CORNERSTONE EARTH GROUP

Type of Services	**Site Management Plan**
Location	**100 and 200 Caribbean Campus Project** **West Caribbean Drive and Borregas Avenue** **Sunnyvale, California**
Client	**Google LLC**
Client Address	**1842 North Shoreline Boulevard** **Mountain View, California 94043**
Project Number	**678-3-2**
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SECTION 1: INTRODUCTION

On behalf of Google LLC (Google), Cornerstone Earth Group, Inc. (Cornerstone) prepared this Site Management Plan (SMP) for the planned commercial development at the 100 and 200 Caribbean Campus in Sunnyvale, California (Site) as shown on Figures 1 and 2. This work was performed in accordance with our March 2, 2018 Agreement (Agreement).

The SMP meets the following corrective action standards:

- Be protective of human health and the environment;
- Describes contingency measures to control the impacted areas and other unanticipated contaminated areas to reduce or eliminate further releases of hazardous constituents that may pose a threat to human health and the environment;
- Comply with applicable federal, state and local standards for management of wastes; and
- Implement applicable risk management controls.

The SMP provides the technical and operational protocols for handling of known and unknown subsurface structures and impacted soil, soil vapor and ground water that may be encountered during the redevelopment of the Site. It contains the following:

- A description of the Site background;
- A general description of the planned development of the Site; and
- General soil, soil vapor and ground water management protocols to be implemented during construction of the planned development.

It is the General Contractor's responsibility to incorporate the provisions of this SMP into the redevelopment plans; applicable worker health and safety procedures are to be applied by the General Contractor and its subcontractors conducting the work.

Google has obtained regulatory oversight from the Santa Clara County Department of Environmental Health (DEH). This SMP will be submitted to the DEH for review and approval prior to starting construction.

SECTION 2: SITE DESCRIPTION

2.1 LOCATION

The approximately 40-acre Site consists of 10 parcels developed with 13 commercial buildings. The Sunnyvale West Channel bisects the Site, separating 100 and 200 Caribbean. Tables 1 and 2 describes the physical location of the property.

TABLE 1. SITE PROPERTIES – 100 CARIBBEAN

Reported Address/Location	Assessor's Parcel No. (APN)	Approximate Lot Size (acres)	Existing Building Footprint (approx. square feet)
140-146 West Caribbean Drive	110-26-027	4.50	90,000
141 Caspian Court	110-26-031	3.63	57,344
1325 Borregas Avenue	110-26-030	3.61	50,000
1383 Borregas Avenue	110-26-029	2.63	50,880
1393-1395 Borregas Avenue	110-26-028	2.88	50,880

TABLE 2. SITE PROPERTIES – 200 CARIBBEAN

Reported Address/Location	Assessor's Parcel No. (APN)	Approximate Lot Size (acres)	Existing Building Footprint (approx. square feet)
360-364 West Caribbean Drive	110-26-023	3.49	72,000
370-376 West Caribbean Drive	110-26-022	2.91	54,000
380-384 West Caribbean Drive	110-26-021	2.95	54,000
390-394 West Caribbean Drive	110-26-020	4.58	86,000
1330-1338 Bordeaux Drive	110-26-025	9.26	25,200
1340-1346 Bordeaux Drive			50,400
1350 Bordeaux Drive			34,500
1360-1368 Bordeaux Drive			25,200

2.2 PLANNED DEVELOPMENT

Google is planning to demolish the buildings and redevelop the Site with Class A office space. For 200 Caribbean, the planned 5-story approximately 505,140 square foot building will have a ground floor footprint of approximately 187,356 square feet. The planned five-story building at 100 Caribbean will consist of approximately 536,750 square feet of office space with a ground floor footprint of approximately 207,828 square feet. Site grades will be raised approximately 7 feet in the area of the planned building pads. A conceptual development plan is included in Figure 3.

Building demolition is tentatively scheduled to start in Spring 2019 with Site development activities anticipated to begin in Summer 2019.

Google is working in partnership with the Santa Clara Valley Water District (SCVWD) to enhance a portion of the Sunnyvale West Channel between West Caribbean Drive and Caspian Court in Sunnyvale as a part of the larger Sunnyvale East and West Channels Protection Flood

Project. As shown on Figure 3, the planned improvements on the SCVWD's parcel will include reconfiguring the channel geometry, widening the channel, creating wetland and riparian habitats, multi-use path and maintenance access, and transitional landscape areas along the channel. A separate SMP will be prepared for the planned channel improvements on SCVWD land.

2.3 SITE SETTING AND ADJOINING SITE USES

The Site is bound by West Caribbean Drive and the Sunnyvale Landfill to the north, Borregas Avenue and commercial development to the east, Caspian Court and commercial development to the south, Bordeaux Drive and undeveloped land to the southwest, and office buildings and commercial buildings occupied by Yahoo! Inc. to the west.

SECTION 3: BACKGROUND

In 2017, Cornerstone performed separate Phase II Soil, Soil Vapor, and Ground Water Quality Evaluations at the 200 Caribbean (Cornerstone, 2018a) and 100 Caribbean campus projects (Cornerstone, 2018b). Figure 4 presents Cornerstone's boring and sampling locations; prior and existing ground water monitoring wells are also shown on Figure 4. The analytical results of Cornerstone's Phase II studies are included in Appendix A.

Relevant Site information presented in the Phase II documents is summarized below, and referenced Site features are shown on Figures 5 to 8. Please refer directly to the Phase II reports for a more complete overview of the Site.

3.1 PRIOR SITE USES

The Site historically was used for agricultural purposes until the late 1970s when the existing commercial buildings were constructed, except for 1325 Borregas Avenue that was constructed in the early 1980s. Since at least the early 1980s several tenants have occupied the buildings involving various uses including commercial, light industrial, warehouse and storage, research and development, and office space. Limited information is known concerning past Site operations by historical tenants that occupied the buildings except for the A.C. Ball Company that formerly occupied 141 Caspian Court; Federal Express that formerly occupied 1393-1395 Borregas Avenue; and AG Associates (AGA) that formerly occupied 1325 Borregas Avenue. These former facilities are further discussed below in Sections 3.1.1, 3.1.2, and 3.1.3.

