

**REMEDATION WELL INSTALLATION
UPDATE REPORT
Defense Fuel Support Point Norwalk
15306 Norwalk Boulevard
Norwalk, CA 90650**

04-NDLA-007

Prepared For:



Defense Logistics Agency Installation Support for Energy
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Fort Belvoir, Virginia 22060-6222
SP0600-14-D-5410
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Prepared By:



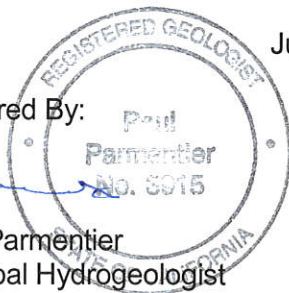
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June 30, 2017

Prepared By:

A handwritten signature in blue ink, appearing to read "Paul Parmentier".

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Principal Hydrogeologist



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1.0 INTRODUCTION

On behalf of our client, Defense Logistics Agency Installation Support for Energy (DLA), The Source Group, Inc. (SGI) is submitting this Remediation Well Installation Update Report (Update Report) for the former Defense Fuel Support Point (DFSP) Norwalk facility located at 15306 Norwalk Boulevard, Norwalk, California (Site; Figure 1).

Recent remediation at the Site has focused on shallow soil remediation, with excavation and on-Site treatment of approximately 65,000 cubic yards of petroleum-containing soil. This shallow soil remediation was presented in the November 2014 *Soil Remediation Action Plan* (RAP; SGI, 2014a), and in an addendum (SGI, 2014b). The RAP and addendum were approved, with conditions, by the Los Angeles Regional Water Quality Control Board (RWQCB) in a letter dated January 7, 2015 (RWQCB, 2015).

As soil remediation efforts approach completion, the focus of Site remediation is shifting towards contamination in the deeper soils and groundwater. In November 2016, 11 biosparge wells (BSP-10 to BSP-20) and three soil vapor extraction (SVE) wells (VEW-38 to VEW-40) were installed at the Site, as presented in the March 2017 *Well Replacement Update Report and Work Plan* (Update Report; SGI, 2017). This Update Report summarizes additional well installation as part of the ongoing system recommissioning efforts. Concurrently with the evaluation and recommissioning of air sparge, biosparge and SVE at the Site, DLA is preparing a light non-aqueous phase liquid (LNAPL) conceptual site model (LCSM) that will outline the proposed LNAPL remediation.

1.1 Site Location and Vicinity

The DFSP Norwalk facility is an approximately 50-acre facility that formerly included 12 aboveground storage tanks (ASTs) used for storage of jet propellant (JP-4, JP-5, and JP-8). Aviation gasoline was reportedly distributed at the truck rack, but not stored in the ASTs. SFPP, an operating partner of Kinder Morgan Energy Partners, L.P. (KMEP), leases a 2-acre easement along the southern and eastern boundaries of DFSP for operation of its pipelines, which conveys gasoline, diesel, and jet fuel. Within the southern easement lie three active pipelines, one of which is a 16-inch diameter pipeline (designated LS-1). LS-1 bends at the southeastern corner of the facility and continues northward within the eastern easement. An abandoned pipeline also runs along the eastern boundary of the Site. The DLA has decommissioned the site, but SFPP pipelines continue to operate.

1.2 Objectives of the Update Report

Per the RWQCB-approved RAP, the former biosparge system was to be recommissioned and the air sparge and SVE network was to be expanded as part of groundwater remediation efforts upon completion of the shallow soil remediation project. Therefore, the objective of this Update Report is to provide details of the remediation well installation being conducted as part of system recommissioning.

1.3 Update Report Outline

This Update Report includes the following sections: Section 1 – Introduction; Section 2 –Well Installation Summary; Section 3 – Schedule and Reporting; Section 4 – Limitations; and Section 5 – References.

