacts related to health risk would be less than under the RAP and would be less than significant. As with the RAP, negligible long-term emissions would result from the SVE/bioventing system, sub-slab vapor mitigation system, and from periodic monitoring and maintenance activities. However, while less than significant, long-term health risk impacts may be greater (benefits would be less) than under the RAP as a result of the removal of less COC-impacted soil.

With regard to hydrology and water quality, since remediation under Alternative 3 would occur over a shorter time period than under the RAP, potential exposure of soils to surface water during remediation would be incrementally less. As with the RAP, impacts would be less than significant.

Alternative 3 would involve excavation activity similar to the RAP and, therefore, would intermittently exceed the significance threshold of 65 dBA, L_{eq} at noise-sensitive receptor locations. However, because concrete saws, jack hammers, and other equipment to remove hardscape and concrete mixer trucks would not be utilized during the residential property excavation phase, remediation activity noise levels would be reduced by approximately 10 dBA during the residential remediation phase compared to the RAP. Similar to the RAP, peak noise impacts under Alternative 3 are predicted to result during the street trenching phase. Mitigation measures involving the relocation of impacted residents would reduce noise and vibration levels to a less than significant level. However, because such relocation would be voluntary, the mitigation is not assured. Therefore, while noise and vibration impacts under Alternative 3 would be less than the RAP, the impacts would be considered to be potentially significant and unavoidable.

Alternative 3 would not remove hardscape, thereby reducing the inert waste generated at the site as well as reducing the overall quantity of impacts soil that would be removed from the site. However, total green waste removed would be the same as under the RAP. Alternative 3 would result in reduced impacts with regard to solid waste and as with the RAP impacts would be less than significant.

As discussed above, Alternative 3 would require less intensive excavation than under the RAP and, therefore, would reduce overall remediation impacts. Alternative 3 would meet Objective 1 to implement a RAP that complies with the CAO, as amended, and would meet the media-specific RAOs. Compared with the RAP, Alternative 3 would reduce impacts associated with excavation because it would result in less noise, vibration and short-term hazards associated with excavation and hauling since Alternative 3 would not result in the removal of hardscape on residential properties. However, Alternative 3 would not reduce or mitigate all of the impacts of

the RAP and still would result in significant and unavoidable impacts with respect to noise and vibration. With the reduced impacts, Alternative 3 would meet Objective 3 to minimize short-term disruption to residents and Objective 5 to limit or minimize environmental impacts associated with the cleanup activities to a greater extent than the RAP. While Alternative 3 would meet Objective 4 to allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into shallow site soils on their properties, it would do so to a lesser extent than the RAP. Therefore, Alternative 3 would potentially result in a greater risk of long-term exposure than under the RAP.

9.0 FINDINGS ON THE MITIGATION MONITORING AND REPORTING PROGRAM

Pursuant to Section 21081.6 of the Public Resources Code, the Regional Board, in adopting these Findings, also adopts the Mitigation Monitoring and Reporting Program (MMRP) for the RAP for the Former Kast Property Tank Farm Site Remediation Project. The MMRP is designed to ensure that, during Project implementation, the Regional Board and other responsible parties will comply with the mitigation measures adopted in these Findings. In addition, the MMRP contains the PDFs that are incorporated into the project to reduce the potential environmental effects of the project. The PDFs are included in the MMRP to ensure implementation of these features and to identify the method of verification, monitoring agency, and timing of implementation. The Regional Board hereby finds that the MMRP, which is incorporated into the Final EIR document dated June 2015 (incorporated by reference), meets the requirements of Public Resources Code Section 21081.6 by providing for the implementation and monitoring of Project conditions intended to mitigate potential environmental effects of the Project.

10.0 FINDINGS REGARDING FINAL EIR

Pursuant to CEQA, on the basis of the review and consideration of the Final EIR, the Regional Board finds that all information included in the Final EIR in “response to comments” and “corrections and additions” to the Draft EIR merely clarifies, amplifies or makes insignificant modifications to an already adequate EIR pursuant to CEQA Guidelines Section 15088.5(b) and that no significant new information has been received that would require recirculation.

STATEMENT OF OVERRIDING CONSIDERATIONS

INTRODUCTION

After considering the Final EIR in conjunction with making the Findings, the lead agency must not approve the project for which the EIR was prepared unless the project as approved will not have a significant effect on the environment; or all avoidable significant effects on the environment have been eliminated or substantially lessened, and the agency finds that “specific overriding economic, legal, social, technological, or other benefits of the project outweigh the significant effects on the environment.” (Public Resources Code Section 21081[b])

This document contains a Statement of Overriding Considerations as required by CEQA (Public Resources Code Section 21081[b]) and CEQA Guidelines Section 15093 (14 Cal. Code Reg. 15093). Specifically, CEQA Guidelines Section 15093(a) requires decision-makers “to balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project.” (14 Cal. Code Reg. 15093[a]) When the specific economic, legal, social, technological, or other benefits of the project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered acceptable (State CEQA Guidelines 15093[a]). In this case, the lead agency must state in writing the specific reasons to support its action. This statement of overriding considerations shall be supported by substantial evidence in the record, shall be included in the record of the project approval, and should be mentioned in the notice of determination.

SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL IMPACTS

The Regional Board has (i) adopted all feasible mitigation measures and approved the project design features included in the Final EIR, and (ii) rejected alternatives to the Project as discussed above. Based on the Final EIR and other information in the record, the Regional Board has determined that implementation of the Project may result in the following significant and unavoidable environmental impacts:

Noise. The Project would result in significant and unavoidable noise levels during remediation since side yards are narrow, and homes are as close as 5 feet from the property line. As such, it is infeasible to erect sound barriers to shield the adjacent homes, and traditional temporary sound barriers are not capable of reducing the noise levels sufficiently to levels below the City of Carson’s threshold (65 dBA). Erecting noise barriers in the street or on public sidewalks for weeks at a time is not feasible, and those homes with direct line of sight to a cluster are predicted to experience high levels of noise. With implementation of MM NOISE-1, the noise sensitive receptors (single-family residential uses) within 130 feet in all directions from the

cluster and areas where noise from active remediation activities would exceed 65 dBA, L_{eq} based on additional noise monitoring during the implementation of the RAP would be offered devices, such as hearing protection, sound proofing, white noise machines, etc. or relocation. If relocation is accepted, those individuals would not be exposed to high noise levels from implementation of the project. While relocation would reduce the significant impact to less than significant, since relocation is voluntary, residents may choose to remain and would potentially be exposed to noise levels in excess of the thresholds even with the use of sound reduction devices. Thus, the impact is conservatively assumed to remain significant and unavoidable even with implementation of the mitigation measure. During the street trenching phase of RAP implementation, MM NOISE-2 would reduce noise levels by approximately 10 dBA. However impacts during this phase would remain above the 65 dBA thresholds, and are also considered significant and unavoidable.

Vibration. Peak velocities fall below the threshold for human perception at approximately 10 feet for vibration resulting from the mini excavator and at 60 feet for vibration resulting from a jack hammer. With the implementation of MM NOISE-1 during residential property remediation and MM VIB-1 during other phases involving the use of a jack hammer, vibration impacts could be mitigated to less than significant. However, since relocation is voluntary, residents may choose to remain and would potentially be exposed to vibration levels in excess of the thresholds. Thus, vibration impacts are conservatively assumed to remain significant and unavoidable even with implementation of the mitigation measures.

In accordance with Section 21081(b) of the California Public Resources Code and Section 15093(b) of the CEQA Guidelines, and having balanced the benefits of the Project against the Project's significant and unavoidable impacts, the Regional Board hereby finds that the following specific overriding economic, legal, social, technological or other benefits of the Project are individually, as well as collectively, sufficient to outweigh the Project's significant effects on the environment, and the adverse environmental effects of the Project are considered "acceptable."

OVERRIDING CONSIDERATIONS

Historically, prior to development of the existing residential uses, the local project vicinity was primarily an industrial area inclusive of numerous oil refinery and other chemical-related facilities, many of which have documented hazardous materials releases. The site was developed in 1923 by Shell Company of California with three concrete oil storage reservoirs and was used as an active oil storage facility until the 1950s, when the site was used only on a standby reserve basis. In 1966, the oil storage reservoirs were removed from the site. Construction of existing on-site homes as part of the Carousel Tract began in 1967 and was completed by the early 1970s. The site has remained residential since that time and includes 285 single-family residences.

In 2008, environmental investigations were conducted in connection with an adjacent industrial chemical facility (former Turco Products Facility). During those investigations, contamination by petroleum hydrocarbons at sample locations was discovered within the site. The Department of Toxic Substances Control (DTSC) communicated these findings to the Los Angeles Regional Water Quality Control Board [Regional Board] in March 2008, and in April 2008 the Regional Board sent an inquiry to Shell regarding the status of any environmental investigations at the site. This inquiry was followed by the Regional Board's California Water Code (CWC) Section 13267 Order to Conduct an Environmental Investigation at the former Kast Property issued to Shell Oil Company (Shell) on May 8, 2008. Shell conducted a series of extensive site multimedia sampling and investigations, pilot studies, and other environmental evaluations of the site in response to that Order and subsequent 13267 Orders issued on October 1, 2008 and November 18, 2009, Section 13304 Order dated October 15, 2009, and Cleanup and Abatement Order R4-2011-0046 (CAO) dated March 11, 2011, as amended. All of the investigations have occurred under Regional Board approval and oversight, following work plans reviewed and approved by the Regional Board. Results of the investigations show that the site has been impacted with petroleum hydrocarbons associated with former crude oil storage during the period prior to residential redevelopment. In addition to hydrocarbon-related impacts, impacts are also locally present from chlorinated solvents. Because of the impacted soils by petroleum hydrocarbons, methane gas also occurs beneath the site, although at non-hazardous levels in the shallow subsurface.

The underlying purpose of the proposed RAP is to remediate the site consistent with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. Pursuant to Water Code section 13360, the Regional Board may not specify the manner of compliance; the person ordered to take action may comply in any lawful manner that will achieve the project goals. The CAO requires Shell to prepare a RAP, that at a minimum, will attain cleanup goals that are based on residential (i.e., unrestricted) land use, that will achieve applicable water quality objectives set forth in the Regional Board's Water Quality Control Plan, that will comply with State Water Resources Control Board (State Water Board) Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California", i.e., the State's "Anti-degradation Policy"), and that will comply with State Water Board Resolution 92-49 ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304). In accordance with the provisions of the CAO and as required by Section 15124(b) of the CEQA Guidelines, the below listed objectives for the proposed RAP have been established. The objectives will aid decision makers in their review of the project and environmental impacts, and alternatives.

1. Implement a RAP that complies with the CAO and meets the media-specific (i.e. soil, soil vapor, and groundwater) Remedial Action Objectives (RAOs) developed for the site.

2. Maintain the residential land use of the site and avoid permanently displacing residents from their homes or physically dividing the established Carousel Tract community.
3. Minimize short-term disruption to residents.
4. Allow residents the long-term ability to safely and efficiently make improvements requiring excavation or penetration into shallow site soils (i.e., landscaping, hardscape, gardening, etc.) on their properties.
5. Limit or minimize environmental impacts associated with the cleanup activities.

The RAP is consistent with the Regional Board's CAO R4-2011-0046 dated March 11, 2011, as amended, and applicable laws and policies. The site in its current state poses a risk to human health and to water quality due to the impacted soils. The RAP would achieve three primary goals – cleanup sufficient waste so that human health is protected, restore the groundwater to its beneficial use and provide for unrestricted land use. Removal of all waste is not feasible and is not necessary to achieve the primary goals.