3.1.1 A.C. Ball Company

A.C. Ball Company, a Department of Defense specialty contractor, formerly occupied the 141 Caspian Court Site building from 1978 to 1982. During A.C. Ball Company's occupancy of Site building 141 Caspian Court, volatile organic compounds (VOCs) were released to soil and ground water as a result of leaking underground solvent storage tanks. Under the regulatory oversight of the San Francisco Bay Regional Water Quality Control Board (Water Board), the underground storage tanks (USTs) were removed in 1987 along with some impacted soil. A dual phase extraction system was installed that operated until November 1996. The system extracted approximately 11 million gallons of ground water, 40 million cubic feet of soil gas, and 130 pounds of VOCs. During the last ground water monitoring event in 2002, maximum VOC concentrations in ground water were 10 micrograms per liter (µg/L) for perchloroethene (PCE), 42 µg/L for trichloroethene (TCE), 69 µg/L for 1,1,1-trichloroethane (TCA), 190 µg/L for 1,1-dichloroethane (DCA), 17 µg/L for 1,2-dichloroethene (DCE), and 22 µg/L for 1,4-dioxane.

In their case closure documentation dated December 15, 2004, the Water Board references a deed restriction for the property that includes the following restrictions that run with the land: 1) no water production wells are to be installed within the property boundaries; 2) the Water Board is to be advised of all changes in ownership; and 3) a health and safety plan (HSP) must be prepared for any excavation work within the property boundaries with provisions for properly managing any VOC-impacted soils.

3.1.2 1393-1395 Borregas Avenue

In the mid/late 1980s, 1393-1395 Borregas Avenue was occupied by Federal Express who operated a 10,000-gallon diesel/gasoline UST located near the southeast corner of the building. The UST initially stored diesel fuel but was later used to store unleaded gasoline. The UST and associated piping was removed in April 1987; a small hole was observed near the suction pump in the piping elbow. Soil and ground water samples were collected from beneath the leaking piping elbow. Total petroleum hydrocarbons (TPH) as gasoline (TPHg) was detected in ground water but not in the selected soil sample. Following removal of the UST in 1987, a Leaking Underground Storage Tank (LUST) case was opened by the Water Board.

In 1989, three monitoring wells (MW-1A, MW-2A, MW-3A) were installed northwest, southwest, and northeast of the building, respectively. TPHg was detected in the ground water sample from MW-3A at a concentration of 8,100 µg/L. Additionally benzene was detected at a concentration of 20 µg/L, toluene at 2 µg/L, ethylbenzene at 98 µg/L, and total xylenes at 360 µg/L. Two additional monitoring wells (MW-4A and MW-5A) were installed and subsequently sampled in April 1991. TPHg was not detected in soil or ground water samples collected from these wells. Quarterly ground water monitoring was conducted between May 1991 and 1992. TPHg was consistently detected from ground water samples collected from MW-3A.

In March 1992, five additional borings (BH-1, BH-2, MW-6A, TW-1, and TW-2) were advanced to help evaluate the lateral extent of the petroleum hydrocarbons. TPHg was detected in soil and ground water samples from two of the borings located down-gradient of the former UST.

In November 1994, a supplemental investigation was performed and three additional monitoring wells (MW-7A, MW-8A, and MW-9A) were installed and sampled quarterly through 1995. During the last reported monitoring event in September 1995, TPHg was detected up to 220 µg/L, PCE up to 8.9 µg/L, and TCE up to 7.2 µg/L. In a letter dated August 8, 1996, the Water Board indicated that no further remedial action was required. The Water Board staff letter also indicated that the available data suggested that the source of the chlorinated VOC contamination was from off-property and up-gradient sources.

3.1.3 1325 Borregas Avenue

By 1983, 1325 Borregas Avenue (also addressed as 133 Caspian Court) was developed with the existing on-Site building. AGA occupied the subject property from at least 1985 through 1995. AGA reportedly manufactured rapid thermal processing equipment for the semiconductor industry and used industrial solvents and acids. Based on Cornerstone's cursory review of provided chemical inventory records, chemical use did not specifically list PCE or TCE. Hazardous materials storage areas were identified at the northern end of the building. Beginning in March 1990, the southern one-third of the building was occupied by Gamma Link (GL), a manufacturer of fax boards. These tenants occupied the property until 1995 when the building became vacant and the property was foreclosed. In 1997 Mercury Interactive

investigated the property prior to its purchase and occupation of the building. Mercury Interactive, a provider of information technology software and services, vacated the Site on May 1, 2004. Spirent Communications (Spirent) occupied the building from at least 1997 to 2014 for office use.

In 1991 three ground water monitoring wells were installed at the property presumably to assess potential impact from the adjacent A.C. Ball Company. The three former ground water monitoring wells were reportedly identified as MW-1, MW-2, and MW-3. Sampling of the wells located at the subject property reportedly occurred from 1991 through 1997, and by 1997, VOC concentrations remained detected in two of three wells but had reportedly declined below drinking water maximum contaminant levels (MCLs). In their letter dated August 12, 1997, the Water Board indicated "*the subject property is not under Board oversight and we are not aware of any VOC sources which need to be addressed at 1325 Borregas Avenue. Therefore, we have no objections to the abandonment of the three on-site ground water monitoring wells on the subject property, provided that neither the SCVWD nor local authorities object.*" A subsequent Water Board letter addressed to Mercury Interactive dated September 16, 1997 stated that *"VOC concentrations were not high enough to be of concern, and do not appear of sufficient significance for us to initiate a site investigation or require the submittal of detailed technical information or continued groundwater monitoring. No further action is required for addressing contamination at the subject property."*

3.2 OFF-SITE CONTAMINATION CASES

3.2.1 Lockheed Plant One

The Site is located adjacent to the approximately 560-acre Lockheed Martin Space Systems Company Plant One Facility (Lockheed). Since approximately 1988, several environmental investigations and remedial efforts have been completed at Lockheed. These investigations were performed under the regulatory oversight of the Water Board due to the reported releases of VOCs, hexavalent chromium, and nitrates that have impacted soil and ground water quality. Ground water monitoring and remediation is ongoing.

A ground water extraction system designed to contain and remove contaminants of concern in the first and second water-bearing zones has operated at Lockheed since 1992. Additionally, an in-situ bioremediation (ISBR) pilot system has been operating since 2009 in the deeper water-bearing zones near the Lockheed source area at Building 182, located approximately 0.3 miles southwest of 200 Caribbean.

Based on a review of the most recent semi-annual monitoring report dated September 2017, TCE is the the primary contaminant of concern that extends beyond the Lockheed property. The approximate reported boundary of TCE-impacted ground water that exceeds 5 µg/L is shown on Figure 4. Other contaminants of concern (*i.e.*, hexavalent chromium and nitrates) appear limited to impacted ground water on the Lockheed property.

