

APPENDIX A

**CROSS-REFERENCE TABLE OF REGIONAL BOARD REQUIREMENTS ADDRESSED IN
THE HHRA, FS, AND RAP**

CROSS-REFERENCE TABLE OF REGIONAL BOARD REQUIREMENTS ADDRESSED IN THE HHRA, FS, AND/OR RAP

The table below presents the CAO requirements addressed in this RAP or the companion Human Health Risk Assessment (HHRA, Geosyntec, 2014a) and Feasibility Study (FS, Geosyntec, 2014b), being submitted concurrently as separate documents. The Regional Board reviewed the Revised Site-Specific Cleanup Goal (SSCG) Report (Geosyntec, 2013c), and provided comments on the report on January 23, 2014 along with additional directives for items to be included in the RAP, and these requirements are also included below. Finally, in the Regional Board’s review of the *Soil Background Evaluation Report* (URS, 2010e) and the *Assessment of Environmental Impact and Feasibility of Removal of Residual Concrete Reservoir Slabs* (URS, 2013e), the Regional Board provided additional directives that are also captured below.

Specific Requirement in Section 3.c of the CAO	Where Addressed
A detailed plan for remediation of wastes in shallow soil that will incorporate the results from the soil vapor extraction (SVE) pilot test;	This requirement is incorporated in the selected remedy, evaluated in the FS (Geosyntec, 2014b), and discussed throughout this RAP.
A plan to address any impacted area beneath any existing paved areas and concrete foundations of the homes, if warranted;	This requirement is incorporated in the selected remedy, discussed throughout the FS (Geosyntec, 2014b) and this RAP. Specific discussion of how the selected remedy addresses impacted areas beneath any existing paved areas and concrete foundations of the homes, as warranted, is included in Section 8.2 of the RAP.
A detailed surface containment and soil management plan;	The Surface Containment and Soil Management Plan is included as Appendix D to the RAP.
An evaluation of all available options including proposed selected methods for remediation of shallow soil and soil vapor;	This evaluation was performed in the Feasibility Study (Geosyntec, 2014b).
Continuation of interim measures for mitigation according to the Regional Board approved Interim Remediation Action Plan; and	This requirement is discussed in Section 4.1 of this RAP.
A schedule of actions to implement the RAP.	This requirement is incorporated in Section 9.5 of this RAP.

Specific Requirement of the Regional Board's January 23, 2014 Letter	Where Addressed
<p>Remedial Alternatives: The RAP shall consider all technologies that were pilot tested, including bioventing, as alternatives. The RAP shall be developed to address COCs in soils in the soil intervals consistent with these comments. The screening FS alternatives in the Revised Report that address this requirement include Alternatives 3B and 4B. Although other alternatives set forth in the screening FS may also be addressed in the RAP, the RAP and environmental analysis must address Alternatives 3B or 4B to take into account the revised SSCGs set forth in Tables I, 2, and 3. Consistent with State Water Board Resolution 92-49, the RAP shall evaluate the alternatives with respect to effectiveness, feasibility, and cost and propose a remedy or remedies that have a substantial likelihood to achieve compliance, within a reasonable time frame, with the cleanup goals and objectives.</p>	<p>This evaluation was performed in the Feasibility Study (Geosyntec, 2014b).</p>
<p>Relocation Plan: The RAP shall provide a preliminary relocation plan for residents of the Carousel Tract during remedial activities. The relocation plan shall be based on the environmental analysis to be submitted in the RAP such that residents are not exposed to COCs or other environmental impacts during the cleanup. A final relocation plan shall be submitted following approval of the RAP.</p>	<p>The Preliminary Relocation Plan is included as Appendix E to this RAP.</p>
<p>Soil Remediation Boundaries: Shell developed site-wide shallow soil concentration contours for discrete depths of 2, 5, and 10 feet below ground surface in the Site Delineation Report. Shell shall consider the results in the Site Delineation Report, soil concentrations contours and the results of the property-by-property investigations in developing the RAP.</p>	<p>These maps were originally submitted on April 29, 2011 on behalf of SOPUS in response to comments received from the Regional Board in the approval letter for the Step-out Sampling Work Plan for Plume Delineation dated February 17, 2011. Revised contour plots of analytes in soil that include soil data through January 30, 2014 are included in Appendix B to this RAP. Section 8.2.3 of this RAP discusses how Shell intends to consider these contours in the remedial strategy.</p>

Specific Requirement of the Regional Board's January 23, 2014 Letter	Where Addressed
Residual Slabs: The RAP shall consider the removal of residual slabs as discussed in the Regional Board's response to the Assessment of Environmental Impact and Feasibility of Removal of Residual Concrete Reservoir Slabs in a letter dated, January 13, 2014 where necessary to protect human health and water quality and address nuisance concerns.	This requirement was revised in the Regional Board's letter dated February 10, 2014, and is discussed in Section 8 of the RAP.
Soil Management Plan: The RAP shall include a proposed Soil Management Plan for all soils containing COCs. The RAP shall address on-going monitoring requirements and identification of other governmental agencies that may be responsible for implementing the Soil Management Plan.	The Surface Containment and Soil Management Plan is included as Appendix D to this RAP.
Other Directives Included in the Regional Board's January 23, 2014 Letter	Where Addressed
Shell shall develop the RAP, the final Human Health Risk Assessment (HHRA) Report, and the environmental analysis using the SSCGs in Tables 1, 2 and 3.	This requirement is addressed by the HHRA (Geosyntec, 2014a) and this RAP. Shell is separately providing a CEQA Notice of Preparation (NOP) and Initial Study (IS) for the project, and these draft documents are also included in Appendix G to this RAP.
To assure protection of residents, the RAP will need to include a method to determine if TPH concentration in soil presents a detectable odor in accordance with the ESL and develop odor-based screening levels of indoor air based on 50 percent odor-recognition thresholds as published in the ATSDR Toxicological Profiles. For soil gas, follow the ESL for odor and other nuisance to calculate a ceiling level for residential land use.	This requirement is addressed in Section 5.5 of the HHRA (Geosyntec, 2014a) and Section 5.2.2 of this RAP. Odor monitoring and control during excavation is discussed in Section 8.1.3 of this RAP, in the Surface Containment and Soil Management Plan (Appendix D), and will be further addressed in the RDIP, as discussed in section 9.2 of this RAP.
The more stringent of the SSCGs for each soil interval are the approved SSCGs. In addition, SSCGs for toluene and xylenes shall be developed in accordance with the comments above and added to the list of COCs.	This requirement is addressed in the HHRA (Geosyntec, 2014a).
In addition, the SSCGs shall be revised if necessary to take into account cumulative risks and the final HHRA Report.	This requirement is addressed in the HHRA (Geosyntec, 2014a).

Other Directives Included in the Regional Board's January 23, 2014 Letter	Where Addressed
<p>Shell is directed to concurrently submit with the RAP (1) the final HHRA Report and (2) draft environmental documents consistent with the California Environmental Quality Act (CEQA) analyzing the potential environmental impacts associated with remediation alternatives considered in the RAP.</p>	<p>The HHRA (Geosyntec, 2014a) and FS (Geosyntec, 2014b) are being submitted concurrently with this RAP as separate documents. Shell is separately providing a CEQA Notice of Preparation (NOP) and Initial Study (IS) for the project and these draft documents are also included in Appendix G to this RAP.</p>
<p>The RAP shall address any areas that the HHRA Report identifies that will not meet the remedial action objectives (RAOs) of a cancer risk of 1×10^{-6} and non-cancer risk of 1. The RAP shall ensure that these areas be remediated to meet the RAOs.</p>	<p>This requirement is discussed in Section 8 of this RAP. Site soils that do not meet RAOs remaining beneath excavated areas and beneath City streets and sidewalks and residential homes will be addressed by operation of the SVE/bioventing system.</p>
<p>The RAP should address the comments by the Expert Panel that are not already addressed in this letter.</p>	<p>This requirement is addressed in the HHRA (Geosyntec, 2014a) and the Feasibility Study (Geosyntec, 2014b), as well as in this RAP.</p>
Other Directives Addressed in the HHRA, FS, and/or RAP	Where Addressed
<p>Source: Regional Board's letter dated September 13, 2013 regarding the <i>Soil Background Evaluation Report</i>.</p> <p>You are required to address OEHHA's comments and submit a revised Soil Background Evaluation Report to Regional Board prior to or concurrent with the submittal of the Human Health Risk Assessment (HHRA).</p> <p>You are required to integrate the parcel-by-parcel risk assessment based on background metal and polycyclic aromatic hydrocarbons (PAHs) concentrations into a site-wide HHRA. The HHRA is due prior or concurrent with the submittal of the Remedial Action Plan.</p>	<p>This directive is addressed by the Soil Background Analysis included as Appendix A to the HHRA (Geosyntec, 2014a). The HHRA addresses background metals and PAHs.</p> <p>The HHRA includes a parcel-by-parcel risk assessment as directed.</p> <p>The HHRA is being submitted concurrently with the RAP.</p>