The site is developed with 285 single family residences. The presence of contamination is a major concern of the Carousel Tract residents due to concerns about potential health risks associated with the use of their property. Remediation of the site as proposed in the RAP will remove impacted soil and will maintain the residential land use of the site. The RAP will avoid the permanent displacement of residents. In other words, the RAP will allow the social fabric of the community to remain intact.

The site is located on the Torrance Plain of the West Coast Groundwater Basin of Los Angeles County. The Basin Plan indicates that beneficial uses of the West Coast Basin include existing municipal and domestic supply, existing industrial service supply, existing industrial process supply, and existing agricultural supply.

The Gage Aquifer underlies the site. Based on results from the groundwater monitoring well installations, the first encountered groundwater beneath the site is located at depths ranging from approximately 52 to 68 feet bgs. Uppermost groundwater occurs within sandy deposits of the Bellflower aquitard, which is referred to as the Shallow Zone. Sampling results indicate that on-site groundwater is impacted with COCs, some of which may be attributed to upgradient sources. Levels of benzene, naphthalene, and arsenic in on-site groundwater exceed California drinking water standards (Maximum Contaminant Levels or MCLs) or Department of Human Health Notification Levels (NLs). In compliance with the CAO, the RAP is designed to address the impacts of the historic uses on the site. The RAP would result in source reduction of the impacted soil through excavation, SVE/bioventing in the vadose zone, as well as LNAPL removal in conjunction with MNA as the remedy for site-related COCs in groundwater.

The implementation of the RAP, with the incorporation of PDFs and MMs, would result in less than significant impacts in all issue areas with the exception of noise and vibration. The relocation of residents, which is included as MM NOISE-1 and MM VIB-1, would result in removing people from potential exposure to noise and vibration in excess of the thresholds. However, while relocation will be offered, relocation is voluntary and residents may choose to remain. If residents remain, residents would potentially be exposed to noise levels in excess of the thresholds. Thus, the impact is conservatively assumed to remain significant and unavoidable even with implementation of the mitigation measure. There are no other feasible mitigation measures that would result in less than significant noise and vibration impacts.

The Regional Board concludes, based upon the whole record, that the economic, social, technical and environmental benefits of meeting the project objectives above outweigh the unavoidable environmental impacts associated with the implementation of the RAP. The Regional Board determines that the benefits override the significance of the significant and unavoidable noise and vibration impacts.

CERTIFICATION OF THE EIR

The Regional Board has reviewed and considered the environmental information contained in the Final EIR SCH No. 2014031053 and hereby determines that it is adequate and was prepared in compliance with the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.). In compliance with Public Resources Code Section 21081 and CEQA Guidelines Section 15093, the Regional Board has considered the Project benefits as balanced against its significant unavoidable environmental impacts and hereby determines that the benefits outweigh the significant unavoidable noise and vibration impacts. Therefore, the Regional Board determines that the significant unavoidable environmental impacts are considered acceptable. The Executive Officer, under delegated authority of the Regional Board pursuant to California Water Code section 13223, hereby:

1. Certifies that the Final EIR and associated documents, consisting of the November 2014 Draft EIR, comments submitted on the Draft EIR and responses to those comments, has been completed in compliance with CEQA and CEQA Guidelines and reflects the independent judgment and analysis of the Executive Officer.
2. Certifies that the Final EIR was presented to the Executive Officer and the Executive Officer reviewed and considered the information contained therein before considering whether to approve the Project.
3. Adopts the Statement of Overriding Considerations and the Mitigation Monitoring and Reporting Program.

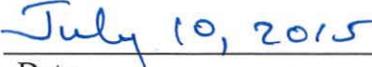
STATEMENT OF LOCATION AND CUSTODIAN OF DOCUMENTS OR OTHER MATERIALS THAT CONSTITUTE THE RECORD OF PROCEEDINGS

Public Resources Code section 21081.6(a)(2) requires the lead agency to specify the location and custodian of the documents or other material that constitute the record of proceedings upon which its decision is based. It is the purpose of this statement to satisfy this requirement. The following is the location of the documents and other materials and the custodian is:

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



Samuel Unger, Executive Officer



Date

4.0 MITIGATION MONITORING AND REPORTING PROGRAM

A. INTRODUCTION

This Mitigation Monitoring and Reporting Program (“MMRP”) has been prepared pursuant to Public Resources Code Section 21081.6, which requires a Lead Agency to adopt a “reporting or monitoring program for changes to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment.” In addition, Section 15097(a) of the State *CEQA Guidelines* requires that:

In order to ensure that the mitigation measures and project revisions identified in the EIR or negative declaration are implemented, the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.

The Regional Water Quality Control Board (Regional Board) is the Lead Agency for the RAP and therefore, is responsible for administering and implementing the MMRP. Where appropriate, the EIR identified Project Design Features and mitigation measures to avoid or substantially lessen significant environmental effects. This MMRP is designed to monitor implementation of the Project Design Features and mitigation measures.

As shown on the following table, each required Project Design Feature (PDF) and Mitigation Measure (MM) for the Project is listed and categorized by impact area, with an accompanying identification of the following:

- **Method of Verification:** The action by which the Monitoring Agency indicates that compliance with the identified PDF or required MM has been implemented.
- **Monitoring Agency:** The agency with the power to enforce the PDF or MM.
- **Timing of Verification:** The phase during which and frequency with which the PDF or MM shall be monitored.
- **Verification:** This column provides a place for staff sign-off, including date and initials, to indicate compliance with and implementation of the PDF or MM.

The Project’s MMRP will be in place throughout the implementation of the RAP. The Responsible Party (RP) will be responsible for implementing all PDFs and MMs unless otherwise noted. The RP shall also be obligated to provide a quarterly Remediation Progress Report to the Regional Board, indicating that the identified PDFs or required MMs have been implemented.