3.2.2 Unidentified Sources of Ground Water Contamination

The Site is located in an area of regional VOC ground water contamination from unknown sources. Regulatory agencies have not yet identified a responsible party for the regional contamination. Prior studies have been performed at several properties to help demonstrate these properties are not a potential source of the VOC contamination and the VOCs detected in shallow ground water are reportedly associated with up-gradient sources of contamination.

3.3 PRIOR STUDIES

During Cornerstone's 2017 investigations, soil, soil vapor and ground water sampling were performed to help evaluate potential impacts from reported off- and on-Site VOC releases, and from unidentified regional VOC ground water contamination. At 200 Caribbean, laboratory analyses of the grab ground water samples detected VOCs above laboratory reporting limits in 7 of 19 samples. The occurrence of VOCs in these seven ground water samples is likely attributed to the VOC-impacted ground water that has migrated beneath the Site from the Lockheed ground water contaminant plume and/or releases associated with the on-Site former A.C. Ball Company located at 100 Caribbean. Laboratory analyses of the grab ground water samples collected at 100 Caribbean detected VOCs above laboratory reporting limits in 15 of 17 samples. PCE, TCE, and 1,1-DCE were detected with the greatest frequency and concentration magnitude. Other VOCs with a lower frequency of detection that also exceeded drinking water MCLs[1] included 1,2-DCA, 1,1-DCA, 1,4-dioxane, cis-1,2-DCE, and vinyl chloride.

Laboratory analyses of the soil vapor samples collected from 38 temporary vapor probes installed at the Site detected similar VOCs as were detected in the paired ground water data. The greatest concentrations and extent of impact appears associated with 100 Caribbean due to historical on-Site releases from the former A.C. Ball Company. PCE, TCE and their breakdown products including, but not limited to, cis-1,2 DCE, trans-1,2 DCE, 1,1-DCE, and/or vinyl chloride were detected in vapor samples collected from 15 of 17 probes installed at 100 Caribbean. These VOCs were detected in the 15 soil vapor samples at concentrations that exceed commercial ESLs[2]. The lateral extent of soil vapor impacts exceeding commercial ESLs correlates with the ground water contaminant plume and ground water exceedances. This data indicates the source of these VOCs in soil vapor is likely due to off-gassing of VOC-impacted ground water from beneath this portion of the Site.

At 200 Caribbean, soil vapor samples with VOC concentrations exceeding commercial ESLs were limited to the vapor probes installed at the western edge of the Site. The source of these VOCs appears associated with the off-Site Lockheed VOC release. As shown on Figure 3, an aboveground parking structure is planned in this portion of project.

To reduce the risk of vapor intrusion, the planned building at 100 Caribbean will be designed with appropriate structural and engineering features. Vapor intrusion mitigation measures will also be incorporated into development plans for the planned building at 200 Caribbean to effectively eliminate actual and/or perceived risk of vapor intrusion into the building.

3.4 CHEMICALS OF CONCERN

Chemicals of Concern (COC) in the subsurface are defined as those detected at or above their respective ESLs established by the Water Board, or MCLs established by the State Water Resources Control Board. As shown in the Data Summary Tables included in Appendix A, COC in soil vapor and ground water at 200 Caribbean include PCE, TCE, cis-1,2-DCE, and vinyl chloride. At 100 Caribbean, COC in soil vapor and ground water include PCE, TCE, cis-1,2 DCE, trans-1,2 DCE, 1,1-DCE, vinyl chloride, 1,2-DCA, 1,1-DCA, and 1,4-dioxane.

[1] Ground water results were compared to the drinking water Maximum Contaminant Levels (MCLs) established by the State Water Resources Control Board (SWRCB, October 2018).

[2] Due to the regulatory involvement of the Water Board at several nearby and on-Site properties, soil vapor results were compared to Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Board (Water Board, 2019).

SECTION 4: PHYSICAL SETTING

4.1 RECENT USGS TOPOGRAPHIC MAP

A 1999 USGS 7.5 minute topographic map was reviewed to evaluate the physical setting of the Site. The Site's elevation is approximately 5 feet above mean sea level; topography in the vicinity of the Site slopes downward gently to the northeast towards the San Francisco Bay.

4.2 LITHOLOGY AND HYDROGEOLOGY

Based on Cornerstone's prior studies at the Site, the upper approximate ½ to 1 foot consisted of finished surface materials including landscape materials, Portland cement concrete, asphalt concrete or asphalt pavement over aggregate base. Beneath the surface materials, up to approximately 5 feet of possible fill and/or reworked native soils consisting of medium stiff brown lean sandy clays with gravel and clayey sands with gravel were observed. In general, the greater thicknesses of the fill and/or reworked native soil were observed in the borings located on the northern half of the Site. Below the fill and/or reworked native soil were stiff expansive clays with varying amounts of sand to approximately 5 to 7 feet, followed by stiff to medium stiff lean sandy clays with varying amounts of sands and gravels. In approximately half of the borings, lean clays with varying amounts of sand extended to the maximum depth explored of approximately 15 to 20 feet. In general, ground water was not readily observed in the soil column from these borings; however, after drilling, ground water was measured in the boreholes at approximate depths ranging from 7 to 10 feet.

In the other half of the borings, beneath the lean clay was sand layer with varying amounts of clay and gravel; it was observed to be approximately ½ to 4 feet thick. Ground water was observed in this layer at approximate depths ranging from 9 to 18 feet. After drilling, ground water was measured in the boreholes at approximate depths ranging from 6 to 12 feet, indicating possible semi-confined to confined ground water conditions.

SECTION 5: SITE MANAGEMENT APPROACH

5.1 APPLICABILITY OF THE CONSTRUCTION MANAGEMENT PLAN

Soil, soil vapor and ground water with concentrations of COC may be present at various on- and off-Site locations. This SMP presents protocol for the following construction activities that may encounter residual COC:

- Building demolition and utility removal;
- Trenching, excavating and grading;
- Subsurface utility installation;
- Building foundation construction;
- Hardscapes; and
- Landscapes.

5.2 GENERAL RISK MANAGEMENT CONSTRUCTION PROTOCOLS

During construction activities, measures will be taken by the General Contractor to minimize dust generation, storm water runoff and tracking of soil on- and off-Site. In addition, measures will be taken to reduce the potential for the creation of preferential pathways (vertical or horizontal) for COC detected in ground water beneath the Site. The general risk management construction protocols are described below.