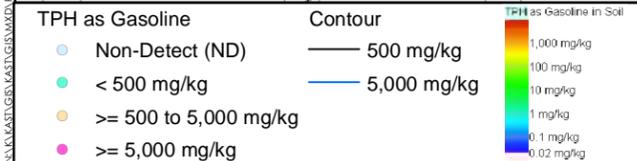
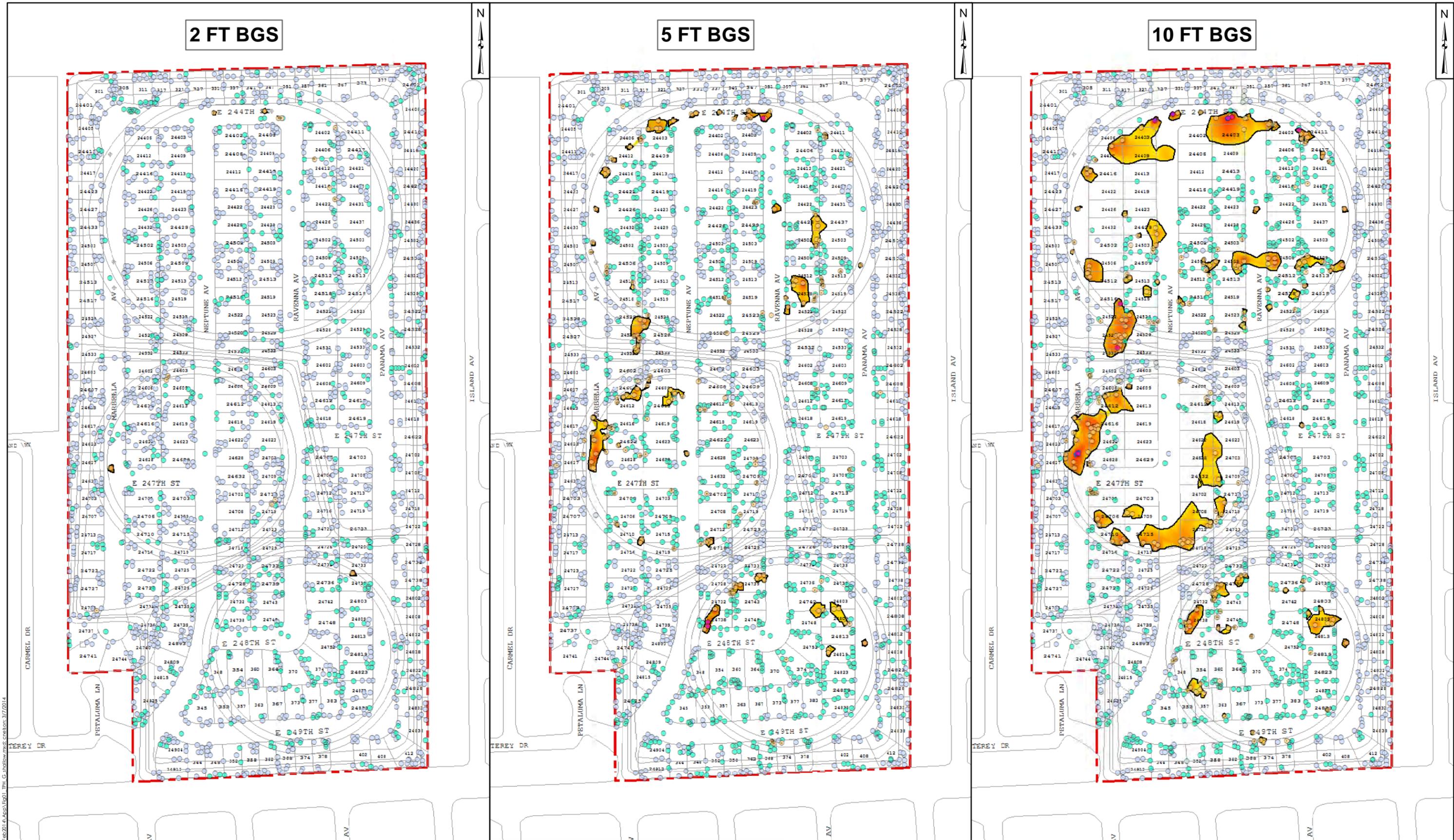
Other Directives Addressed in the HHRA, FS, and/or RAP	Where Addressed
<p>Source: Regional Board's letter dated February 10, 2014, providing clarification and revision of the Regional Board's January 13, 2014 review of the <i>Assessment of Environmental Impact and Feasibility of Removal of Residual Concrete Reservoir Slabs</i>.</p> <p>Residual Slabs: The RAP shall consider remedial options to address long term health risks, water quality, and nuisance concerns consistent with the Regional Board's response to Assessment of Environmental Impact and Feasibility of Removal of Residual Concrete Reservoir Slabs in a letter dated January 13, 2014, as revised and clarified in the Regional Board's letter dated February 10, 2014.</p> <p>Shell shall identify in the RAP: Remedial options to address long term health risks, water quality, and nuisance concerns caused by constituents of concerns [sic] associated with residual concrete slabs that will meet the approved site-specific cleanup goals consistent with State Water Resources Control Board Resolution 92-49.</p>	<p>The approach to residual concrete reservoir slabs is discussed in Section 8 of the RAP. Residual slabs will be removed from excavations, if encountered, to the lateral limits of excavated areas. Any residual COCs associated with the slabs will be addressed via operation of the SVE/bioventing system. This approach addresses any long-term health risks, water quality, and nuisance concerns caused that may be associated with the residual concrete slabs, meets the site-specific cleanup goals, and is consistent with State Water Resources Control Board Resolution 92-49.</p>

APPENDIX B
CONTOUR PLOTS OF ANALYTES IN SOIL

2 FT BGS

5 FT BGS

10 FT BGS



Note: Contours created in Mining Visualization System (MVS) using Franke/Nielson Inverse Distance Weighting (IDW) interpolation



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07-Mar-2014

TPHG in Shallow Soil
Former Kast Property

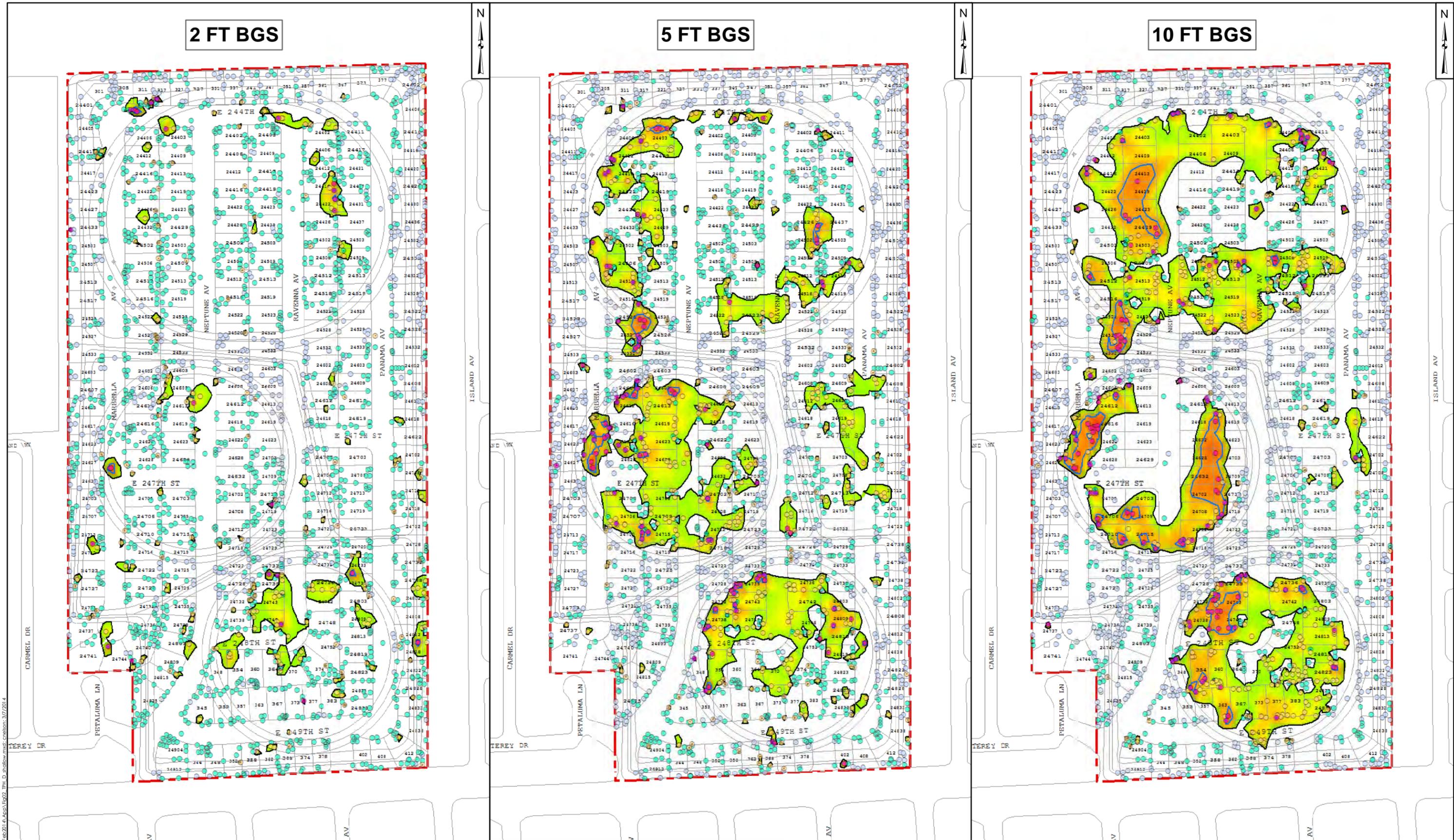
Figure
1

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2 FT BGS

5 FT BGS

10 FT BGS



TPH as Diesel

- Non-Detect (ND)
- < 1,000 mg/kg
- ≥ 1,000 to 10,000 mg/kg
- ≥ 10,000 mg/kg

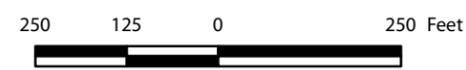
Contour

- 1,000 mg/kg
- 10,000 mg/kg

TPH as Diesel in Soil

10,000 mg/kg
1,000 mg/kg
100 mg/kg
10 mg/kg
1 mg/kg

Note: Contours created in Mining Visualization System (MVS) using Franke/Nielson Inverse Distance Weighting (IDW) interpolation



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TPHD in Shallow Soil
Former Kast Property