2.0 WELL INSTALLATION SUMMARY

As described in the introduction, recommissioning efforts for the former biosparge system are currently underway, and this section summarizes installation of the remediation wells targeting the deep soil and groundwater contamination remaining after shallow soil remediation efforts have been completed. Thirty-four additional remediation wells are to be installed as dual-nested biosparge and SVE wells targeting impacts in the eastern and south central areas of the Site. The proposed locations of these wells (RW-1 through RW-34) are illustrated on Figure 2. Well locations and spacing were based on the results of the recent optimization testing conducted in those areas in April 2017.

The installation of these wells will include the following tasks.

2.1 Preparatory Tasks

The Site- and task-specific health and safety plan (HASP) will be updated prior to field work, if necessary. The drilling permit has been obtained from the Los Angeles County Department of Health Services, and is included in Appendix A. Underground Services Alert will be contacted prior to drilling.

2.2 Well Installation

SGI personnel will supervise the drilling, installation, and development of all the wells. The wells will be installed by hollow-stem auger rigs.

During the drilling of the wells in the eastern part of the site where a fine-grain layer is present around a depth of 30 feet (ft), the soil types will be logged every 5 feet to evaluate the lithology and determine the proper placement of the vapor extraction well, with the bottom of the vapor extraction well tentatively screened in the sandy layer below the 3- ft deep silt layer. In the southern part of the Site, where no fine-grain layer is present, the remediation wells will all be installed with the same well construction. The soil from the drilling will be screened for hydrocarbon impacts using a photoionization detector (PID) from the ground surface to the total depth as an estimate of the degree of subsurface contamination at each well location.

2.3 Remediation Well Construction Specifications

The remediation wells were constructed in general accordance with the June 2014 California Environmental Protection Agency (CalEPA) guidance manual *Well Design and Construction for Monitoring Groundwater at Contaminated Sites*.

All nested dual biosparge/SVE wells were constructed with the following specifications (as presented in Figure 3):

- Borehole diameter 8.25 inches.
- 2-foot long biosparge screen set a minimum of 3 feet below the deepest impacted interval, typically between 43 and 45 feet below ground surface (bgs).
- 1-foot long sump (silt trap) below the screen, typically from 45 to 46 feet bgs.

- Casing: two-inch PVC Schedule 40 flush thread.
- Screen slot size 0.010".
- #2/12 sand filter pack.
- Approximately 1 foot of #30 transition sand placed above the top of screen, and approximately 8 feet of bentonite time-release pellets placed above the filter pack.
- 20-foot long SVE screen set approximately 8 feet above the bentonite seal, typically between 13 and 33 feet bgs. The depth of the lower part of the SVE screen may be adjusted to ensure that the SVE well reaches into to sandy layer below the finer-grain layer found in the eastern part of the site.
- Casing: two-inch PVC Schedule 40 flush thread.
- Screen slot size 0.020".
- #3 sand filter pack.
- Approximately 1 foot of #30 transition sand placed above the top of screen, and approximately 3 feet of hydrated bentonite chips placed above the filter pack.
- Cement/bentonite grout placed above the bentonite seal up to approximately 5 feet bgs.

After the current temporary completion with the well casing extended above ground and marked with protection posts and caution tape, flush-mount street boxes will be installed and set in concrete at grade surface as part of system recommissioning after the performance optimization tests are completed and prior to the remediation system re-start.

2.4 Well Development

Prior to remediation start-up, each biosparge well will be developed to remove fine particles/debris, and increase the fluid flow from or into the surrounding formation.

The wells will be developed with a surge block and pump, and the developed water monitored using a multi-parameter water quality meter. Water quality parameters (pH, conductivity, dissolved oxygen, temperature, and salinity) will be monitored at regular intervals until the parameters stabilize, within 10% of previous readings for each parameter. Stabilization provides an indication that representative groundwater is entering the screen and is being sampled. During development, measurements and observations of general fluid character including the potential presence of hydrocarbons including LNAPL will be recorded.