5.2.1 Pre-Construction Notification

Prior to the start of any construction activity that involves below ground work (e.g. mass grading, foundation construction, excavating or utility trenching), information regarding Site risk management procedures (*e.g.*, a copy of this SMP) will be provided to the General Contractor and each of its subcontractors for incorporation into their HSPs.

5.2.2 Site-Specific Health and Safety Worker Requirements

A Site-specific HSP prepared by a Certified Industrial Hygienist (CIH) is included in Appendix B. The HSP establishes health and safety protocols for personnel working in impacted areas. This HSP meets federal and State of California OSHA standards for hazardous waste operations (29 CFR 1910.120 and 8 CCR 5192).

The General Contractor will be responsible for following the protocols presented in the HSP. The Contractor also will prepare their own HSP and Injury and Illness Prevention Plan (IIPP) and will maintain the responsibility for the health and safety of their workers. The General Contractor's HSP will follow the protocols in the Site-specific HSP and will establish health and safety protocols for their personnel and their subcontractors and their personnel in accordance with federal and State of California OSHA standards. The General Contractor's HSP will contain provisions for limiting chemical exposure to construction workers, chemical and non-chemical hazards, emergency procedures, and standard safety protocols. Contractors are required to implement their specific requirements for worker training, based on the level of expected contact to soil, soil vapor, and ground water associated with their workers' activities.

5.2.3 Personal Protection Equipment (PPE)

Work activities will be conducted with, at a minimum, Level D protection:

- Rubber boots when in contact with ground water;
- Work boots;
- Work gloves;
- Safety glasses when risk of splashing or contact with ground water;
- Hard hat at all times; and
- Hearing protection (if noise levels exceed 85 dBA).
- As noted below, earthwork conducted in exclusion zones also requires coveralls, nitrile gloves, and respiratory protection.

Workers conducting earthwork activities in exclusion zones as discussed in Section 5.2.5 shall complete 40-hour HAZWOPER training course (29 CFR 1910.120). In these areas, coveralls and nitrile gloves are needed only as required to help reduce soiling by contaminated materials. Respiratory protection is also required for workers entering excavations/trenches until air sampling results demonstrate that it is no longer needed.

5.2.4 Site Security and Access

The Site will be fenced and gated with lock. Access to the Site will be limited by the General Contractor to authorized personnel. Site control procedures will be implemented by the General Contractor to control the flow of personnel, vehicles and materials in and out of the Site. Signs will be posted by the General Contractor instructing visitors to sign in at the project support areas at all Site entrances.

5.2.5 Site Control in Contaminated Areas

To help prevent the migration of contamination by personnel or equipment, three zones will be established for work activities performed in known contaminated areas: an exclusion zone, a contamination reduction zone (CRZ) and a support zone. The General Contractor and its subcontractors are responsible for establishing these work zones.

5.2.5.1 Exclusion Zone

Exclusion zones consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. Currently, three exclusion zones have been established:

- The portion of the Site that overlies the Lockheed VOC ground water plume and is 5 feet or more below existing Site grades (Figure 5);
- The portion of the Site that overlies the on-Site former A.C. Ball Company VOC ground water plume and is 5 feet or more below existing Site grades (Figure 5); and
- Potentially impacted soil associated with the former solvent UST systems operated by A.C. Ball Company (Figure 6);

As shown on Figure 5, the geometry of the exclusion zones for the Lockheed and A.C. Ball Company VOC releases were established based on the portion of the ground water contaminant plumes that may exceed drinking water MCLs. The size and configuration of each exclusion zone may vary. The procedures described in this SMP will be followed when work is occurring within approximately 50 feet of these areas. Each exclusion zone boundary will be clearly and conspicuously marked prior to disturbing existing soil in that zone. A single entry and exit point will be established. Entry will be limited to essential personnel or pre-approved visitors. As construction progresses, demarcation of the exclusion zone work area will be adjusted depending if soil disturbance is completed and/or new areas are disturbed.

5.2.5.2 Support Zone

The support zone will consist of a clearly marked area where the administrative area, break areas, and changing facilities are located. Smoking, drinking, and eating will be allowed only in designated areas. Sanitation facilities (with hand wash) will be provided in the support zone.

5.2.5.3 Contamination Reduction Zone

The CRZ will be established between the exclusion zone and support zone. In this area, personnel will begin the sequential decontamination process required to exit the exclusion zone. To prevent on- and off-Site migration of contamination and to facilitate personnel accountability, all personnel will enter and exit the exclusion zone through the CRZ. All vehicles and equipment exiting the exclusion zone will traverse a track-out prevention area consisting of rumble strips or a 20-foot pad of 6-inch minus rock to dislodge materials from wheels and undercarriage. In no event will visible track-out to public roadways be permitted. Potentially contaminated material that is removed will be added to the stockpile area, and rinsate generated by decontamination activities can be used for dust control on the contaminated stockpiles which will be located in lined and bermed areas. Rinsate generated by decontamination activities cannot be used for other dust control purposes.

5.2.6 Access Controls

The General Contractor will establish the physical boundaries of each zone and will instruct all workers and visitors on the limits of the restricted areas. No one will be allowed to enter a restricted area without the required protective equipment for that area. The General Contractor's Site Safety Officer (SSO) will ensure compliance with all restricted area entry and exit procedures. The General Contractor's SSO also will designate a decontamination corridor through which personnel may exit from a contaminated area and enter into adjacent clean break areas. Additional responsibilities of the SSO are summarized in the HSP.

Visitors should check in with the General Contractor's SSO immediately upon arrival. Only authorized visitors will be allowed access to active work areas. Each visitor will be required to provide and wear the necessary protective equipment for use during Site visits and will be escorted by the General Contractor while on Site. All visitors, subcontractors and other personnel will be required to sign a safety plan acknowledgement sheet to certify that they have read and will comply with the Site HSP. Failure to comply with this Site entry procedure may result in expulsion from the Site.

5.2.7 Traffic Control

To reduce the potential impacts of construction traffic at the Site, the General Contractor will employ traffic management measures at the Site: 1) to provide for the safety of on-Site personnel; 2) to reduce the potential for spillage or tracking of soil on- or off-Site; 3) to help facilitate concurrent construction activities with remediation activities so that they do not adversely impact or compromise safe traffic flow within the Site; and 4) to limit the disruption of existing traffic flows on local roadways.