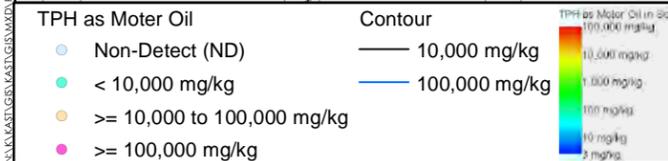
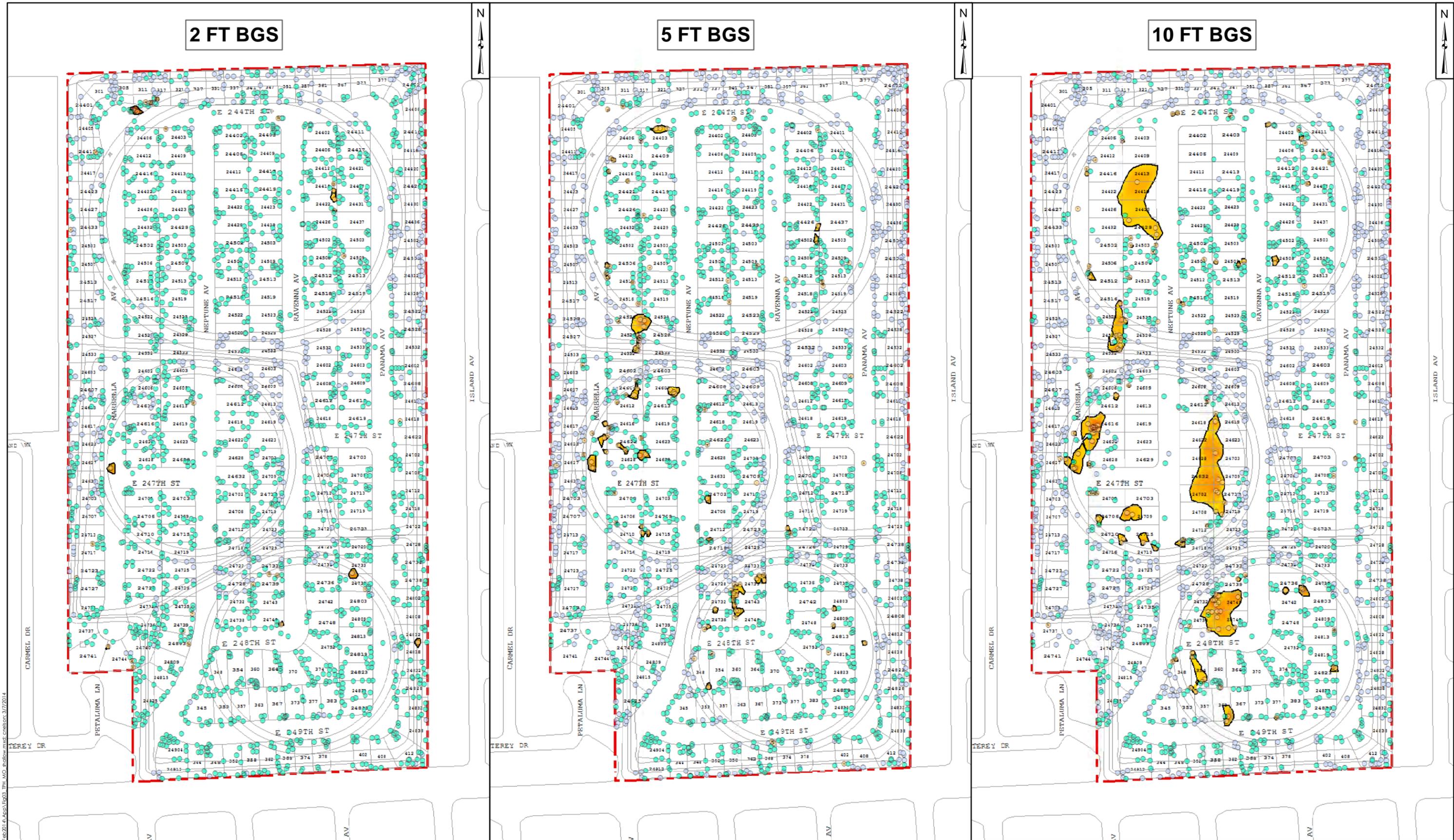
Figure
2

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2 FT BGS

5 FT BGS

10 FT BGS



Note: Contours created in Mining Visualization System (MVS) using Franke/Nielson Inverse Distance Weighting (IDW) interpolation



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TPHMO in Shallow Soil
Former Kast Property

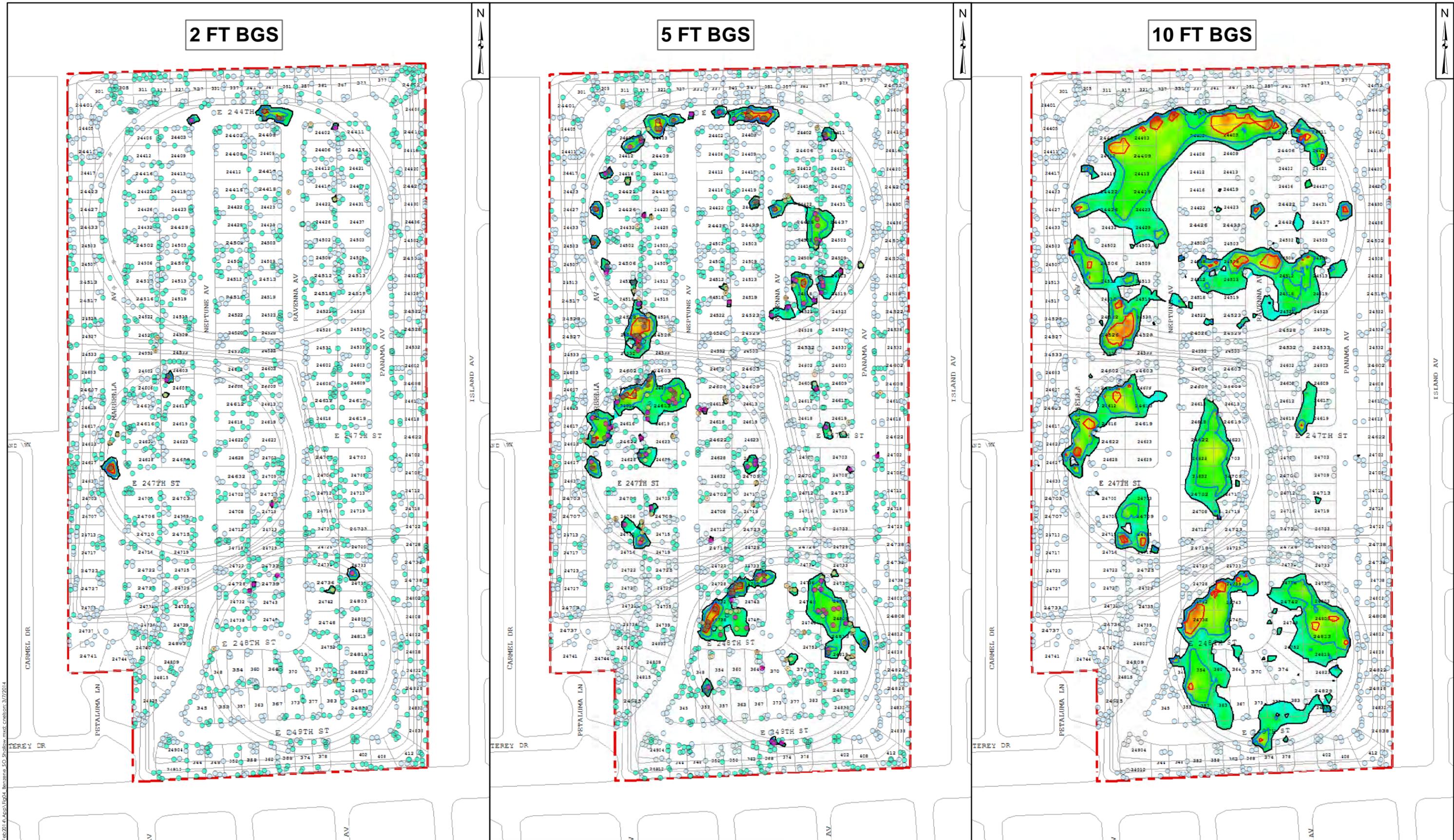
Figure
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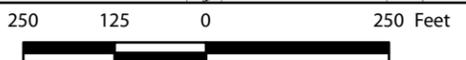
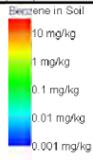
2 FT BGS

5 FT BGS

10 FT BGS



- Benzene**
- Non-Detect (ND)
 - < 0.015 mg/kg
 - ≥ 0.015 to 0.15 mg/kg
 - ≥ 0.15 to 1.5 mg/kg
 - ≥ 1.5 mg/kg
- Contour**
- 0.015 mg/kg
 - 0.15 mg/kg
 - 1.5 mg/kg



Note: Contours created in Mining Visualization System (MVS) using Franke/Nielson Inverse Distance Weighting (IDW) interpolation

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Benzene in Shallow Soil
Former Kast Property