2.5 Waste Management

Investigation-derived soil cuttings generated during drilling will be placed into a bin, and the soil will be hauled off-site for disposal pending characterization and profiling. Development fluids will be contained in drums and will be added to the on-site treatment system for treatment and disposal, similarly to the well water purged during groundwater monitoring events.

2.6 Survey

SGL will coordinate the surveying of all well locations and top-of-casing elevations of all groundwater monitoring wells after site re-grading and final well head construction.

3.0 REPORTING

After the completion, development, and surveying of all remediation wells, a detailed report on remediation well installation, system optimization testing, recommissioning and system startup will be prepared, which will include well logs, development records, and surveying data.

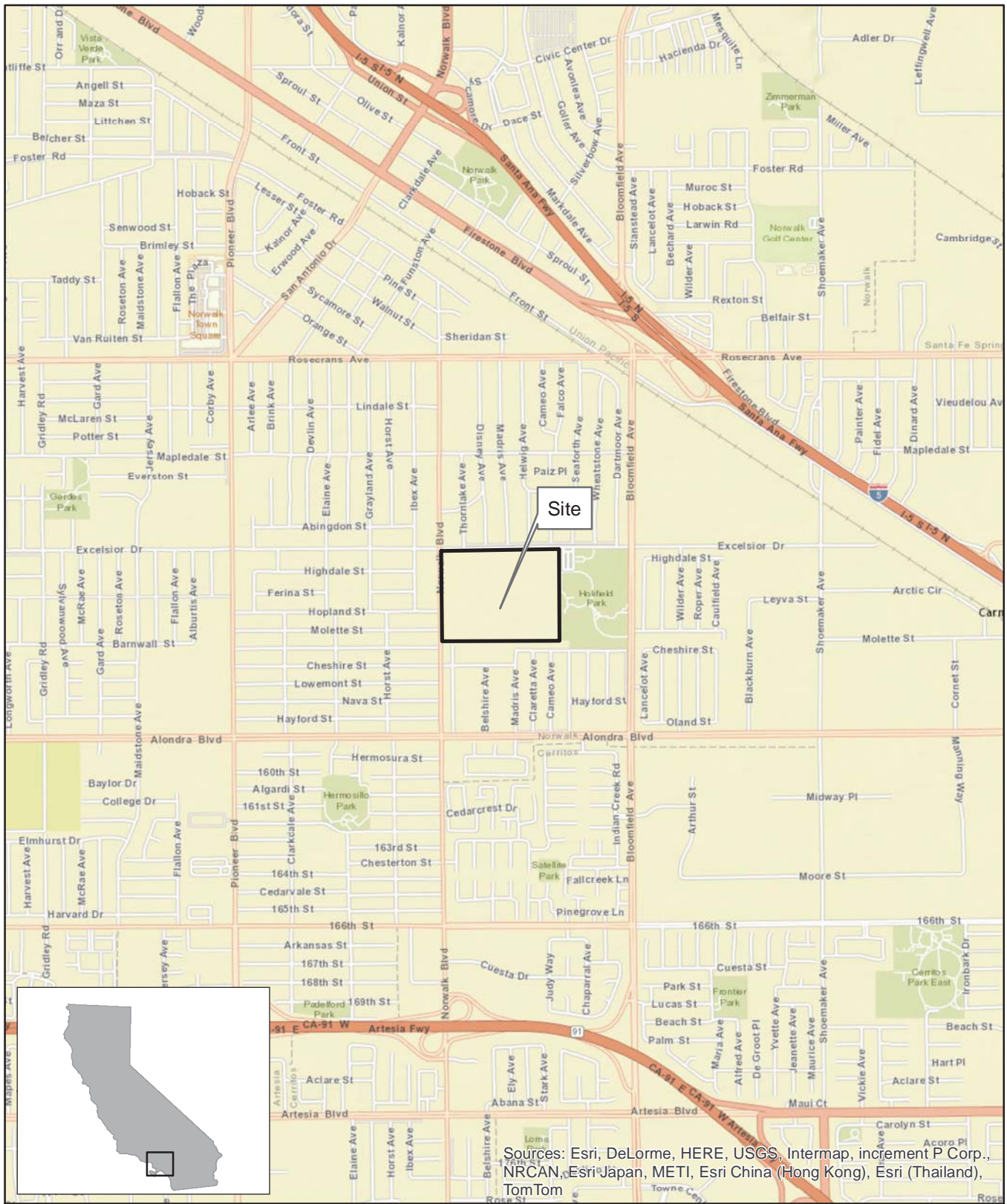
4.0 LIMITATIONS

This Update Report was prepared for the exclusive use of Defense Logistics Agency Installation Support for Energy (DLA) for the express purpose of complying with regulatory directives for environmental investigation, in accordance with the scope of work, methodologies, and assumptions outlined in SGI's contract with DLA and as applicable to the location of the proposed investigation. Any re-use of this work product, in whole or in part, for a different purpose, or by others must be approved by SGI and DLA in writing. If any such unauthorized use occurs, it shall be at the user's sole risk without liability to SGI. To the extent that this report is based on information provided to SGI by third parties, including DLA, their direct-contractors, previous workers, and other stakeholders, SGI cannot guarantee the completeness or accuracy of this information, even where efforts were made to verify