Traffic management protocols include:

- Visual monitoring of traffic movements on the Site will be performed by the General Contractor to ensure safe movement of traffic and protection of persons and property around the Site.
- Construction roads will be observed by the General Contractor to confirm road conditions support safe working and driving.

- Each subcontractor is responsible for compliance with this plan for vehicle and transport safety of personnel and vehicles under their control.
- Drivers of vehicles are responsible for driving safely and exercising care.
- Any track-out on a paved public road at any location where vehicles exit the work Site will be cleaned by using wet sweeping or a HEPA filter equipped vacuum device by the end of each work day. Dry sweeping of paved roadways will be prohibited.
- A maximum vehicle speed limit of approximately 15 miles per hour or less.
- Water applied sufficiently often to keep the area adequately wetted.
- Vehicles maintained by covering holes or other openings in cargo compartments such that no spillage can occur.
- Loads wetted and either:
    - Covered with tarps; or
    - Loaded such that the material does not contact the front, back, or sides of the cargo compartment at any point less than ½ foot from the top and that no point of the load extends above the top of the cargo compartment.
- Spills immediately cleared by engaging appropriate safety and response standards as relevant to the event.

5.2.8 Equipment Decontamination

Decontamination procedures shall be established and implemented by the General Contractor to reduce the potential for construction equipment and vehicles to release contaminated soil onto public roadways or other off-Site transfer. A separate decontamination pad will be established for the decontamination of all equipment leaving the exclusion zones. The following will apply:

- Gross soil deposits will be removed manually from tracks, tires, drives, etc. using digging bars, scrapers, etc. before moving to the decontamination pad.
- All surfaces that cannot be sufficiently decontaminated manually will be pressure washed to remove remaining adhering contamination.
- A final rinse will be performed to remove dissolved contaminant, water, and surfactant residues.
- Rinsates and dislodged soil and other contaminated material will be added to the impacted stockpiles or directly hauled by trucks for appropriate off-Site disposal.

5.2.9 Dust Control

The General Contractor will utilize effective means of dust and erosion control to minimize the generation of dust and erosion associated with excavation activities, truck and vehicle traffic onto and off the Site, and the effects of ambient wind traversing exposed soil.

Work activities, such as clearing, demolition, excavation and grading operations, construction vehicle traffic on unpaved ground, and wind blowing over disturbed soil surfaces may generate dust and particulate matter whenever exposed soil surfaces are dry. The General Contractor will minimize dust emissions to the maximum extent possible. To accomplish minimal dust emissions, the General Contractor will implement dust control measures in accordance with Air District rules and regulations.

An effective means of dust control will be utilized to minimize the generation of dust associated with the earthwork activities, truck traffic onto and off the Site, and the effects of ambient wind traversing exposed soil. Dust control measures (which will be recorded in a daily written log) utilized at the Site will include several or more of the following on an as needed basis:

- Providing equipment and staffing during normal working hours for watering of all exposed or disturbed soil surfaces sufficient to suppress dust plumes.
- Using dust suppressant additives in the water, which can be a small amount of ordinary liquid detergent.
- Covering or wetting of stockpiles of debris, soil, sand or other materials that can be blown by the wind.
- Misting or spraying water while excavating soil and loading transportation vehicles.
- Minimizing drop heights while loading/unloading excavated soil.
- Sweeping adjacent streets of all soil and debris generated from the Site work activities.
- Wetting inactive portions of the Site that have exposed soil surfaces or treating these areas with an approved dust suppressant.
- Suspending earth moving or other dust producing activities during periods of high winds whenever dust control measures are unable to prevent visible dust plumes.
- Watering to control dust will not result in ponded water or runoff. If runoff occurs, it will be contained on-Site.

5.2.9.1 Perimeter Air Monitoring

Perimeter air monitoring for dust during excavation and grading activities at the Site can be conducted at the Site by the Environmental Professional or General Contractor if requested by Google. The following procedures would be followed.

Prior to the beginning of excavation or grading activities, a windsock or anemometer will be used to monitor the wind direction at the Site and to help determine the location of monitors along the fence lines. Fence line dust monitoring will be conducted at three locations. Each monitor will be positioned within the breathing zone at approximately 5 feet above the ground level.

Perimeter dust monitoring will include the collection of air samples at one upwind location and two downwind locations. The monitoring will be performed using three DataRAM PDR-1000

particulate monitors. These meters log the detected airborne dust concentrations.

The particulate meters will be monitored to evaluate if excessive dust is migrating off-Site. Each time the meters are checked, the differences between the average upwind dust concentration and the average downwind concentration will be compared to the ambient air quality standard of 150 µg/m³ (8-hour average) for respirable dust. If this standard is exceeded, increased dust control measures will be implemented. The California Ambient Air Quality Standard for respirable particulate matter (PM10) is 50 µg/m^3 over an averaging time of 24 hours. Based on an 8-hour construction work day, 150 µg/m^3 over an averaging time of 8 hours will average 50 µg/m^3 over 24 hours (16 hours of non-activity). Significant concentrations are defined as exceeding 150 µg/m^3 over an averaging time of 8 hours.

5.2.10 Storm Water Pollution Prevention Plan (SWPPP)

The Clean Water Act and associated federal regulations (Title 40 of the Code of Federal Regulations [CFR] 123.25(a)(9), 122.26(a), 122.26(b)(14)(x) and 122.26(b)(15) require nearly all sites engaged in clearing, grading, and excavating activities that disturb one acre or more, to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharges. A Site-specific Storm Water Pollution Prevention Plan (SWPPP) and Erosion Control Plan covering the activities of Site redevelopment will be prepared by the Civil Engineer (QSD). Contractors and their Subcontractors shall comply with the provisions and protocols of this plan. A copy of the SWPPP will remain on-Site throughout construction. Storm water pollution controls will be based on best management practices (BMPs), such as those described in “Information on Erosion and Sediment Control for Construction Projects: A Guidebook” (Water Board 1998) and “Erosion and Sediment Control Field Manual, Third Edition (Water Board 1999). The California Stormwater Best Management Practice Handbooks published by the California Stormwater Quality Association (CASQA) (http://www.casqa.org) also reflect current practices and storm water management standards. Sediment and erosion control procedures include, but are not limited to the following:

- Construct temporary berms or erecting silt fences around exposed soil;
- Place straw bale barriers or sediment traps around catch basins or other entrances to storm drains;
- Cover soil stockpiles with plastic sheeting or tarps during rainfall events;
- Thoroughly sweep paved areas exposed to soil excavation/grading activities;
- During storm events, prevent stockpiled soil from entering the storm drain system;
- Provide water for truck cleaning and dust control; and
- Implement other appropriate BMPs.