After review and approval of the final MMRP by the Regional Board, minor changes and modifications to the MMRP are permitted, but can only be made by the RP subject to the approval by the Regional Board. The Regional Board, in conjunction with any appropriate agencies or departments, will determine the adequacy

of any proposed changes or modification. The flexibility is necessary due to the nature of the MMRP, and the need to protect the environment, including the potential need to make modifications to reflect any findings in the field. No changes will be permitted unless the MMRP continues to satisfy the requirements of CEQA, as determined by the Regional Board.

B. MITIGATION MONITORING AND REPORTING PROGRAM

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
5.1 Air Quality					
PDF AQ-1 All off-road diesel construction equipment remaining on-site for more than 15 work days will meet USEPA Tier 3 off-road emission standards, if commercially available locally. Use of Tier 3 engines results in a substantial reduction in NO _x emissions compared to similar Tier 2 or lower engines, and has been shown to increase fuel economy over similar Tier 2 engines. Documentation of all off-road diesel construction equipment on-site including Tier 3 certification will be maintained and made available to the Regional Board for inspection upon request.	Written verification, including documentation from the equipment manufacturer or retrofit contractor/installer for Tier 3 equipment. Maintenance of a written log with model, serial number, equipment owner/operator, and any unique visible identifier of all equipment used on-site; the log will demonstrate compliance with Tier 3 emission standards and will be available for inspection upon request by the Regional Board.	Regional Board	Prior to commencement of construction activities and continuously during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
PDF AQ-2 All on-road waste haul trucks exporting soil to the appropriate receiver facility will be model year 2007 or newer or retrofitted to comply with USEPA Year 2007 on-road emissions standards. Documentation of all on-road trucks exporting soil will be maintained and made available to the Regional Board for inspection upon request.	Written verification that all on-road vehicles used for hauling export materials are engine model year 2007 or newer; engines manufactured prior to 2007 will be allowed if retrofitted to 2007 emission standards or better; this requirement does not apply to trucks hauling municipal, universal, or "green" waste from the	Regional Board	Prior to commencement of activities and during all construction and remediation phases Periodic inspections will be conducted by Responsible Party; Inspections of truck logs will be conducted no less than quarterly by the Regional Board during project activities.		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
	<p>site</p> <p>Hauling contractor(s) will provide written record demonstrating availability or absence of 2007 or newer model year trucks in its fleet;</p> <p>Maintenance of a written log with truck engine model year or retrofit certification, Vehicle Identification Number (VIN), and license plate number; the log will be updated as needed and will be available for inspection upon request by the Regional Board. Copies of the certification with the information specified will be acceptable in place of the log.</p>				
<p>PDF AQ-3 The contractor will prohibit the idling of on- and off-road heavy duty diesel vehicles for more than five minutes at a time. This project design feature is consistent with California regulations and laws as well as CARB ATCM requirements.</p>	<p>Hauling and remediation contractors will inform all operators of on- and off-road heavy duty diesel equipment of ATCM requirements as well as noise requirements (see PDF NOISE-2) associated with idling and monitor on-site compliance</p> <p>Contractor will post signs with idling limits at the entrance(s) to the work area</p>	<p>Regional Board</p>	<p>Continuously by Responsible Party during all construction and remediation phases</p> <p>Inspections will be conducted no less than quarterly by the Regional; frequency may be modified as warranted Board</p>		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
PDF AQ-4 The contractor will install SVE and bioventing systems to address petroleum hydrocarbons, VOCs, and methane in soil vapor and to promote degradation of residual hydrocarbon concentrations that do not meet Remedial Action Objectives (RAOs), or are not removed by excavation. The SVE and bioventing systems will require a permit from the SCAQMD. Periodic monitoring will be conducted as specified in the SCAQMD Permit.	Issuance of permit	SCAQMD and Regional Board	Prior to and during operation of SVE/bioventing systems by the RP Inspections will be conducted no less than quarterly by Regional Board; frequency may be modified as warranted		
PDF AQ-5 Sub-slab vapor mitigation system will be installed at 28 identified properties (27 based on RAO exceedance for potential vapor intrusion and 1 based on SSCG exceedance for methane). Sub-slab vapor mitigation system will also be installed at any additional properties within the Carousel Tract where the homeowner requests a sub-slab mitigation system. The system will use sub-slab depressurization (SSD), which will create a negative pressure below the slab of the residence using a fan to remove air from below the slab and exhausting it above the building.	Post installation of the SSD system at individual properties, periodic sub-slab soil vapor probes sampling will be performed and results will be included in the quarterly progress reports for Regional Board review.	Regional Board	Periodically by the RP Review of sampling reports by Regional Board; sampling events will occur annually for the first five years and less frequently after that according to the schedule in the approved RAP		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
<p>PDF AQ-6 The project will comply with applicable SCAQMD rules that govern the control of air pollutant emissions from the site, including: SCAQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil.</p> <p>Submit a Mitigation Plan in accordance with Attachment A of SCAQMD Rule 1166, and obtain approval from the SCAQMD. VOC suppression measures shall include water mist as a first level of vapor and odor control. Care will be taken to ensure that the soil is not over-saturated, which could generate runoff that would need to be managed and increase the weight of soil to be disposed. Based on monitoring data or odor perception, vapor and odor control will be implemented on an as needed basis. Based on experience from the excavation pilot test, Rusmar AC-565 Long Duration Foam was found to be most effective at controlling vapors and odors. This type of foam, or equivalent, and necessary support equipment will be staged and ready for application at locations where remedial excavations are conducted and there is the potential for odor releases. A copy of the approved plan will be on-site during the entire excavation</p>	<p>Issuance of 1166 Permit Mitigation Plan in accordance with Attachment A of SCAQMD Rule 1166 submitted to the SCAQMD</p> <p>Use of a real-time monitor that is calibrated on a daily basis</p> <p>Monitoring consistent with Rule 1166</p> <p>Maintenance of monitoring logs</p>	<p>SCAQMD and Regional Board</p>	<p>Before and during all construction and remediation phases</p> <p>Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted</p>		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