third-party information. SGI has exercised professional judgment to collect and present a scope of work and opinions of a scientific and technical nature. The opinions expressed are based on the conditions of the site existing at the time of this report preparation, current regulatory requirements, and any specified assumptions. Findings or conclusions presented in this report are intended to be taken in their entirety to assist DLA and regulatory personnel in applying their own professional judgment in making decisions related to the property. SGI cannot provide conclusions on environmental conditions outside the completed scope of work. SGI cannot guarantee that future conditions will not change and affect the validity of the presented scope of work and any conclusions presented. No warranty or guarantee, whether expressed or implied, is made with respect to the data, observations, recommendations, and conclusions.

5.0 REFERENCES

- California Environmental Protection Agency (CalEPA), 2014. *Well Design and Construction for Monitoring Groundwater at Contaminated Sites*. June 2014.
- The Source Group, Inc. (SGI), 2014a. *Soil Remedial Action Plan, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard*. November 30, 2014.
- SGI, 2014b. *Addendum to the Soil Remedial Action Plan (Description of F4 Bioremediation), Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard*. December 10, 2014.
- SGI, 2017. *Well Replacement Update Report and Work Plan*. March 14, 2017.
- Los Angeles Regional Water Quality Control Board (RWQCB), 2015. *Review of Remedial Action Plan and Soil Management Plan, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard*. January 7, 2015.

FIGURES



Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

SOURCE:
ESRI 7.5 MINUTE TOPOGRAPHIC MAP.
<http://resources.esri.com/arcgisonline/services>