Maintenance, monitoring and inspection will be conducted according to the BMPs. Erosion control measures will be maintained until disturbed areas are stabilized. Changes to this erosion control plan will be made to meet field conditions only with the approval or at the direction of the Civil Engineer.

5.2.11 Stockpiling

Soil may require temporary stockpiling as needed by the General Contractor. The stockpile area including protection of nearby storm drains will be constructed in accordance with the approved SWPPP. The SWPPP will also include measures to protect stockpiles during rain events.

5.2.11.1 "Clean" Soil

In general, the stockpile area will be clean and free of debris. The stockpile will be covered with heavy duty plastic (minimum of 30 mil), or watered twice daily, or sprayed with a non-toxic soil binder. All stockpiles will include berms for containment of any water that drains from the soil. Stockpiles will be inspected at least daily. All stockpiles will be handled as to prevent and/or reduce potential dust generation. Additional water spray will be utilized for dust suppression and foam or surfactant will be utilized for stabilization of stockpiles, if necessary.

5.2.11.2 Soil Suspected as Contaminated

Excavated soil suspected to be impacted will require additional stockpiling measures. In general, the stockpile area will be clean and free of debris prior to the placement of the bottom liner. The liners will consist of heavy duty plastic (minimum of 30-mil) as the bottom and top liners. All stockpiles will include berms for containment of any water that drains from the soil. Stockpiles will be inspected at least twice daily and repaired as needed. At the end of each shift or when the stockpile is not in use for two hours or longer, the pile(s) will be securely covered with the heavy duty plastic liner. All stockpiles will be handled as to prevent and/or reduce potential dust generation. Additional water spray will be utilized for dust suppression and foam or surfactant will be utilized for stabilization of stockpiles, if necessary.

5.2.11.3 Sampling of Stockpiles Suspected as Contaminated

Stockpile samples will be collected in random areas and depths and analyzed for COC in accordance with the following protocols:

- Up to 1,000 cubic yards (cy): One sample per every 250 cy
- 1,000 to 5,000 cy: Four samples for the first 1,000 cy and one sample for each additional 500 cy
- Greater than 5,000 cy: 12 samples for the first 5,000 cy and one sample for each additional 1,000 cy

5.2.12 Corrosion

Because of the nature of the contaminants and their potential detrimental impacts on utility pipelines, a corrosion study shall be performed by a Corrosion Engineer to evaluate the need for protective measures for utilities, which could include wrapping piping with corrosion resistant tape, applying an epoxy coating, using corrosion resistant piping materials (including gaskets, flanges and couplings) and/or installing a cathodic protection system.

5.2.13 General Protective Measures

- All excavating, trenching and grading activities will be conducted according to Cal OSHA regulations.
- Trenches/excavations 5 feet or deeper will be sloped, shored or benched.
- Open trenches/excavations will be inspected daily for readily observable indications of possible cave-ins, hazardous atmosphere or other hazardous conditions.
- If readily observable conditions are noted that could result in cave-in, hazardous atmosphere or other hazardous condition, exposed workers will be removed from the area until the necessary precautions have been taken to address the concern.
- Trenches/excavations will be protected with adequate barriers or physical protection.
- Stockpiles of soil will not be stored within 2 feet of a trench/excavation.
- Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, the atmosphere will be tested before workers enter the work area.
- Adequate precautions will be taken to prevent exposures to atmospheres containing less than 19.5 percent oxygen and or hazardous atmospheres, including proper respiratory protection or ventilation.
- Workers will not work in excavations/trenches in which there is accumulated water or in trenches/excavations in which water is accumulating, unless adequate precautions have been taken against the hazards posed by the accumulation. These measures can include PPE, shoring or water removal.
- Workers will wash hands thoroughly after handling Site soil or ground water even if they were wearing protective gloves.

5.2.14 Field Documentation

The Environmental Professional will be present on-Site during earthwork operations performed within approximately 50 feet of an exclusion zone and will be responsible for observing soil conditions, air monitoring and sampling, monitoring health and safety measures, stockpile sampling, and confirming that General Contractor activities are being completed in conformance with this document. As part of this process, daily field reports documenting Site activities will be completed and made available for inspection by authorized oversight personnel for the duration of the project.

5.2.14.1 Daily Field Reports

Daily field reports will document where, when, how, and from whom project information was obtained. Entries will be complete and accurate enough to permit reconstruction of field activities. Each page will be dated and the time of entry noted.

5.2.14.2 Chain of Custody Records

Chain-of-custody records are used to document sample collection and shipment to the laboratory for analysis. All sample shipments for analyses will be accompanied by a chain-of-custody record. Form(s) will be completed and sent with the samples for each laboratory and each shipment. If multiple coolers are sent to a single laboratory on a single day, chain-of-custody form(s) will be completed and sent with the samples for each cooler. The chain-of-custody record will identify the contents of each shipment and maintain the custodial integrity of the samples. Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until receipt by the laboratory, the custody of the samples will be the responsibility of the sample collector.

5.2.14.3 Photographs

Photographs will be taken by the Environmental Professional to help document information entered in the daily field report. When a photograph is taken, the following information will be written in the daily field report:

- Time, date, location, and, if appropriate, weather conditions
- Description of the subject photographed
- Name of person taking the photograph

5.3 DEMOLITION OF BUILDINGS

5.3.1 Hazardous Materials

Some components encountered as part of the building demolition waste stream may contain hazardous materials. Identified asbestos containing materials, light bulbs, ballasts and remaining universal wastes, lubrication fluids and CFCs and HCFC's will be removed before structural demolition begins. With proper planning, a majority of the environmental risk associated with the management of waste from a demolition project can be eliminated. Materials that may result in possible risk to human health and the environment when improperly managed include lamps, thermostats, and light switches containing mercury; batteries from exit signs, emergency lights, and smoke alarms; lighting ballasts which contain PCBs; and lead pipes and roof vent flashings. A summary of these components and their potential risks are presented below.