Figure

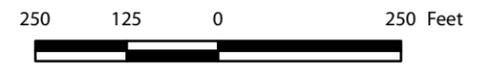
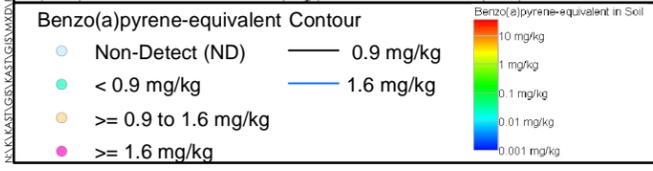
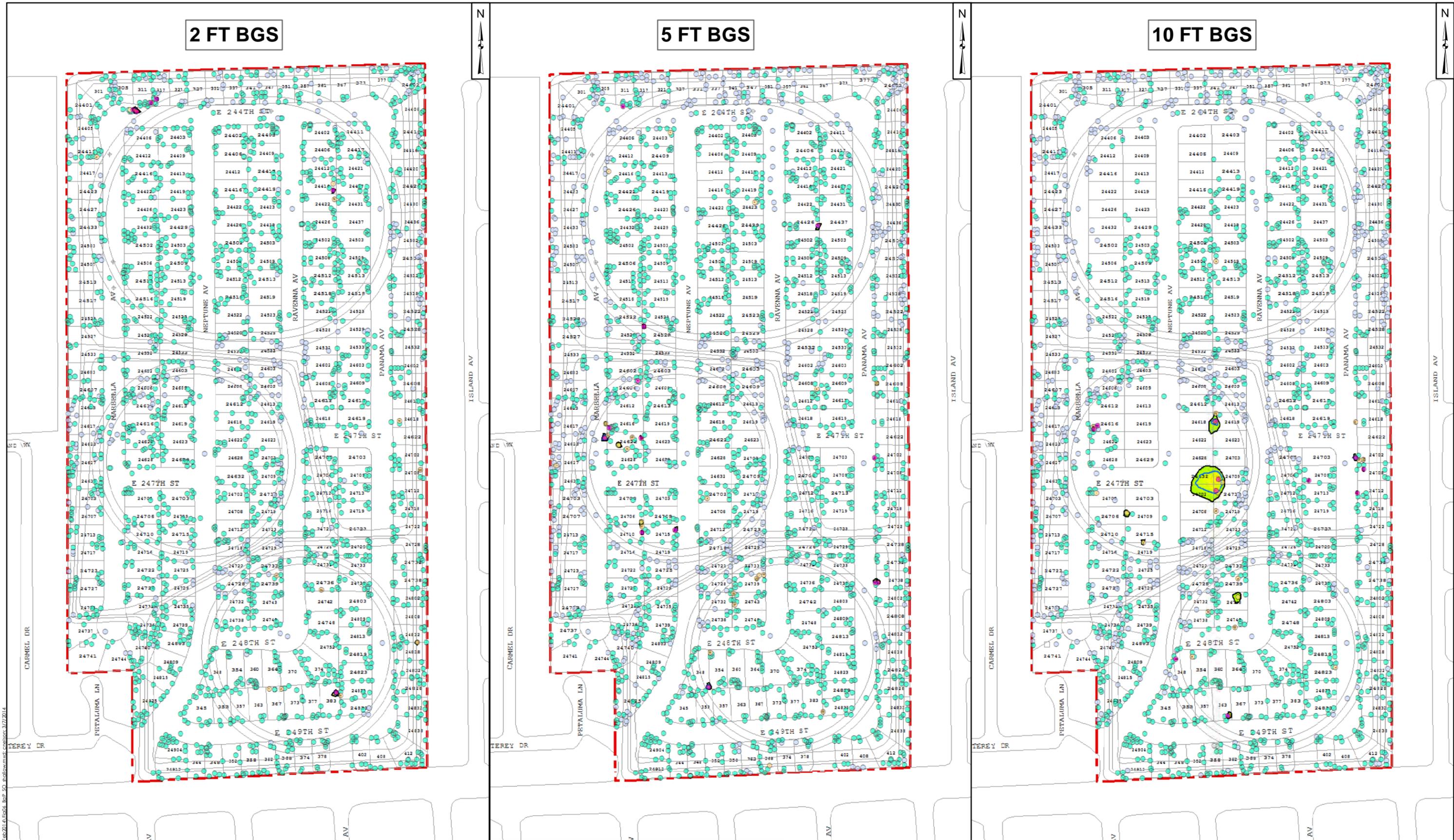
4

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2 FT BGS

5 FT BGS

10 FT BGS



Note: Contours created in Mining Visualization System (MVS) using Franke/Nielson Inverse Distance Weighting (IDW) interpolation

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Benzo(a)pyrene-equivalent in Shallow Soil
Former Kast Property

Figure

6

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APPENDIX C

FOURTH QUARTER 2013 GROUNDWATER MONITORING RESULTS

TABLE C-1
Fourth Quarter 2013 Groundwater Monitoring Results
Shallow Zone (Water Table Wells)
VOCs and Hydrocarbons

LOCATION NAME			MW-01	MW-02	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-09	MW-10	MW-11	MW-13	MW-14	MW-15	MW-16	MW-17
SAMPLE DATE			10/25/2013	10/24/2013	10/23/2013	10/24/2013	10/25/2013	10/24/2013	10/25/2013	10/22/2013	10/22/2013	10/23/2013	10/21/2013	10/25/2013	10/24/2013	10/23/2013	10/22/2013	10/23/2013
SAMPLE NAME			MW-01	MW-02	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-09-DUP	MW-10	MW-11	MW-13	MW-14	MW-15	MW-16	MW-17
SAMPLE DELIVERY GROUP (SDG)	Method	Unit	13-10-1987	13-10-1867	13-10-1749	13-10-1867	13-10-1987	13-10-1867	13-10-1987	13-10-1678	13-10-1678	13-10-1749	13-10-1590	13-10-1987	13-10-1867	13-10-1749	13-10-1678	13-10-1749
1,1,1-Trichloroethane	SW8260B	UG/L	0.37J	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	SW8260B	UG/L	0.90J	< 1.0	< 1.0	1.3J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	SW8260B	UG/L	16	< 1.0	2.0	2.4	6.1	15	3.5	< 1.0	< 1.0	2.7	< 1.0	< 1.0	0.49J	1.7	< 1.0	< 1.0
1,1-Dichloroethene	SW8260B	UG/L	23	< 1.0	6.3	4.4	7.8	42	12	< 1.0	< 1.0	8.8	< 1.0	< 1.0	3.9	2.2	< 1.0	< 1.0
1,2,3-Trichloropropane	SW8260B	UG/L	< 5.0	< 5.0	< 5.0	< 10	6.8	0.66J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4-Trimethylbenzene	SW8260B	UG/L	< 1.0	1.2	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	7.8	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	SW8260B	UG/L	3.4	< 0.50	< 0.50	< 1.0	< 0.50	0.58	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3,5-Trimethylbenzene	SW8260B	UG/L	< 1.0	1.1	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.39J	< 1.0	< 1.0	< 1.0	< 1.0
Acetone	SW8260B	UG/L	< 20	< 20	< 20	< 40	< 20	< 20	< 20	< 20	< 20	11J	< 20	< 20	< 20	< 20	< 20	< 20
Benzene	SW8260B	UG/L	0.20J	1.9	2.9	12	130	0.59	47	< 0.50	< 0.50	6.2	< 0.50	480	120	11	< 0.50	0.73
Bromochloromethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Carbon Disulfide	SW8260B	UG/L	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform	SW8260B	UG/L	5.8	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	SW8260B	UG/L	220	< 1.0	110	27	93	100	63	< 1.0	< 1.0	78	< 1.0	96	39	24	< 1.0	3.6
Dibromochloromethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diisopropyl Ether (DIPE)	SW8260B	UG/L	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	SW8260B	UG/L	< 1.0	0.68J	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	110	7.6	< 1.0	< 1.0	< 1.0
Freon 113	SW8260B	UG/L	0.97J	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Isopropylbenzene (Cumene)	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	18	0.98J	< 1.0	< 1.0	< 1.0
Methylene Chloride	SW8260B	UG/L	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	SW8260B	UG/L	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	66	3.6J	< 10	< 10	< 10
n-Butylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.4	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	SW8260B	UG/L	< 1.0	1.4	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.29J	< 1.0	< 1.0	< 1.0	< 1.0
p/m-Xylene	SW8260B	UG/L	< 1.0	4.3	< 1.0	< 2.0	< 1.0	< 1.0	0.30J	< 1.0	< 1.0	< 1.0	< 1.0	2.0	0.29J	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	SW8260B	UG/L	< 1.0	0.20J	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.45J	< 1.0	< 1.0	< 1.0	< 1.0
Propylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	17	0.88J	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	0.30J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.4	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butyl Alcohol (TBA)	SW8260B	UG/L	< 10	< 10	< 10	< 20	18	< 10	12	< 10	< 10	45	< 10	20	< 10	< 10	< 10	< 10
Tetrachloroethene	SW8260B	UG/L	210	< 1.0	< 1.0	2.0J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.26J	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	SW8260B	UG/L	1.1	< 1.0	4.3	14	20	0.71J	0.89J	< 1.0	< 1.0	2.7	< 1.0	7.6	1.5	1.5	< 1.0	< 1.0
Trichloroethene	SW8260B	UG/L	300	< 1.0	0.54J	450	< 1.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.5	< 1.0	< 1.0
Vinyl Chloride	SW8260B	UG/L	< 0.50	< 0.50	1.9	< 1.0	< 0.50	0.63	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Xylenes, Total	SW8260B	UG/L	< 1.0	5.7	< 1.0	< 2.0	< 1.0	< 1.0	0.30	< 1.0	< 1.0	< 1.0	< 1.0	2.3	0.29	< 1.0	< 1.0	< 1.0

Notes:

Bold text indicates results above laboratory reporting limit.
µg/L = micrograms per liter
J = Estimated value; the result is between the MDL and the RL
B = Analyte detected in associated blanks

TABLE C-1
Fourth Quarter 2013 Groundwater Monitoring Results
Shallow Zone (Water Table Wells)
VOCs and Hydrocarbons