<p>period.</p> <p>Monitor for the presence of VOC and implement the approved mitigation plan when VOC-contaminated soil, as defined in Rule 1166, is detected.</p> <p>If required, obtain a SCAQMD Permit for project activities, and provide a copy of said Permit to the Regional Board.</p>					
<p>PDF AQ-7 The project will implement fugitive dust control measures consistent with SCAQMD rules and regulations. The dust control measures will consist of various elements including: proper maintenance and watering of internal haul roads; water spraying of soil excavated and placed for cover or soil reconsolidation; and applying water on intermediate soil cover areas. This project design feature is consistent with SCAQMD Rule 403 requirements.</p>	<p>The applicant will comply with SCAQMD Rule 403 which requires fugitive dust control measures including track-out prevention, street sweeping and watering of exposed surfaces.</p>	<p>Regional Board</p>	<p>Continuously by Responsible Party during all construction and remediation phases</p> <p>Visual inspections will be conducted frequently when Regional Board staff are on-site, and written inspection records will be made periodically by the Regional Board</p>		
<p>PDF AQ-8 Exposed surfaces and active excavation sites will be controlled with water and/or suppressants certified by CARB, the SCAQMD, or other air pollution control agency, to control fugitive dust, vapors, and odors. Such suppressants include foams (e.g., Rusmar AC-565 Long Duration Foam), nontoxic binders, or other suppressants to reduce fugitive</p>	<p>Maintenance of logs indicating frequency of watering, use of dust suppressant, and foam application</p>	<p>Regional Board</p>	<p>Continuously by Responsible Party during all construction and remediation phases</p> <p>Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted</p>		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
dust emissions and to control vapors and odors. Logs of water purchase or usage and suppressant application (including brand/manufacturer, date of application, area treated and amount applied) will be maintained by the RP and made available to the Regional Board and SCAQMD for inspection upon request.					
PDF AQ-9 Prior to leaving the site, each haul truck, and other delivery trucks that come in contact with site waste, will be inspected and put through procedures, such as brushing, to remove loose debris from tire wells and on the truck exterior. Haul truck operators (drivers) will be required to have the proper training and registration by the State and as applicable to the material they will be hauling. Trucks transporting hazardous waste are required to maintain a hazardous waste manifest that describes the content of the materials. These manifests will be supplied by the waste receiver facility and prepared by the contractor or trucking company and the Kast Property RP representative(s) prior to export off-site. The contracted trucking company will be a certified hazardous waste transportation contractor, if the material is	<p>Installation of at least one track out prevention device</p> <p>Implement additional track out prevention devices if needed.</p> <p>Inspect track out device at end of each workday and clean as needed.</p> <p>Maintenance of log of manifest data for export trucks, including vehicle license plates and time of departure. Copies of the manifests with the information specified will be acceptable in place of the log.</p> <p>Verification that haul truck operators (drivers) are licensed to transport hazardous waste if load transported is characterized as hazardous waste.</p>	Regional Board	<p>Continuously by Responsible Party during all construction and remediation phases and upon completion of the remediated Site</p> <p>Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted</p>		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
profiled as hazardous. A log of manifest data will be maintained by the RP and made available to the Regional Board for inspection upon request.					
PDF AQ-10 Waste haul trucks and soil delivery trucks entering and exiting the site will be required to follow the approved traffic plan that establishes the trucking route, days and hours of truck operation, and various requirements to provide traffic, pedestrian and bicycle safety. Truck operators will be provided with a trucking route map and hours of operation allowed.	Approved truck haul route map	City of Carson and Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
PDF AQ-11 In order to minimize traffic congestion at or near the site, construction worker parking will be provided at a nearby off-site location. Shuttles and/or vans will be provided to transport construction workers from the off-site parking location to the site.	Instrument, such as lease agreement, verifying approval for off-site parking	Regional Board	Prior to commencement of remedial activities Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
PDF AQ-12 To the maximum practical extent, recyclable materials, including non-hazardous construction and demolition debris, will be reused or recycled.	Maintenance of log indicating number of trucks hauling recyclable materials	Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
5.2 Geology and Soils					
PDF GEO-1 Prior to issuance of a grading permit, a final geotechnical investigation and remedial	Issuance of grading permit	Los Angeles County Department	Prior to issuance of grading permit		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
excavation grading plan with final design recommendations applicable to every excavated area will be prepared by a California-registered geotechnical or civil engineer and submitted to the LACDPW and City of Carson for review. The geotechnical report will describe the characteristics of underlying natural or fill soils, including expansive soils, potential differential settlement and varying soils strength and the placement of backfill. The geotechnical report will contain recommendations for any needed cut slopes or compaction of fill materials. The remedial excavation grading plan will detail the excavation and backfill design details based on the findings and recommendations of the geotechnical report.		of Public Works and City of Carson			