PROJECT NO.:	DATE:	DR. BY:	APP. BY:
04-NDLA-001	5/28/2014	JK	PP

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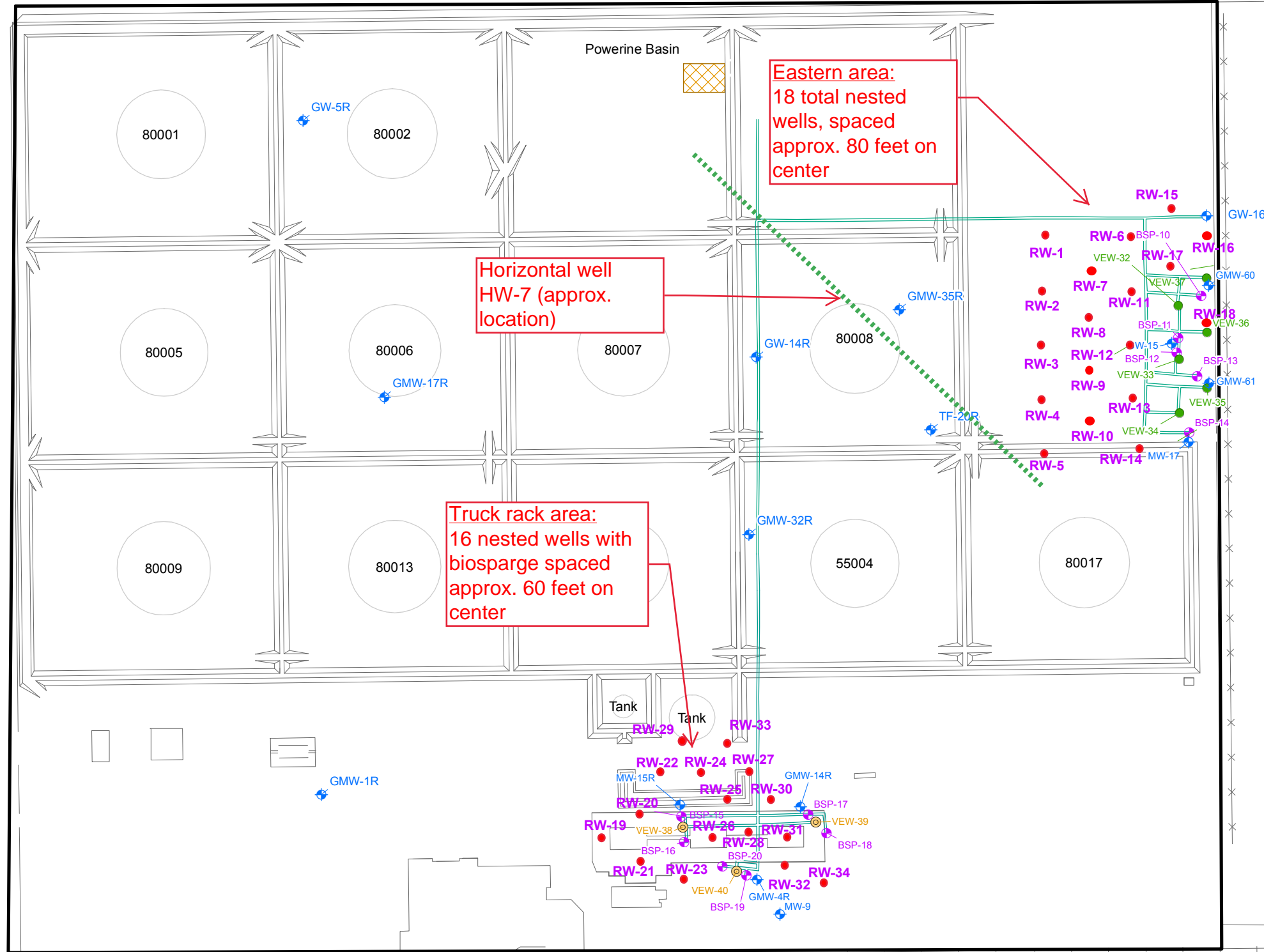
**DEFENSE FUEL SUPPORT POINT
NORWALK**
15306 NORWALK BOULEVARD
NORWALK, CALIFORNIA

SITE LOCATION MAP









FIGURE
1

Norwalk Blvd

Excelsior Dr

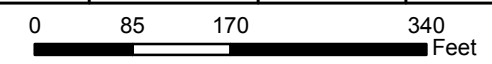


Legend

-  Former Above Ground Storage Tanks
-  DFSP Norwalk Border
-  BSP&SVE_Trenches_Surveyed
-  Groundwater Monitoring Wells
-  Redrilled Biosparging Wells
-  Redrilled SVE Wells
-  Existing SVE Wells
-  Proposed Nested SVE/BSP Wells