LOCATION NAME			MW-01	MW-02	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-09	MW-10	MW-11	MW-13	MW-14	MW-15	MW-16	MW-17
SAMPLE DATE			10/25/2013	10/24/2013	10/23/2013	10/24/2013	10/25/2013	10/24/2013	10/25/2013	10/22/2013	10/22/2013	10/23/2013	10/21/2013	10/25/2013	10/24/2013	10/23/2013	10/22/2013	10/23/2013
SAMPLE NAME			MW-01	MW-02	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-09-DUP	MW-10	MW-11	MW-13	MW-14	MW-15	MW-16	MW-17
SAMPLE DELIVERY GROUP (SDG)	Method	Unit	13-10-1987	13-10-1867	13-10-1749	13-10-1867	13-10-1987	13-10-1867	13-10-1987	13-10-1678	13-10-1678	13-10-1749	13-10-1590	13-10-1987	13-10-1867	13-10-1749	13-10-1678	13-10-1749
Carbon Chain C6	SW8015B	UG/L	< 50	16J	< 50	< 50	71	16J	30J	< 50	< 50	< 50	< 50	190	58	< 50	< 50	< 50
Carbon Chain C7	SW8015B	UG/L	26J	13J	< 50	< 50	9.0J	< 50	7.1J	< 50	< 50	< 50	< 50	22J	< 50	< 50	< 50	< 50
Carbon Chain C8	SW8015B	UG/L	30J	14J	< 50	< 50	19J	< 50	14J	< 50	< 50	< 50	< 50	140	18J	< 50	< 50	< 50
Carbon Chain C9-C10	SW8015B	UG/L	< 50	28J	21J	< 50	46J	18J	54	< 50	< 50	22J	< 50	320	51	20J	< 50	< 50
Carbon Chain C11-C12	SW8015B	UG/L	< 50	< 50	< 50	< 50	43J	29J	76	< 50	< 50	24J	< 50	410	40J	< 50	< 50	< 50
Carbon Chain C13-C14	SW8015B	UG/L	< 50	< 50	< 50	< 50	51	50	93	< 50	< 50	22J	< 50	380	38J	< 50	< 50	< 50
Carbon Chain C15-C16	SW8015B	UG/L	< 50	< 50	< 50	< 50	46J	69	82	< 50	< 50	22J	< 50	370	32J	< 50	< 50	< 50
Carbon Chain C17-C18	SW8015B	UG/L	< 50	< 50	< 50	24J	33J	50	130	< 50	< 50	18J	< 50	220	24J	< 50	< 50	< 50
Carbon Chain C19-C20	SW8015B	UG/L	< 50	< 50	< 50	38J	23J	45J	100	< 50	< 50	< 50	< 50	200	< 50	< 50	< 50	< 50
Carbon Chain C21-C22	SW8015B	UG/L	< 50	< 50	< 50	34J	< 50	< 50	43J	< 50	< 50	< 50	< 50	130	< 50	< 50	< 50	< 50
Carbon Chain C23-C24	SW8015B	UG/L	25J	< 50	< 50	46J	19J	25J	33J	< 50	< 50	< 50	< 50	84	< 50	< 50	< 50	< 50
Carbon Chain C25-C28	SW8015B	UG/L	19J	< 50	< 50	40J	< 50	18J	32J	< 50	< 50	< 50	< 50	52	< 50	< 50	< 50	< 50
Carbon Chain C29-C32	SW8015B	UG/L	16J	< 50	< 50	26J	8.6J	13J	23J	< 50	< 50	< 50	< 50	34J	10J	< 50	< 50	< 50
Carbon Chain C33-C36	SW8015B	UG/L	< 50	< 50	< 50	16J	< 50	9.6J	< 50	< 50	< 50	< 50	< 50	16J	8.3J	< 50	< 50	< 50
Carbon Chain C37-C40	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C41-C44	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Total Petroleum Hydrocarbons (C6-C44)	SW8015B	UG/L	120	71	< 50	220	370	340	720	< 50	< 50	110	< 50	2600	280	< 50	< 50	< 50
TPH as Gasoline	SW8015B	UG/L	200HD	170HD	110HD	200HD	630HD	83HD	220HD	< 50	< 50	80HD	< 50	1500HD	260HD	120HD	< 50	< 50
TPH as Diesel	SW8015B	UG/L	66HD	73HD	44HDJ	210HD	280HD	320HD	660HD	35J	< 50	140HD	< 50	2200HD	210HD	44HDJ	39J	< 50
TPH as Motor Oil	SW8015B	UG/L	< 250	< 250	< 250	300HD	< 250HD	250HDJ	530HD	< 250	< 250	< 250	< 250	1100HD	< 250	< 250	< 250	< 250

Notes:

Bold text indicates results above laboratory reporting limit.

µg/L = micrograms per liter

J = Estimated value; the result is between the MDL and the RL

B = Analyte detected in associated blanks

TABLE C-2
Fourth Quarter 2013 Groundwater Monitoring Results
Gage Wells
VOCs and Hydrocarbons

LOCATION NAME			MW-G01D	MW-G02D	MW-G03D	MW-G04D	MW-G01S	MW-G02S	MW-G03S	MW-G04S
SAMPLE DATE			10/22/2013	10/22/2013	10/22/2013	10/23/2013	10/21/2013	10/22/2013	10/23/2013	10/24/2013
SAMPLE NAME			MW-G01D	MW-G02D	MW-G03D	MW-G04D	MW-G01S	MW-G02S	MW-G03S	MW-G04S
SAMPLE DELIVERY GROUP (SDG)	Method	Unit	13-10-1678	13-10-1678	13-10-1678	13-10-1749	13-10-1590	13-10-1678	13-10-1749	13-10-1867
1,1,1-Trichloroethane	SW8260B	UG/L	< 1.0	0.37J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	SW8260B	UG/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4-Trimethylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.51J
1,2-Dichloroethane	SW8260B	UG/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.40J	2.9	< 0.50
1,3,5-Trimethylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acetone	SW8260B	UG/L	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Benzene	SW8260B	UG/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.22J	0.20J	81
Bromochloromethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0
Bromodichloromethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.42J
Carbon Disulfide	SW8260B	UG/L	0.72J	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.8
cis-1,2-Dichloroethene	SW8260B	UG/L	< 1.0	< 1.0	0.64J	< 1.0	< 1.0	< 1.0	13	< 1.0
Dibromochloromethane	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.32J
Diisopropyl Ether (DIPE)	SW8260B	UG/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	0.55J	0.59J	< 2.0
Ethylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.2
Freon 113	SW8260B	UG/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Isopropylbenzene (Cumene)	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	SW8260B	UG/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	1.1J
Naphthalene	SW8260B	UG/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
n-Butylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p/m-Xylene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.61J
p-Isopropyltoluene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Propylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.23J
sec-Butylbenzene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butyl Alcohol (TBA)	SW8260B	UG/L	< 10	< 10	< 10	< 10	< 10	< 10	53	120
Tetrachloroethene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.73J
trans-1,2-Dichloroethene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.57J	< 1.0
Trichloroethene	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	0.41J	< 1.0	< 1.0	< 1.0
Vinyl Chloride	SW8260B	UG/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Xylenes, Total	SW8260B	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.61

Notes:

Bold text indicates results above laboratory reporting limit.
µg/L = micrograms per liter

TABLE C-2
Fourth Quarter 2013 Groundwater Monitoring Results
Gage Wells
VOCs and Hydrocarbons

LOCATION NAME			MW-G01D	MW-G02D	MW-G03D	MW-G04D	MW-G01S	MW-G02S	MW-G03S	MW-G04S
SAMPLE DATE			10/22/2013	10/22/2013	10/22/2013	10/23/2013	10/21/2013	10/22/2013	10/23/2013	10/24/2013
SAMPLE NAME			MW-G01D	MW-G02D	MW-G03D	MW-G04D	MW-G01S	MW-G02S	MW-G03S	MW-G04S
SAMPLE DELIVERY GROUP (SDG)	Method	Unit	13-10-1678	13-10-1678	13-10-1678	13-10-1749	13-10-1590	13-10-1678	13-10-1749	13-10-1867
Carbon Chain C6	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	49J
Carbon Chain C7	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	12J
Carbon Chain C8	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	12J	25J
Carbon Chain C9-C10	SW8015B	UG/L	13J	< 50	< 50	< 50	< 50	< 50	33J	41J
Carbon Chain C11-C12	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C13-C14	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C15-C16	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C17-C18	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C19-C20	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C21-C22	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C23-C24	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C25-C28	SW8015B	UG/L	< 50	< 50	< 50	16J	< 50	< 50	< 50	< 50
Carbon Chain C29-C32	SW8015B	UG/L	< 50	< 50	< 50	17J	< 50	< 50	< 50	9.6J
Carbon Chain C33-C36	SW8015B	UG/L	< 50	< 50	< 50	11J	< 50	< 50	< 50	10J
Carbon Chain C37-C40	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Chain C41-C44	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Total Petroleum Hydrocarbons (C6-C44)	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	150
TPH as Gasoline	SW8015B	UG/L	< 50	< 50	< 50	< 50	< 50	< 50	60HD	230HD
TPH as Diesel	SW8015B	UG/L	39J	< 50	45J	98	< 50	46J	49HDJ	82HD
TPH as Motor Oil	SW8015B	UG/L	< 250	< 250	< 250	< 250	< 250	< 250	< 250	< 250

Notes:

Bold text indicates results above laboratory reporting limit.
µg/L = micrograms per liter

TABLE C-3
Fourth Quarter 2013 Groundwater Monitoring Results
Shallow Zone (Water Table Wells)
Metals

LOCATION NAME			MW-01	MW-02	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-09	MW-10	MW-11	MW-13	MW-14	MW-15	MW-16	MW-17
SAMPLE DATE			10/25/2013	10/24/2013	10/23/2013	10/24/2013	10/25/2013	10/24/2013	10/25/2013	10/22/2013	10/22/2013	10/23/2013	10/21/2013	10/25/2013	10/24/2013	10/23/2013	10/22/2013	10/23/2013
SAMPLE NAME			MW-01	MW-02	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-09-DUP	MW-10	MW-11	MW-13	MW-14	MW-15	MW-16	MW-17
SAMPLE DELIVERY GROUP (SDG)	Method	Unit	13-10-1987	13-10-1867	13-10-1749	13-10-1867	13-10-1987	13-10-1867	13-10-1987	13-10-1678	13-10-1678	13-10-1749	13-10-1590	13-10-1987	13-10-1867	13-10-1749	13-10-1678	13-10-1749
Antimony	SW6020	mg/L	0.00022J	< 0.001	< 0.001	< 0.001	0.00014J	0.00011J	0.00014J	< 0.001	< 0.001	< 0.001	< 0.001	0.00013J	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	SW6020	mg/L	0.0012	0.00184	0.00633	0.266	0.014	0.0046	0.466	0.00078J	0.00071J	0.00441	0.00574	0.0534	0.00348	0.0729	0.00257	0.00061J
Barium	SW6020	mg/L	0.0823	0.114	0.186	0.118	0.43	0.335	0.509	0.154	0.149	0.386	0.187	0.536	0.166	0.131	0.16	0.0677
Chromium	SW6020	mg/L	0.00057J	< 0.001	< 0.001	0.00178	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.00047J	< 0.001	< 0.001
Cobalt	SW6020	mg/L	0.0002J	0.00021J	0.00083J	0.00047J	0.00033J	0.00125	0.00038J	0.00031J	0.0003J	0.00029J	0.00034J	0.0006J	0.00022J	0.00025J	0.0003J	0.00106
Copper	SW6020	mg/L	0.00146	0.00077J	0.00081J	0.00071J	0.00058J	0.00229	0.00135	0.00081J	0.00074J	0.00078J	0.00078J	0.00069J	< 0.001	0.00148	0.00078J	0.00089J
Lead	SW6020	mg/L	0.00011J	< 0.001	9E-05J	< 0.001	0.00011J	< 0.001	< 0.001	0.0001J	< 0.001	9E-05J	< 0.001	8E-05J	< 0.001	0.00013J	< 0.001	0.0001J
Mercury	SW7470A	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00125	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Molybdenum	SW6020	mg/L	0.00048J	0.00051J	0.00077J	0.0069	0.00142	0.00675	0.00585	0.0014	0.00136	0.00094J	0.00263	0.00031J	0.00165	0.00089J	0.00225	< 0.001
Nickel	SW6020	mg/L	0.00677	0.00408	0.00484	0.00442	0.00598	0.0134	0.0113	0.00482	0.0042	0.00609	0.00465	0.00866	< 0.001	0.00527	0.00479	0.00904
Selenium	SW6020	mg/L	0.0097	0.00126	< 0.001	0.00234	0.00088J	0.00307	0.0006J	< 0.001	0.00023J	< 0.001	< 0.001	0.00038J	< 0.001	< 0.001	< 0.001	0.0183B
Silver	SW6020	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.00012J	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vanadium	SW6020	mg/L	0.0006J	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.00019J	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	SW6020	mg/L	0.00456J	0.00237Jb	0.00535	0.00476Jb	0.00431J	0.0082b	0.00195J	0.00628	0.00652	0.0116	0.0144	0.00406J	< 0.005	0.0169	0.0867	0.0135