PDF GEO-2 The geotechnical report and remedial excavation grading plans will include site-specific design criteria related to the excavation activities in proximity to foundations and footings.	Issuance of grading permit	Los Angeles County Department of Public Works and City of Carson	Prior to issuance of grading permit		
PDF GEO-3 Pre-excavation and post-excavation surveys of the existing structures and improvements at the site and at adjacent properties that have granted access will be conducted to document pre-excavation	Submittal of documentation (i.e., written notes, digital photographs and videos) after completion of excavation	Los Angeles County Department of Public Works and City of Carson	Pre- and post-excavation		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
conditions and any changes in those conditions following excavation. Documentation will consist of written notes, digital photographs, and videos. Existing cracks or other distress present in structures or concrete will be documented and measured. Cracks will be monitored by direct measurement using a dial caliper capable of measuring distances to approximately ±0.001 inch, or using commercially available crack monitoring devices installed on the existing cracks, such that any potential change of crack size during implementation of the RAP can be monitored and documented.					
PDF GEO-4 Full time observation should be provided by qualified technical staff working under the responsible charge of a licensed engineer. Any conditions encountered within the field that are different than those anticipated (i.e. irrigation water seepage, localized loose soils, clean sand, etc.) will be brought to the immediate attention of the geotechnical engineer for corrective measures.	Any such occurrences shall be documented in a daily field report and included in the quarterly Remediation Progress Report	Los Angeles County Department of Public Works, City of Carson, and Regional Board	Ongoing during excavation Daily report reviewed by Regional Board		
PDF GEO-5 Clean soil will be imported for backfill of excavations from an offsite source. Before importing the backfill soil to the site, samples of the proposed	Approval of laboratory analyses by geotechnical engineer	Los Angeles County Department of Public Works and	Ongoing during excavation		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
import soil will be submitted for laboratory geotechnical and chemical characterization analysis. Geotechnical tests include gradation, plasticity index (PI), maximum density and optimum moisture, and corrosivity tests. The geotechnical engineer will approve the backfill soil prior to its import, placement, and compaction at the site.		City of Carson			
PDF GEO-6 Upon completion of excavation, concrete removal and environmental sampling (as appropriate), excavated areas will be backfilled as soon as possible. Backfill soils would be moisture conditioned to near optimal moisture content and compacted to at least 90 percent relative compaction, or as determined by the Geotechnical Engineer and approved by Los Angeles County Department of Public Works (LACDPW) and the City of Carson. Borings from auger excavation would be backfilled with controlled low strength material (CLSM, also referred to as flowable fill or sand/cement slurry) the same day they are excavated. Where slot trenching is used for 5-foot excavations or for targeted deeper excavations to 10 feet, the lower part of the slot trenches would also be backfilled with CLSM. The upper 3 feet of excavations would	Final Grading Compaction Report for each property	Los Angeles County Department of Public Works and the City of Carson	Upon completion of excavation, concrete removal and environmental sampling (as appropriate)		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
be backfilled with certified clean imported soil. Backfill soil would be free of deleterious organic matter (i.e., vegetation) and cobbles larger than four inches in diameter, and would be approved by the Geotechnical Engineer. The upper foot of soil backfill within landscaped areas would be topsoil suitable for vegetation growth and would be compacted to not more than 85 percent relative compaction.					
PDF GEO-7 Landscaping of backfilled properties would be restored to "like conditions" or as agreed to with the homeowners, as allowable under current state and local regulations.	Property Specific Remediation Plan	Regional Board	Ongoing during restoration		
5.3 Greenhouse Gas Emissions					
PDF GHG-1 The project will comply with the use of low carbon vehicle fuels as required under State law.	If fuel for the project is purchased outside of California, the contractor shall provide documentation that this out-of-state fuel complies with the California Low Carbon Fuel Standard.	Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
5.5 Hydrology and Water Quality					
PDF H/WQ-1 The Responsible Party will provide a Surface Containment and Soil Management Plan to permitting agencies prior to the start of RAP implementation. This document will provide	Surface Containment and Soil Management Plan, and SWPPP Responsible Party submit Notice of Intent to enroll with General Construction	Los Angeles County Department of Building and Safety City of	Prior to issuance of a grading permit Ongoing during implementation of the RAP		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
measures for surface containment and management of residual soils containing COCs above SSCGs and will serve as part of the grading permit process. In addition, in compliance with the General Construction NPDES Permit, the Responsible Party will provide specific stormwater BMPs as part of proposed grading plans to reduce the potential for sediments within discharge of runoff into the storm drain system during grading. In accordance with the Los Angeles County Building Code, BMPs must demonstrate that eroded sediments and other pollutants will be retained on site and not transported from the site via sheetflow, swales, area drains, natural drainage courses, or wind; stockpiles of earth and other construction-related materials will be protected from being transported from the site by the forces of wind or water; fuels, oils, solvents, and other toxic materials will be stored in accordance with their listing and will not contaminate the soil and surface waters; spills will be cleaned up immediately and disposed of in a proper manner and not washed into the drainage system; non-stormwater runoff from equipment. Vehicles will be dry decontaminated before leaving the site to avoid water runoff. Excess	NPDES permit (State Water Board Order No. 2010-0014-DWQ)	Carson, and Regional Board			