5.3.2 Asbestos

NESHAP guidelines require the removal of potentially friable asbestos containing materials prior to building demolition. Friable asbestos containing materials greater than 1% asbestos shall be manifested, transported and disposed as a hazardous waste.

5.3.3 Lead-Based Paint

The Consumer Product Safety Commission banned the use of lead as an additive in paint in 1978. The removal of lead-based paint isn't required if it is bonded to the building materials. However, if the lead-based paint is flaking, peeling, or blistering, it should be removed prior to demolition. In either case, applicable OSHA regulations will be followed; these include requirements for worker training, air monitoring and dust control, among others. Building debris

or soil containing lead above regulatory levels will be disposed appropriately.

5.3.4 PCBs

Caulking containing concentrations of PCBs equal to or greater than 50 mg/kg shall be disposed as hazardous waste.

If any ballasts (PCB or non-PCB) are present, they will be collected and recycled in accordance with universal waste requirements. Drums will be labeled and closed during accumulation. Drums should not be filled more than half due to weight. PCB ballasts will be segregated from non-PCB ballast.

Light ballasts suspected to contain PCBs will be inspected for the printed statement, “No PCBs”. PCB ballasts missing the “No PCBs” label will be removed from the fixtures and disposed as PCB containing materials prior to the demolition of the buildings. Ballast marked as “No PCBs” could contain land-banned dielectric fluids and will be disposed in an appropriate manner.

In addition, PCBs were commonly used in transformers; several transformers were observed on-Site. Transformers will be appropriately removed and disposed prior to demolition activities.

5.3.5 Mercury

Mercury containing equipment may be present. Mercury containing devices will be handled with caution to prevent spillage. Devices will be handled intact, sealed and packaged to prevent breakage. All used mercury containing equipment must be labeled clearly as “Universal Waste – Mercury Containing Equipment”. Examples of mercury containing equipment include: thermostats, tilt switches, pressure gauges, flow meters, float switches and drain traps.

5.3.6 Batteries

Storage batteries and other batteries than contain hazardous metals, such as mercury, lead, silver and cadmium, must be clearly labeled with the following phrases: “Universal Waste – Battery(ies)”, “Waste Battery(ies)”, or “Used Battery(ies)” during accumulation.

5.3.7 CFC-Based Refrigerant

Accessible condenser-type air conditioning equipment may be present on rooftops. Mechanical equipment will be assumed to contain a CFC-based refrigerant. Refrigerant and lubricating fluids will be captured from the equipment and properly disposed prior to demolition of the structures.

5.3.8 Miscellaneous Chemicals

Any hazardous chemicals found during demolition will be handled as hazardous waste. Examples include: cylinders, bottles and cans with liquid.

5.3.9 Waste Disposal

Demolition waste such as fluorescent lamps, PCB ballasts, lead acid batteries, mercury thermostats, and lead flashings have special case-by-case requirements for generation, storage, transportation, and disposal. Before disposing of any demolition waste, the General

Contractor and/or their subcontractor will determine if the waste is hazardous and will ensure proper disposal of waste materials.

5.3.10 General Demolition Risk Management Protocols

- Hazardous materials spills will be immediately contained and remediated by trained personnel and reported to the key personnel listed in Table 3.
- Demolition activities will be performed in a manner to minimize airborne dust as described in Section 5.2.9. All demolition activities will be performed with the objective of preventing visible emissions of dust from the Site.
- Stripped topsoil will be stockpiled for on-Site use and protected as described in Section 5.2.11. Excess soil from footings and other subsurface materials will be removed and stockpiled per the protocols of Section 5.2.11. If this material is planned for off-Site disposal, it will be evaluated through analytical testing by the Environmental Professional so that appropriate handling and disposal alternatives can be determined.
- As per the traffic control protocols (Section 5.2.7), all vehicles leaving the work areas will be required to exit via the tire shaker and wheel wash at the guard shack at the Site entrance/exit.

5.3.11 Field Observation During Demolition

Figures 6, 7, and 8 present known areas of the Site where prior occupants stored and/or used hazardous materials. Except for the former solvent UST systems, these areas are not identified as exclusion zones. During removal of the hardscape in these known historical chemical use areas, including in the former solvent UST system exclusion zone, the Environmental Professional will observe the condition of the surface soil for evidence of staining, soil discoloration, odors, and/or other signs of potential contamination. Monitoring of soil vapors with an Organic Vapor Meter (OVM) will also be performed as outlined in Section 6.1.2. If unanticipated contamination is encountered, the area will be managed as described in Section 5.2.5 (Site Control in Contaminated Areas) and the protocols outlined in Section 6.3 (Management of Unanticipated Contamination) will be followed.

5.3.12 Recycled Building Materials

Significant quantities of asphalt concrete (AC) grindings, aggregate base (AB), and Portland Cement Concrete (PCC) will be generated during demolition activities. If the AC grindings are mixed with the underlying AB to meet Class 2 AB specifications, they may be reused (if acceptable to the Geotechnical Engineer of Record) within the new pavement and flatwork structural sections, including within parking garage slab-on-grade areas (provided crushed rock is not required due to the proximity to ground water). AC/AB grindings shall not be reused beneath ground floor/enclosed building areas unless approved by Google. Laboratory testing will be required to confirm the grindings meet project specifications.

If the Site area allows for on-Site pulverization of PCC and provided the PCC is pulverized to meet the “Material for Fill” requirements of the Geotechnical Engineer and Environmental Professional, it may be used as select fill within habitable building areas, excluding the capillary break layer; as typically pulverized PCC comes close to or meets Class 2 AB specifications, the

recycled PCC may likely be used within the pavement structural sections. PCC grindings also make good winter construction access roads, similar to a cement-treated base (CTB) section.

SECTION 6: SOIL MANAGEMENT PROTOCOLS

6.1 SOIL MANAGEMENT IN EXCLUSION ZONES

As discussed, exclusion zones consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. Currently, three exclusion zones have been established:

- Impacted soil and ground water associated with the Lockheed VOC ground water plume that has migrated beneath the Site;
- Impacted soil and ground water associated with the on-Site A.C. Ball Company VOC ground water plume; and
- Potentially impacted soil associated with the former solvent UST systems operated by A.C. Ball Company.

The exclusion zones established for the Lockheed and AC Ball Company VOC ground water plumes are presented on Figure 5 and generally coincide with the area of the ground water plume that could potentially exceed drinking water MCLs. Construction activities in these exclusion zones that involve excavation to an approximate depth greater than 5 feet below existing grades are subject to the soil, soil vapor, and ground water management protocols presented in Sections 6, 7 and 8 of this SMP.