Notes:
 Bold text indicates results above laboratory reporting limit.
 µg/L = micrograms per liter
 mg/L = milligrams per liter
 J = Estimated value; the result is between the MDL and the RL
 U = Concentration is below the MDL

TABLE C-4
Fourth Quarter 2013 Groundwater Monitoring Results
Gage Wells
Metals

LOCATION NAME			MW-G01D	MW-G02D	MW-G03D	MW-G04D	MW-G01S	MW-G02S	MW-G03S	MW-G04S
SAMPLE DATE			10/22/2013	10/22/2013	10/22/2013	10/23/2013	10/21/2013	10/22/2013	10/23/2013	10/24/2013
SAMPLE NAME			MW-G01D	MW-G02D	MW-G03D	MW-G04D	MW-G01S	MW-G02S	MW-G03S	MW-G04S
SAMPLE DELIVERY GROUP (SDG)	Method	Unit	13-10-1678	13-10-1678	13-10-1678	13-10-1749	13-10-1590	13-10-1678	13-10-1749	13-10-1867
Antimony	SW6020	mg/L	0.00033J	0.00013J	0.00014J	0.00021J	0.00057J	0.00017J	< 0.001	0.00044J
Arsenic	SW6020	mg/L	0.00603	0.00495	0.00901	0.00114	0.00412	0.00836	0.00696	0.0168
Barium	SW6020	mg/L	0.0117	0.0306	0.0396	0.0228	0.102	0.0139	0.227	0.0374
Chromium	SW6020	mg/L	< 0.001	< 0.001	< 0.001	0.00107	< 0.001	< 0.001	0.00552	< 0.001
Cobalt	SW6020	mg/L	< 0.001	0.00018J	0.00013J	0.0001J	0.00026J	0.0001J	0.00019J	0.00015J
Copper	SW6020	mg/L	0.00052J	0.00043J	0.00049J	0.00065J	0.00085J	0.00075J	0.00072J	0.00112
Lead	SW6020	mg/L	9E-05J	< 0.001	< 0.001	0.00012J	0.00057J	< 0.001	< 0.001	< 0.001
Mercury	SW7470A	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Molybdenum	SW6020	mg/L	0.00203	0.00085J	0.00095J	0.00065J	0.00097J	0.00409	0.00177	0.00332
Nickel	SW6020	mg/L	0.00293	0.00344	0.00319	0.00252	0.00493	0.00267	0.0047	0.00178
Selenium	SW6020	mg/L	< 0.001	0.00034J	< 0.001	< 0.001	< 0.001	< 0.001	0.00045BJ	0.00133
Silver	SW6020	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Vanadium	SW6020	mg/L	0.00028J	< 0.001	< 0.001	0.00091J	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	SW6020	mg/L	0.0642	0.00722	0.00452J	0.013	1.16	0.0151	0.00597	0.0193b

Notes:

Bold text indicates results above laboratory reporting limit.

mg/L = milligrams per liter

J = Estimated value; the result is between the MDL and the RL

U = Concentration is below the MDL

APPENDIX D

SURFACE CONTAINMENT AND SOIL MANAGEMENT PLAN

SURFACE CONTAINMENT AND SOIL MANAGEMENT PLAN

INTRODUCTION

URS Corporation (URS) has prepared this Surface Containment and Soil Management Plan (SMP) as part of the Remedial Action Plan (RAP) for the Former Kast Property (Site) in Carson, California on behalf of Equilon Enterprises LLC, doing business as Shell Oil Products US (Shell or SOPUS). The SMP is submitted in accordance with Cleanup and Abatement Order (CAO) No. R4-2011-0046 issued to Shell by the California Regional Water Quality Control Board – Los Angeles Region (RWQCB or Regional Board) on March 11, 2011 and the RWQCB's letter dated January 23, 2014 directing Shell to submit this RAP and Human Health Risk Assessment for cleanup of the Carousel Tract pursuant to California Water Code Section 13304.

The Regional Board is the lead Regulatory Agency for this project; however, the protocols presented in this SMP are intended to apply to all parties involved in soil disturbance activities at the Site (e.g., excavation, landscaping, utility installation), including the City of Carson, County of Los Angeles Department of Public Works, local utility providers, contractors, and residents.

OBJECTIVE

This SMP provides the detailed approach to mitigate potential residential, construction, or utility worker exposure to soils that do not meet Remedial Action Objectives (RAOs) that may remain at the Site following implementation of the excavation remedy outlined in the RAP and forthcoming Remedial Design Implementation Plan (RDIP). For the purposes of this SMP, these soils will be referred to herein as “residual soils.” The SMP details the long-term approach to address potential residual soils should the need arise to disturb these soils in the future. Residual soils may be present at depths below the depth of excavation, as well as in areas not excavated such as beneath homes, City sidewalks and streets.

BACKGROUND

Remediation of soil, soil vapor, and groundwater is required in portions of the Site to meet RAOs, as approved by the Regional Board. In accordance with the CAO, this SMP specifies on-going monitoring requirements for residual soils that will remain in place after remedial excavation. The SMP summarizes protocols for containment, monitoring, and management of such residual soils. This SMP is designed to be used in conjunction with existing administrative controls (e.g., City of Carson and Los Angeles County Codes regarding construction, grading, landscaping, and excavation and encroachment permits).

Site-related constituents of concern (COCs, those COCs associated with the historic use of the Site as an oil storage facility) consist of petroleum hydrocarbon-derived constituents and some metals. In addition, other chemicals have been detected in Site soils that are unrelated to the former Site use as an oil storage facility and are referred to as non-Site-related COCs.

Proposed remedial actions include excavation to 3 feet bgs in open areas and areas covered by residential hardscape, including residential planters, walkways, and uncovered patios at properties where risk estimates are above regulatory thresholds or may pose a concern for the potential leaching to groundwater pathway. Soil will not be excavated from properties from areas beneath homes, City sidewalks and streets. Excavated areas will be backfilled with clean imported soils and landscaping/hardscaping will be restored to like conditions. The backfilled clean soil and landscaping will provide a protective barrier to minimize the potential for exposure to soils below the depth of excavation. Soils below a depth of 3 feet and soils beneath surface containment features will be addressed through a soil vapor extraction (SVE) and bioventing system that will include installation of SVE/bioventing wells both in City streets and on residential properties where RAOs are not met based on existing conditions.

This Soil Containment and Soil Management Plan outlines procedures so that residents or construction/utility workers are not inadvertently exposed to soils that exceed the RAOs for the Site.

SURFACE CONTAINMENT

Physical barriers (e.g., presence of clean soil to a depth of 3 feet, hardscape, or structures) will serve to contain and/or prevent exposure to underlying impacted soils on a property and will restrict access and exposure to deeper soils. In areas where impacted soils will be excavated to 3 feet bgs, the certified clean imported soil backfill will serve as a soil barrier restricting exposure to underlying soils. Additionally, Site soils that meet RAOs will provide surface containment preventing contact with underlying residual soils. Where soils are not removed as part of the remedial excavation, the existing cover (consisting of concrete foundations and floor slabs of houses, garages, City sidewalks, street pavement, etc.) will provide a protective barrier to minimize the potential for exposure to impacted soil below. Site features, such as homes, garages, City sidewalks, and roads are considered part of the protective barrier.

MANAGEMENT OF RESIDUAL SOILS CONTAINING SITE COCs ABOVE SSCGs

Following remedial excavation, residual soils may remain below 3 feet bgs and beneath homes, garages, streets and City sidewalks. The potential for contact with these residual soils will be mitigated by the surface containment features described above, except in limited instances where excavation deeper than 3 feet may be necessary. Because City Code requires permits for excavations deeper than 3 feet, there is an administrative control already in place to restrict potential contact with these deeper soils (i.e., a permit requirement). This administrative control and notification mechanism is further discussed below.

Based on the distributions of COCs on each property (e.g., Figures 3-3 through 3-8 and Appendix B of this RAP), Shell will have a means to identify soils remaining after remedial excavation and remedial system installation that do not meet RAOs. This will provide a sufficient summary of the residual soils remaining at the Site to allow any entity performing future excavations at the Site to anticipate the environmental conditions they may encounter. It is anticipated that SVE/bioventing will reduce levels in residual soils to meet RAOs within approximately 30 years (see Section 8.2.4 of the RAP).

Administrative Controls

In their January 23, 2014 letter, RWQCB states that excavation to a depth requiring a grading permit under Los Angeles County building code “is supportive of unrestricted residential use because institutional controls are already in place...” (RWQCB, 2014a). RWQCB notes that in the Carousel Tract, the Los Angeles County building code is administered by the City of Carson. RWQCB states as follows: “Because the City of Carson must be notified and approve excavations below five feet, the City could readily inform residents and workers of other appropriate precautions necessary for excavations below five feet through existing administrative processes.” The LA County building code, therefore, acts as an applicable or relevant and appropriate requirement (ARAR) for excavations deeper than five feet at the Site.