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
<p>or waste concrete will not be washed into the public way or any other drainage system and provisions will be made to retain concrete wastes on site until they can be disposed of as solid waste; sediments and other materials will not be tracked from the site by vehicle traffic, construction entrance roadways will be stabilized so as to inhibit sediments from being deposited into the public way, and accidental depositions will be swept up immediately and will not be washed down by rain or other means. Site-specific BMPs will be submitted to the Los Angeles County Department of Building and Safety (reviewing agency for the City of Carson) for review and approval. For areas of one-acre or greater, the RP shall prepare a SWPPP that describes all structural and non-structural BMPs. BMPs must be reviewed and approved by the Los Angeles County Department of Buliding and Safety prior to issuance of a grading permit. In accordance with Los Angeles Building Code, Appendix J, Section J111.3 a Wet Weather Erosion Control Plans (WWECP) for each storm season will be submitted for all active grading projects.</p>					

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
PDF H/WQ-2 Dust monitoring will be conducted for all excavations. If visible dust is encountered, periodic watering of the active excavation areas will be recommended throughout the excavation and backfill activities. Watering will be monitored to prevent off-site runoff.	Observation; presence of water mists, water truck, and/or water buffalo on-site during excavation	Regional Board and City of Carson	Ongoing during implementation of the RAP		
PDF-H/WQ-3 Impacted soil will be directly loaded into approved waste containers (such as drums, bins, or directly into trucks) for off-site transport. The RP will provide suitable containers based on the nature of the excavation work being conducted. In the event that it is necessary to temporarily stockpile soil onsite before loading, soils will be placed upon plastic sheeting and covered with plastic until they can be loaded into approved waste containers to be provided by the RP.	Visual inspection by Regional Board	Regional Board and City of Carson	Ongoing during implementation of the RAP		
PDF H/WQ-4 LNAPL will be recovered where it has accumulated in monitoring wells to the extent technologically and economically feasible, and where a reduction in current and future risk to groundwater will result.	Review of records of interface probes	Regional Board	Throughout implementation of the RAP		
PDF H/WQ-5 A stable or decreasing plume of site-related COCs will be maintained beneath the site. This will be achieved through reduction of COCs in soils	Groundwater monitoring reports	Regional Board	Throughout implementation of the RAP		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
through soil vapor extraction (SVE) and bio-venting, which would reduce COCs entering groundwater via on-site soils, removal of wastes in soil, and monitored natural attenuation (MNA) of groundwater.					
PDF H/WQ-6 Periodic groundwater monitoring will continue as part of the remedial action. If, based on a five-year review following soil excavation and initiation of the SVE/bioventing system operation, the groundwater plume is not stable or declining, an evaluation of additional groundwater treatment technologies will be conducted and implemented as needed.	Groundwater monitoring reports	Regional Board	Semi-annual groundwater monitoring Ongoing during implementation of the components of the RAP; every 5 years following soil excavation and initiation of the SVE/bioventing system		
PDF H/WQ-7 The Shallow Zone and Gage aquifer will be returned to background levels for site-related benzene and naphthalene through natural biodegradation.	Groundwater monitoring reports	Regional Board	Semi-annual groundwater monitoring		
5.6 Noise and Vibration					
PDF NOISE-1 The project contractor(s) will equip all construction machinery and equipment, fixed or mobile, with properly operating and maintained noise mufflers, consistent with manufacturers' standards.	Quarterly compliance reports prepared by the Project Contractor(s)	Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
PDF NOISE-2 Engine idling from construction equipment such as excavators and haul trucks will be limited, to the extent feasible.	See PDF AQ-3	See PDF AQ-3	See PDF AQ-3		
PDF NOISE-3 Expected hours for construction equipment use on-site will be 7:30 A.M. to 4:30 P.M. Monday through Friday, with hauling activities from 8:00 A.M. to 4:00 P.M.	Daily log of start and stop times maintained by construction supervisor	Regional Board	Continuously by Responsible Party during all construction and remediation phases		
PDF NOISE-4 Project-related heavy truck traffic will be limited to specific routes.	Approved truck haul route map	City of Carson and Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
PDF NOISE-5 During excavation, acoustical attenuation blankets approximately 12 feet in height will be installed between the excavation site and adjacent occupied houses provided that this can be done without creating a safety hazard, to reduce community noise exposure from stationary sources of substantial noise, such as generators and water buffalos (trailer).	Property Specific Plans Acoustical Report prepared by Responsible Party	Regional Board	Continuously by Responsible Party during all construction and remediation phases Review of Acoustical Record by Regional Board; Inspections will be conducted periodically by the Regional Board		
MM NOISE-1 Residents of properties shall be offered noise mitigation measures (e.g., hearing protection, sound proofing, white noise machines, etc.) acceptable to the residents or relocation for the duration of nearby active	Property Specific Plans	Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
remediation activities which may create ambient noise levels at their property in excess of 75 dBA, L_{eq} , for 20 days or less or in excess of 65 dBA, L_{eq} , for 21 days or longer. Based on the analyses presented in this EIR, this shall apply to residences located within approximately 90 feet of street trenching or 130 feet from an edge of residential remediation (i.e. a cluster of 4 to 8 homes); these distances may be revised by the Regional Board upon completion of additional monitoring and analysis which could be performed under the direction of an independent acoustician during the implementation of the RAP, or if the City of Carson agrees that the 75 dBA threshold is acceptable for the construction activities. Appendix F-8 includes 75 dBA and 65 dBA contours showing the impacted properties surrounding a hypothetical 8-property cluster.					
MM NOISE-2 To the maximum extent feasible, the project shall provide noise blanket/temporary noise barriers between the active areas and occupied residential units during street trenching.	Visual inspection by Regional Board	Regional Board	Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted		
MM NOISE-3 The RP shall either retain the services of a qualified acoustical engineer with expertise in design of sound isolations to	Issuance of permit	Regional Board and City of Carson	Prior to issuance of a building permit for the SVE/bioventing system enclosure Inspections will be conducted no less than quarterly by the Regional Board; frequency		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
ensure the noise from the SVE/bioventing system (i.e., installation of building enclosure) complies with the City's exterior noise limits (55 dBA) or provide documentation (e.g. manufacturer's specification sheet for an off-the-shelf product) to the satisfaction of the City, as applicable, that the design will achieve the standard.			may be modified as warranted		
MM VIB-1 Residents of properties located within 60 feet of the use of jack hammers on private property shall be offered relocation for the duration of jack hammer use.	Property Specific Plans	Regional Board	Ongoing by Responsible Party during all construction and remediation phases		
5.7 Traffic and Circulation					
PDF TRAF-1 Prior to implementation of the RAP, the project contractor will submit a Haul Route Plan to the City of Carson for review and approval. The proposed haul route will be restricted to the City's designated truck route roadways and will be as shown in Figure 5.7-2 of this EIR.	Approved truck haul route map	City of Carson	Prior to issuance of any City permits		
PDF TRAF-2 Prior to implementation of construction activities specified in the RAP, the project contractor will prepare a Construction Traffic Management Plan that will be submitted to the City of Carson for review and approval prior to the start of any	Construction Traffic Management Plan, including a site-specific construction work site traffic control plan	City of Carson	Prior to construction		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
<p>work. This plan will comprise site traffic control plans, including but not limited to such elements as the designation of haul routes for construction-related trucks, the sequencing of construction activities, any driveway turning movement restrictions, temporary traffic control devices, travel time restrictions for construction-related traffic, consolidation of construction truck deliveries, flag control, and designated staging and parking areas for workers and equipment.</p> <p>Because the construction activities occur within a public street right-of-way, the following design features would also apply:</p> <p>A site-specific construction work site traffic control plan will be prepared and submitted to the City of Carson for review and approval prior to the start of any construction work. This plan will include such elements as the location and hours of any necessary lane closures, local traffic detours (if any), protective devices and traffic controls (such as barricades, cones, flag persons, lights, warning beacons, temporary traffic signals, warning signs), the location and hours of any necessary access limitations for abutting properties, and provisions</p>					