DFSP Norwalk
15306 Norwalk Boulevard
Norwalk, California

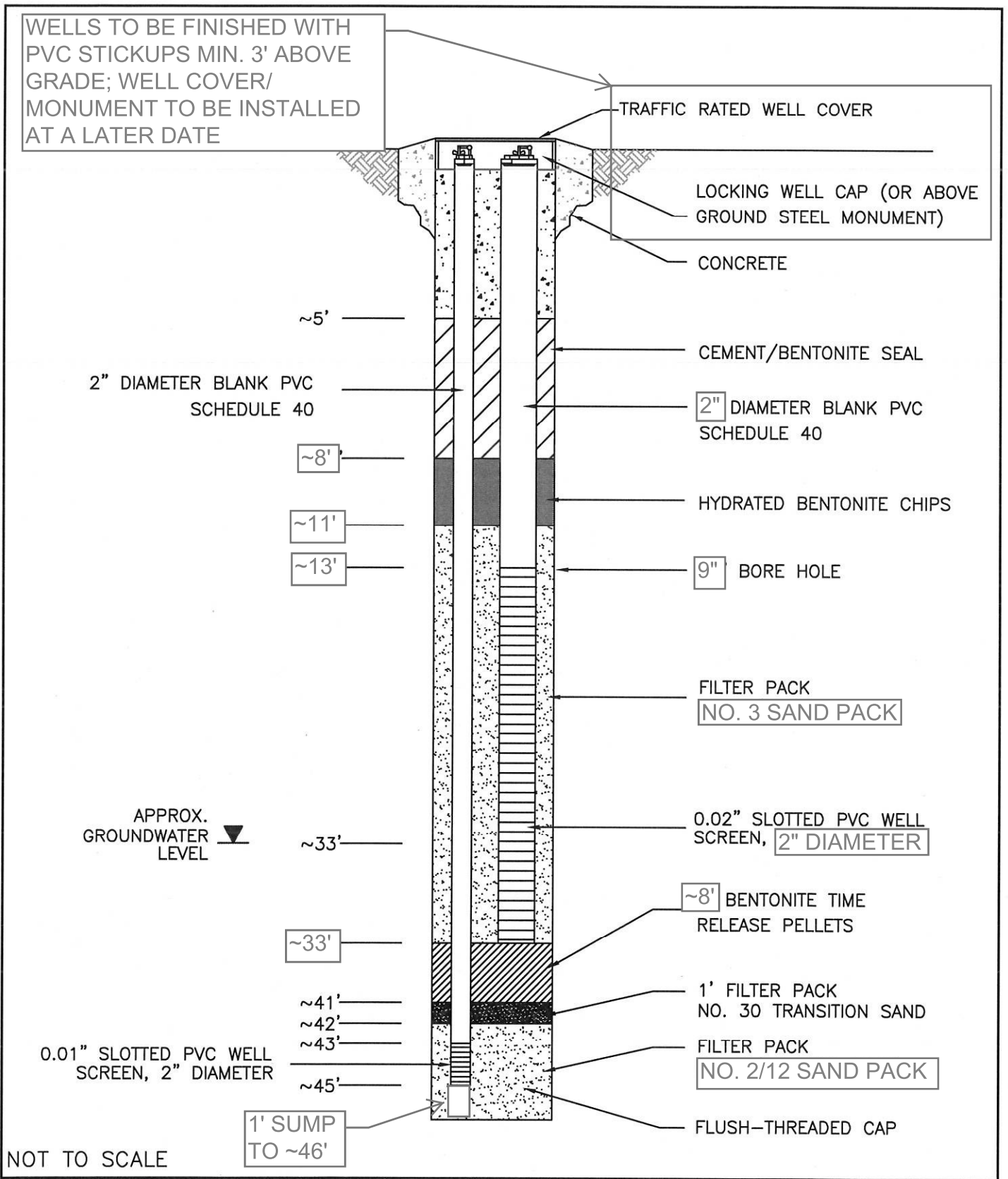
Project Number:	Date:	Drawn By:	Approved By:
04-NDLA-007	06/09/2017	PW	PP