While the statements above refer to the County requirement of Grading Permits for excavations 5 feet or deeper, the City of Carson has amended L.A. County building code Section 7003.1 to require a Grading Permit for excavations 3 feet or deeper. City of Carson Building Code Section 8105 (amending the L.A. County Building Code) states that:

A Grading Permit shall not be required for:

- 1. An excavation which (a) is less than three (3) feet in depth below natural grade, or (b) does not create a cut slope greater than three (3) feet in height and steeper than one and one-half (1-1/2) horizontal to one (1) vertical.*
- 2. A fill not intended to support structures and which does not obstruct a drainage course if such fill is placed on natural grade that has a slope not steeper than three (3) horizontal to one (1) vertical and (a) is less than one (1) foot in depth at its deepest point, measured vertically upward from natural grade to the surface of the fill, or (b) does not exceed twenty (20) cubic yards on any one (1) lot.*

Thus, the City of Carson has amended L.A. County building code Section 7003.1 to require a Grading Permit for excavations deeper than 3 feet, and these existing institutional controls support the 3-foot soil excavation remedy. Because the City must be notified and approve excavations deeper than 3 feet (City of Carson Building Code §8105 amending Los Angeles County Building Code §7003.1), the City could readily inform residents and workers of appropriate precautions necessary for excavations below 3 feet through an existing administrative processes, and also notify Shell that monitoring and disposal of residual soils may be required.

Shell intends to coordinate with the City of Carson to establish a process through existing building and grading permit reviews, General Plan overlay or footnote, area plan, or similar process, to ensure that if a property owner plans to conduct activities involving excavations greater than 3 feet deep (such as building renovation, installation of a pool or deeper landscape alterations), Shell is notified so that it can arrange for sampling and proper handling of impacted soils that may be present. It is expected that, based on the City permitting requirements, redistribution of deep soils to the surface at

these properties will not be permitted. An example of such an enhancement is in use at the Del Amo Soil and NAPL OU site.¹

Because an institutional control is already in place in the City of Carson requiring grading permits in order to excavate at depths below 3 feet, these requirements are not expected to interfere with the unrestricted resident's use and enjoyment of their property.

Activities that may disturb impacted soil (e.g., excavation, grading, trenching, filling, earth movement, or removal of soil) below a depth of 3 feet require advance notification to the City of Carson. A mechanism will be established with the City for notification to be made to the Regional Board and Shell. The property owner(s) would be directed to provide advance notice of plans to conduct construction activities that may encounter residual impacted soil. If advance notice is impractical, such as during urgent or emergency utility work, notice should be provided as soon as practical after the work begins, so that Shell may arrange for sampling and proper handling of impacted soils that may be present.

Additionally, Shell's consultants are and will continue to be set up within the Underground Service Alert (USA) one-call system to receive notification of planned excavation work in the Carousel Tract. Upon notification of planned excavations, Shell or its representatives will coordinate with the entity that contacted USA (whether the homeowner or their representative, a homeowner's contractor, or utility company such as Cal-Water, Southern California Gas Company, or AT&T) to provide monitoring, management, handling and proper disposal of residual soils during excavation activities.

¹ At the Del Amo Soil and NAPL OU site, the site remedy includes multiple layers of institutional controls (ICs) used in conjunction to protect site workers and the public from potential exposure to site contaminants. One of the layers of the ICs is called the "Permit Review IC", which is currently active as a pilot program. For this Permit Review IC, the responsible parties (including Shell), USEPA, and DTSC worked together with the City of Los Angeles to place "flags" in the Los Angeles Department of Planning's Zoning Information and Map Access System (ZIMAS) database for the parcels that make up the Del Amo site. Flags alert City staff and applicants of special conditions or restrictions that apply to a specific parcel. These flags provide information and instructions to City employees and permit applicants who propose development in identified locations that require grading/excavation or building permits. The flag informs the user that the parcel's location requires contact with EPA's project team for an environmental review. As building permit applications are reviewed by the City of Los Angeles Building and Safety Department, applicants are referred to EPA's Environmental Review Team (ERT) to review construction plans and determine whether contaminated soil or groundwater would be encountered. The ERT is currently composed of EPA, DTSC, along with the responsible parties.

With this IC pilot program, the responsible parties serve as the point of contact for permit applicants. The responsible parties conduct an initial review by obtaining information from the applicant regarding the nature of the proposed construction project, proposed land use, and locations and depths of excavations. If the proposed project involves applicable soil penetration, EPA issues a letter to the applicant that outlines specifies actions to be taken prior to or during the construction process that are necessary to protect human health and the environment, or that states that the project can proceed without further evaluation.

Monitoring

A number of types of monitoring may be performed to support excavation activities, depending on the volume and extent of excavation. Appropriate monitoring for dust, odor, and vapors will be conducted. Where required, Shell will offer to perform monitoring if not otherwise being performed by party doing the work. At a minimum, real-time monitoring of the work area and excavations will be conducted using a photoionization detector (PID) during excavation operations. Monitoring may also be conducted with a flame-ionization detector (FID) for methane in the parts per million by volume (ppmv) range and a four-gas meter for methane in the percent level, oxygen, carbon dioxide, and hydrogen sulfide. Monitoring for odors may also be conducted based on worker perception, at the downwind property boundary of the residential property where excavation is occurring.

To mitigate offsite dust migration and resultant impacts to neighboring properties, dust monitoring will be conducted for large excavations. If visible dust is encountered, periodic watering of the active excavation areas will be recommended throughout the excavation and backfill activities. In addition to dust suppression efforts, odor suppressants will be recommended to mitigate offsite migration of odors from the work area.

Soils Management

As discussed above, notification through participation in the USA system or City of Carson permit requirements will allow Shell's representatives to collect appropriate samples and arrange for disposal of soil generated from utility work, if appropriate. If excavation of the soil is necessary for residential or utility provider construction activities, it is likely that impacted soil will not be suitable for re-use. Shell will, if requested by the property owner or utility service provider, arrange for the removal, transportation, and offsite disposal by a qualified waste contractor of residual soil. If potentially impacted soil is observed during urgent or emergency construction activities (e.g., a gas line repair), and an authorized representative is not onsite, Shell should be notified as early as possible to allow the material to be profiled and properly disposed. If Site soils are being excavated on an urgent basis, the property owner or contractor should ensure that potentially affected soil is segregated and stockpiled to allow for proper soil profiling and management.

After receiving notification that potentially impacted soil will be encountered during the course of construction activities, Shell will arrange for a contractor to collect samples of the soil (either in situ or from a segregated stockpile) for profiling purposes if an updated waste profile is needed.

To the extent possible, impacted soil will be direct loaded into approved waste containers for transport to the appropriate recycling or disposal facility. With advance notice, Shell 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 should be placed upon plastic sheeting and covered with plastic until they can be loaded into approved waste containers to be provided by Shell.

Excavated impacted soil will be transported offsite to appropriately licensed recycling/disposal facilities by a state-licensed waste hauler for appropriate recycling or disposal. To the extent possible, soils will be pre-profiled, and approval will be obtained from the recycling/disposal facilities before excavation activities begin. All documentation pertaining to waste disposal profiles and waste disposal acceptance will be in place prior to any offsite shipments of waste.

CONTACTS

Information regarding the implementation of this SMP can be obtained by calling the Regional Board project manager at the number listed below. Other governmental agencies that may be responsible for implementing the Soil Management Plan include the SCAQMD, Los Angeles County Department of Public Works, Los Angeles County Fire Department, Los Angeles County Department of Health, and the City of Carson.

If you have any questions or wish to discuss the project, please contact:

Teklewold Ayalew, PhD, PG
Regional Board Project Manager
(213) 576-6739
tayalew@waterboards.ca.gov

Shell's Kast Community Information Line
(310) 857-2335
info@kastproperty.com

APPENDIX E
PRELIMINARY RELOCATION PLAN

PRELIMINARY RELOCATION PLAN

Introduction

As part of the Remedial Action Plan (RAP), Shell Oil Products US (SOPUS or Shell) will provide temporary alternative accommodations to eligible residents of properties while remedial actions (in particular remedial excavations) are performed in the yards of their residences, in compliance with recommendations of the Human Health Risk Assessment, Feasibility Study, and RAP, and under the oversight of the Los Angeles Regional Water Quality Control Board (RWQCB or Regional Board). During remedial excavation, backfill, and restoration work, residents of the properties where excavation is conducted will be temporarily relocated as described herein. Following backfill and utility and hardscape restoration, residents would move back into their homes during landscape restoration and fence/block wall construction, or, at their option, wait to return until after the landscape restoration work is completed.

Residents of properties adjacent to locations where excavations are occurring will be offered alternative accommodations if it is necessary based on the nature of the excavation work, the potential for interruptions of access to the property, or due to disruptions in utility service to the property. Relocation of residents at adjacent or nearby properties will include services and security as described herein.

This is an overview of the Program and the services being offered. If desired by a resident, a Cartus Program counselor will be available to review a resident's particular needs during relocation and present the Program features and options available.

About the Program

The Program is being offered to eligible residents of properties where excavation will be performed that may cause a temporary inconvenience to the residents and necessitate temporary alternative living arrangements during excavation and restoration.

The Program:

- Offers a payment that can be applied towards temporary living expenses for the members of the household living at the residence;
- Provides assistance, if desired, with making temporary living arrangements and/or hotel accommodations billed directly to Cartus, a Shell contractor;
- Provides an inconvenience allowance as part of the payment.

Cartus, a nationwide real estate services company, will administer the Program.

Alternative accommodations may be offered on a case-by-case basis to residents of neighboring properties to minimize disruptions (due to interruptions of access to the property resulting from

equipment staging, or due to disruptions in utility service to the property, noise, or other conditions) to those residents.

Program Eligibility

Residing owners or tenants of a residential property that qualifies for temporary living arrangements (as determined by Shell or its consultants/contractors as set forth above) due to remediation-related excavation activities are eligible for the Program.

It is a requirement of the Program that the resident sign a “Use of Home and Acknowledgement of Payment to Occupants” form in order to receive program benefits. Please see Attachment A – “Use of Property and Acknowledgement of Payment of Occupants.”

Planned Remediation Activities

Overview

As described in the RAP, Shell intends to conduct the following multi-media remedial actions for the Site:

- Excavation of shallow soils on impacted residential properties based on the findings of the Human Health Risk Assessment and protection of groundwater criteria, as specified in the RAP.
- Soil vapor extraction (SVE) to address volatile petroleum hydrocarbons, volatile organic compounds (VOCs) and methane in soil vapor where appropriate and to promote degradation of residual hydrocarbons in deeper soil following shallow soil excavation. SVE wells will be installed in City streets and on residential properties, as appropriate.
- Bioventing to induce oxygen levels in subsurface soils to promote microbial activity and degrade longer-chain petroleum hydrocarbons. Bioventing will work in conjunction with SVE.
- Sub-slab mitigation at a limited number of properties where sub-slab soil vapor concentrations exceed site-specific cleanup goal values.
- Continued recovery of crude oil floating on the water table from two wells located on Marbella Avenue.
- Continued groundwater monitoring to support monitored natural attenuation for groundwater. Additional groundwater remedial actions may be undertaken in the future, but it not expected that these actions will affect residences.