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
<p>to maintain emergency access through construction work areas.</p> <p>Generally accepted construction safety standards will be followed to separate pedestrians from construction activity through such measures as protection barriers and signage indicating alternative pedestrian access routes where existing facilities would be affected. This would include the sidewalks around the perimeter of an active excavation site.</p> <p>Advance notice of planned construction activities will be provided to any affected residents and property owners in the vicinity of the construction site.</p> <p>The project contractor will coordinate with emergency service providers (police/sheriffs, fire, ambulance and paramedic services) to provide advance notice of ongoing construction activity and construction hours.</p>					
<p>PDF TRAF-3 One travel lane will be kept open at all times or detours will be provided during residential property remediation, well installation and street trenching phases.</p>	Construction Traffic Management Plan	City of Carson	During construction		
<p>PDF TRAF-4 The project contractor will arrange for off-site parking within 5 miles of the site and will provide shuttle services to</p>	Instrument, such as lease agreement, verifying approval for off-site parking	Regional Board	Prior to construction		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
				Initial	Date
the site for approximately 50 percent of on-site workers.					

In addition to the above PDFs and MMs, the Expedited Implementation Option requires the following additional PDF relative to Air Quality in order to reduce impacts to a less-than-significant level:

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
5.1 Air Quality					
PDF AQ-13 Under the Expedited Implementation Option, the contractors shall require that two clusters under active remediation and restoration are separated by a minimum distance of 64 meters (210 feet) as measured from the closest site boundary of each cluster.	Property Specific Plans	Regional Board	Continuously by Responsible Party during all construction and remediation phases if/when the Expedited Implementation Option is implemented. Inspections will be conducted periodically by the Regional Board		

In addition to the above PDFs and MMs, Alternative 2 requires the following two additional MMs relative to Hazardous Materials in order to reduce impacts to a less-than-significant level:

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
5.4 Hazardous Materials					
MM HAZ-1 CARB certified Level 3 diesel particulate filter (DPF) shall be installed on construction equipment used during excavation activities. DPFs shall be required	The contractor(s) will install CARB Level 3 certified DPF on all on-site off-road equipment rated at 20 horsepower (hp) or higher	Regional Board	Continuously by Responsible Party during all construction and remediation phases Logs will be reviewed periodically by the Regional Board		

Project Design Feature (PDF)/ Mitigation Measure (MM)	Method of Verification	Monitoring Agency	Timing of Verification	Verification/ Approval Party	
<p>for construction equipment rated at 20 horsepower (hp) or higher and used on-site for 21-days or longer. Diesel particulate filters (DPFs) shall reduce off-road diesel particulate matter (DPM) emissions from each piece of off-road equipment by at least 85 percent. Equipment which needs servicing (breaks down) may be replaced with Tier 3 on a temporary basis if equipment with a DPF is not commercially available. If replacement equipment is not equipped with a DPF, documentation must be provided to demonstrate that no commercially available equipment with a DPF is available.</p>	<p>and anticipated to be used on-site for 21-days or longer Equipment which breaks down or malfunctions may be immediately replaced with non-DPF equipped Tier 3 equipment. Documentation that no commercially available DPF equipped replacement equipment is available. Documentation with estimated repair time of equipment and search for feasible replacement.</p>		<p>Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted</p>		
<p>MM HAZ-2 The applicant shall investigate the feasibility of requiring haul trucks to be model year 2010 and newer engines or trucks which have been retrofitted to meet model year 2010 emissions standards. Results of this feasibility investigation shall be documented and provided to the Regional Water Quality Control Board for approval prior to start of hauling activities.</p>	<p>Hauling contractor(s) will provide written record demonstrating availability or absence of 2010 or newer model year trucks in its fleet; Bid documents giving preference to year 2010 and newer haul trucks</p>	<p>Regional Board</p>	<p>Continuously by Responsible Party during all construction and remediation phases Inspections will be conducted no less than quarterly by the Regional Board; frequency may be modified as warranted</p>		

TIME SCHEDULE FOR IMPLEMENTATION OF REMEDIAL ACTION PLAN

REQUIREMENT		DUE DATE
1	Site-Wide Remediation Design and Implementation Plan (RDIP)	October 15, 2015
2	Site-Specific Health and Safety Plan	October 15, 2015
3	Emergency Response Plan	October 15, 2015
4	Property-Specific Remedial Plans (PSRPs)	27 blocks of 8 houses are due within 30 days of property inspection. The first batch of PSRPs due within 30 days after RDIP approval
5	Quarterly Remediation Progress Reports <u>Reporting Periods</u> January to March – April 15 April to June – July 15 July to September – October 15 September to December – January 15	First report due October 15, 2015
6	Property-Specific Remedial Action Completion Reports	Within 45 days following completion of remedial actions at eight homes per phase
7	Groundwater Monitoring Reports <u>Reporting Periods</u> January to June – July 15 July to December – January 15	First report due January 15, 2016