Dual Biosparging and SVE Well Locations

SGI environmental
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Figure 2



 THE SOURCE GROUP, INC.	PREPARED BY: B. THOMS	DATE: 6/16/17	Typical Dual Biosparging and SVE Well Construction Diagram	FIGURE 3
	PROJECT: 04-NDLA-007	15306 NORWALK BLVD, NORWALK, CALIFORNIA		

APPENDIX A

Well Permit



ENVIRONMENTAL HEALTH

Drinking Water Program



5050 Commerce Drive, Baldwin Park, CA 91706

Telephone: (626) 430-5420 • Facsimile: (626) 813-3013 • Email: vgallegos@ph.lacounty.gov

http://publichealth.lacounty.gov/eh/ep/dw/dw_main.htm

SR0102274 & SR0102276 15306 Norwalk Blvd Norwalk 90650 Work Plan Approval

TO BE COMPLETED BY APPLICANT:

WORK SITE ADDRESS 15306 Norwalk Boulevard	CITY Norwalk	ZIP 90650	EMAIL ADDRESS FOR WELL PERMIT APPROVAL Lisa.moreno@apexcos.com
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NOTICE:

- WORK PLAN APPROVALS ARE VALID FOR 180 DAYS. 30 DAY EXTENSIONS OF WORK PLAN APPROVALS ARE CONSIDERED ON AN INDIVIDUAL (CASE-BY-CASE) BASIS AND MAY BE SUBJECT TO ADDITIONAL PLAN REVIEW FEES (HOURLY RATE AS APPLICABLE).
- WORK PLAN MODIFICATIONS MAY BE REQUIRED IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED AT THE SITE INSPECTION ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THE DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM.
- WORK PLAN APPROVALS ARE LIMITED TO COMPLIANCE WITH THE CALIFORNIA WELL STANDARDS AND THE LOS ANGELES COUNTY CODE AND DOES NOT GRANT ANY RIGHTS TO CONSTRUCT, RENOVATE, OR DECOMMISSION ANY WELL. THE APPLICANT IS RESPONSIBLE FOR SECURING ALL OTHER NECESSARY PERMITS SUCH AS WATER RIGHTS, PROPERTY RIGHTS, COASTAL COMMISSION APPROVALS, USE COVENANTS, ENCROACHMENT PERMISSIONS, UTILITY LINE SETBACKS, CITY/COUNTY PUBLIC WORKS RIGHTS OF WAY, ETC.
- ALL FIELD WORK MUST BE CONDUCTED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL GEOLOGIST LICENSED IN THE STATE OF CALIFORNIA.
- THIS PERMIT IS NOT COMPLETE UNTIL ALL OF THE FOLLOWING REQUIREMENTS ARE SIGNED BY THE DEPUTY HEALTH OFFICER. WORK SHALL NOT BE INITIATED WITHOUT A WORK PLAN APPROVAL STAMPED BY THE DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM.
- **ONCE APPROVED NOTIFY VINCENT GALLEGOS AT vgallegos@ph.lacounty.gov PREFERABLY 4 BUSINESS DAYS BEFORE WORK IS SCHEDULED TO BEGIN.**

TO BE COMPLETED BY DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM:

X WORK PLAN APPROVED: 45 Sparge Well Installations

DATE: April 20, 2017

ADDITIONAL APPROVAL CONDITIONS:

- Please provide/ verify project dates and time via my email listed above this comment box
- Submit Copies Well Drillers Completion Report(s) within 30 days.



Vincent Gallegos R.E.H.S.
Drinking Water Program
vgallegos@ph.lacounty.gov

GROUT SEAL INSPECTION

WELL DRILLERS COMPLETION REPORT(S)

DATE ACCEPTED: REHS signature

DATE ACCEPTED: REHS signature