Of these activities, excavation of shallow soils is the only activity anticipated to require temporary relocation of residents of the affected properties. Based on findings of the Human Health Risk Assessment, Shell will excavate shallow soils at approximately 183 residential properties to a depth of 3 feet below existing grade where the presence of soil impacts results in estimates of incremental lifetime cancer risk and non-cancer hazard that are above regulatory thresholds or may pose a concern for the potential leaching to groundwater pathway.

Soils will be excavated from both landscaped areas and areas currently covered by hardscape, including walkways, driveways, and patio areas. Hardscape and landscaping will be removed during the initial stage of excavation and restored to like conditions following completion of excavation. Shell also anticipates that it may be necessary to remove fences and block walls between yards and ornamental or partitioning walls on individual properties, as the depth of excavation will exceed footing depths. If possible, fences and walls will be protected in place and not removed; however, they will be removed and restored if necessary. As with other hardscape, fences and walls will be restored following completion of excavation along with restoration of landscaping. Exceptions to excavation beneath hardscape include patios covered by structures and roofs and pool decking surrounding swimming pools. These hardscape areas will not be excavated to avoid structural demolition and potential damage to swimming pools and appurtenant equipment.

Following approval of the RAP, a Site-wide Remedial Design and Implementation Plan (RDIP) will be prepared along with a Property Specific Remediation Plan (PSRP) for each property that requires remedial action. As part of PSRP preparation, Shell contractors will meet with homeowners and/or residents, and their legal representatives to obtain necessary information for relocation during remedial implementation and to discuss hardscape and landscape restoration.

Remedial excavation is anticipated to proceed in phases, if possible with each phase of work including approximately eight contiguous properties. Each phase will include homes on both sides of a city block (e.g., the east side of Marbella and west side of Neptune Avenues). This approach will be used so that if it is necessary to remove back fences or block walls, the fences can be removed one time and excavation conducted in both yards before the fences are restored.

Preliminarily, it is estimated that excavation and backfill will take approximately 3 weeks per property with site restoration taking approximately an additional 3 to 4 weeks. Approximately seven weeks would be needed to complete a phase of eight properties. Thus, residents may be relocated for a period of approximately seven weeks, with potential for shorter or longer durations. Following backfill and utility and hardscape restoration, residents would move back into their homes during landscape restoration and fence/block wall construction, or, at their option, wait to return until after the landscape restoration work is completed.

Temporary Living Assistance

Overview

The goal of the Program is to provide eligible households with financial assistance toward the temporary living expenses that participants may incur due to temporary relocation during remediation activities. In addition, if desired, assistance with temporary living arrangements may be provided.

How the Program Assistance Payment is Established

At least two weeks prior to the relocation date, a meeting will be held with the residents to provide information about financial assistance to facilitate relocation, including relocation or boarding of pets and assistance with transportation, if needed. Residents will be asked for general information about persons living in the home, such as the number of adults and children and the ages of the children. Special needs, such as long-term vehicle storage, special medical needs, or transportation needs will

be discussed and accommodations will be made to ensure the relocation is as comfortable as possible for the residents. Refer to Attachment B for information to be obtained during the interview. Once the interview is completed, a financial assistance calculation will be completed and the residents will be informed of the amount to be provided.

Assistance with Temporary Living Arrangements

Residents will have the option to stay at a hotel of their choice and make their own arrangements subject to the daily payment amounts provided below. If requested, residents may choose to stay at a hotel arranged by and direct billed to Cartus. Available hotels for direct billing include:

- Marriott Residence Inn Torrance, 3701 Torrance Boulevard, Torrance, California;
- Marriott Residence Inn Manhattan Beach, 1700 North Sepulveda Boulevard, Manhattan Beach, California;
- Marriott Courtyard Torrance, 2633 Sepulveda Boulevard, Torrance, California;
- Marriott Residence Inn Downtown Long Beach, 600 Queensway Drive, Long Beach, California; and
- Marriott Residence Inn Long Beach, 4111 East Willow Street, Long Beach, California

In either instance, Shell will pay any pet fees charged by the hotel.

If requested, Cartus can make the initial reservations and will provide contact information at the hotel in case any changes need to be made. In addition, direct billing can be set up for the room, pet fees, and tax. However, all other expenses (meals, etc.) shall be paid directly by the participating residents. Meals and other miscellaneous assistance based on the family profile will be provided in the payment amount. Any damage to hotel rooms, furnishings or other property during relocation periods will be the responsibility of the relocated residents.

Program Payment

The Program will provide eligible participants with assistance towards the temporary living expenses such as lodging and meals that may be incurred as a result of the remediation being completed at their home. The Program payment will be calculated by Cartus and will be communicated after the interview conducted as part of the RDIP and PSRP process.

Payment will be provided in the form of funds loaded onto one debit card per property. As noted above, the resident will need to sign a “Use of Property and Acknowledgement of Payment to Occupants” form in order to receive the payment. Please see Attachment A for further information.

Shell will provide relocated residents a daily meal allowance of \$71 per day per adult, and \$36 per day per child. These amounts are based on the 2014 Federal per diem allowance for the Los Angeles area (<http://www.gsa.gov/portal/category/100120>). For the purposes of meal allowance calculations, a child is considered a person 12 years of age or younger. If a resident chooses to make their own hotel arrangements, the hotel allowance is \$165 per night per room, based on 2 people per room. This amount is higher than the 2014 Federal per diem allowance for the area. Additionally, an inconvenience allowance will also be provided.

If the resident has pets that will not be staying at the hotel, the resident will be given the option to board the pets at a facility selected and reserved by Cartus, or to make their own arrangements to board pets with an allowance of \$30 per day per pet. Additionally, Shell will pay for updated shots if the pet is not current on vaccinations required for boarding. Shell understands that some pets have special needs, such as regular medication, that might increase the cost of boarding a pet, and will take such special needs requests under consideration when provided an explanation of the need.

Security

While residents are temporarily relocated, onsite security, consisting of an off-duty law enforcement officer, will be present at each area where active remediation work is being conducted and the residents are relocated during the hours that URS or its subcontractor personnel are not present onsite. When working on both sides of a block, a security officer will be stationed on each street. A relief officer will be present in the neighborhood to relieve the onsite officer(s) for meal and rest breaks. In the event of an emergency, including suspicious persons/activities at or near the residence, emergency services will be contacted immediately by calling 911, followed by the resident or their designated legal representative, and URS. If the situation is not an emergency, URS will be notified immediately or, if after hours, at the start of the next working day. All verbal notifications will be followed by written documentation of the incident within 24 hours; including date, time, and description of the incident; who was contacted, and time the resident or their legal representative and URS representative were notified.

Attachment A

USE OF PROPERTY AND ACKNOWLEDGMENT OF PAYMENT TO OCCUPANTS

Company and Responsible Occupants agree as follows:

Agreement: This Use of Property and Acknowledgment of Payment to Occupants

Property Address:

Responsible Occupants (Owner or Tenant):

Company: Shell Oil Company

Activities: Excavation yard of Property including hardscape, and Restoration of Property

Leave Date:

Return Date:

Excavation and Restoration Period: The Leave Date through the Return Date

Number of Days in Excavation and Restoration Period:

Number of Nights in Excavation and Restoration Period:

Number of Occupants in Home (including Responsible Occupants) and Number of Pets to be Boarded:

Payment to Responsible Occupants: \$XXX TOTAL PAYMENT AMOUNT If one or more Occupants decide to stay at the house after having asked for alternative accommodations, the amounts provided for those accommodations will be adjusted accordingly.

What Company will do: (a) Have the right to use the Property for Remediation purposes during the Excavation and Restoration Period; (b) Pay to the Responsible Occupants the Total Payment Amount; (c) Repair any damage to the Property caused by Company's use of the Property during the Excavation and Restoration Period.

What Responsible Occupants will do: (a) Have all of the Occupants and pets leave the Home on or before the Leave Date and keep all Occupants and pets away from the Property during the entire Excavation Period until the specified Return Date; (b) Allow Company to use the Property during the Period for Excavation and Restoration (even if occupant elects to return during Restoration activities); (c) Notify Company of all known hazards or risks in the Property and in the Home; (d) Comply with all Rules of Occupancy at the temporary living facility/hotel during the Occupants' stay.

No Admission of Liability: Company is not admitting to any liability relating to the Property or the Home or any environmental matter relating to the Property or the Home by signing and performing this Agreement or conducting the Excavation and Restoration.

Signed as of <Date>.

RESPONSIBLE OCCUPANTS:

COMPANY:

[Signature]

[Signature]

[Signature]

Special Needs? (e.g., handicap accessible, special provisions for health concerns)

How many cars/trucks do you currently have that will require parking at the temporary address?

Hotel/Extended Stay Facility Needs *(Delete if not needed) (The company has ultimate discretion to determine the number of rooms needed.)*

Number of Rooms: _____

Adjoining Rooms: No Yes

Explain:

Refrigerator: No Yes

Explain:

Apartment Needs *(Delete if not needed) (The company has ultimate discretion to determine the number of bedrooms needed.)*

Number of bedrooms needed:

Other needs:

Staying with Friends or Family:

Name and address of friend or family:

Phone number of friend or family:

Pet Needs

Do you have pets that will need to be temporarily relocated? No Yes

How many pets and what type:

Are your pets up to date on all required shots? No Yes

Do any of your pets have unique needs? (e.g. daily medication, large aquariums, etc.)
 No Yes If yes, please explain:

Transportation Needs

How do your children get to school currently?
What is the name of the school(s) your children attend:
Will your children require transportation to school from the temporary living facility? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, please provide details:
How far away is your workplace from your children's school(s)?
Do you have any other transportation needs?

Additional Information

Please provide any other information that you feel would be helpful in addressing your temporary living needs.
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I certify that the above information is accurate and true. I understand that if any information on this form changes, I need to inform the Company. I also understand that if any information on this form is found to be inaccurate, some or all of my temporary relocation assistance may be denied or withdrawn.

Signature: _____

Printed name: _____

Date: _____