Figure 6 presents the former solvent USTs operated by the A.C. Ball Company. All soil disturbing activities performed in this exclusion zone must be performed in accordance with the requirements outlined in Sections 6, 7 and 8 of this SMP.

6.1.1 Soil Excavation Procedures

The General Contractor should assume that soil excavated from the exclusion zones below an approximate depth of 5 feet may be contaminated. Additionally, shallower soil excavated from the solvent UST exclusion zone may also be contaminated. Screening of the excavated soil from these areas/depths as described in Section 6.1.2 will be performed by the Environmental Professional to help evaluate reuse and/or disposal options.

Soil in contact with ground water shall be assumed contaminated. If excavated, these materials will be handled as described in Section 6.1.2.4.

6.1.2 Screening of Excavated Soils

Excavated soil will be field-screened for the presence of VOCs. Field screening will occur using an OVM that measures to at least 10 parts per billion by vapor (ppb_v). Soil that is field-screened and “cleared” using the field head space method with the OVM (discussed below) can be considered “clean” and acceptable for reuse as on-Site fill (if also approved by the Geotechnical Engineer of Record).

6.1.2.1 Calibration

The direct-read monitor will be calibrated in accordance with the manufacturer's manual. If the instrument readings are irregular and the meter cannot be recalibrated, the meter will be removed from the field and replaced with a different unit that is capable of being calibrated and used with reliability.

6.1.2.2 Soil Screening Procedure

Soil screening will be performed as follows:

- A representative soil sample will be placed into an unused resealable Ziplock plastic bag with a minimum volume of one quart until the bag is approximately half full;
- The bag will be sealed and the soil crumbled by hand while inside the bag;
- After a minimum of 2 minutes, the bag slightly opened to allow the OVM probe into its headspace; and
- The sample will be considered as possibly contaminated if the OVM reading is 500 ppbv or higher for approximately 10 seconds or more.

6.1.2.3 Soil Screening Frequency

Soil screening will be performed by the Environmental Professional as follows:

- During soil grading activities with an excavation cut less than 2 feet, one soil sample will be collected and screened using an OVM for every approximately 100 square feet of disturbed soil surface. This criterion applies to the former solvent UST system exclusion zone since shallower impacted soil may be encountered.
- Utility trench screening will involve collecting one soil sample for every approximately 50 cubic yards of excavated soil, or every 10 lineal feet of trench.

6.1.2.4 Potentially Contaminated Soil

Potentially contaminated soil will be segregated and stockpiled separately from other soil. Soil samples will be collected by the Environmental Professional from the suspect impacted stockpile for laboratory analyses. Soil samples for laboratory analyses will be collected in new (unused) or pre-cleaned, stainless steel liners. Soil samples for VOC analysis will be collected in 5-gram Core N' One™ capsules following DTSC guidance. The ends of the liners will be covered in a Teflon film, fitted with plastic end caps, taped, and labeled with a sample identification number. Each sample will be assigned a unique sample number. The assigned number will provide a tracking procedure to allow ease of data retrieval, data reduction, and evaluation. The sample identification numbers will be maintained on the Daily Field Reports and on the chain-of-custody records. The sample label or tags will be affixed to each sample container. The samples will then be placed in an ice-chilled cooler and transported to a state-certified laboratory with chain of custody documentation.

Collected soil samples will be submitted to a state-certified laboratory and selectively analyzed for COC identified for the Site:

- Full list Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons (TPH) as gasoline (EPA Test Method 8260)
- TPH as diesel and motor oil (EPA Test Method 8015B).

Other analytical test methods may be recommended by the Environmental Professional and/or required by the Water Board or landfill (if off-Site disposal is required).

If the analytical results of the soil samples do not exceed residential ESLs, the soil will be suitable for reuse as backfill.

6.1.3 Excavation Perimeter Monitoring in Exclusion Zones

A ppbRAE 3000 OVM or other direct-read (real-time) monitors will be used to monitor trench/excavation perimeters in the exclusion zones to evaluate if areas outside the excavation areas are potentially impacted by excavation activities. Samples will be collected by the Environmental Professional over approximately 1 to 5 minute durations every hour around the perimeter of the excavation during trench/excavation air monitoring activities discussed in Section 8.2.2. Baseline OVM samples will be collected for comparison each day, prior to and during excavation activities and in the ambient air at least 100 feet from the excavation area.

Ambient air will be considered as possibly elevated if 1) the OVM reading is over 500 ppb_v above background for greater than one minute or more, and 2) in the opinion of the Environmental Professional, the source of the vapors is COC originating from the trench/excavation and not from unrelated sources (e.g. construction equipment and materials). Under this scenario, the soil vapor management protocols outlined in Section 8 must be followed.

6.1.4 "Clean" Import Fill Placement in Exclusion Zones

As discussed, "clean" fill will be imported to the Site to raise Site grades approximately 7 feet. Following placement of approximately 1 foot of "clean" import fill in an exclusion zone, the exclusion zone designation can be removed during continued placement of import fill. If future grading/trenching activities in an exclusion zone involve extending the excavation through the "clean" fill section and below existing Site grades[3] (i.e. foundation excavation/drilling, landscape excavation, the area of disturbance will be managed as described in Section 5.2.5 (Site Control in Contaminated Areas).

6.2 EXISTING UTILITIES

Due to the commercial use of the Site, utility lines are likely to be encountered during demolition and grading activities. The General Contractor will review drawings and conduct field investigations to verify the location, type and elevation of existing utilities, whether or not shown on the construction plans. Any removed utility line that is greater than 3 inches in diameter will be observed by the General Contractor for sediment. If sediment is present, it will be stockpiled

[3] In the case of the ground water exclusion zones, as discussed in Section 6.1 (Soil Management in Exclusion Zones), the area of excavation work will need to be managed as an exclusion zone if excavation activities through the "clean" import fill section extend at least 5 feet below existing Site grades.

as potentially contaminated material and sampled in accordance with the protocols outlined above in Section 6.1.2.4. If the utility appears to be former process piping or drain/sewer lines, the material should be assumed contaminated and the General Contractor will notify the Environmental Professional; note that regulatory agencies may need to be notified prior to the removal of such utilities.

6.3 MANAGEMENT OF UNANTICIPATED CONTAMINATION OR HAZARDOUS DEBRIS

Other known areas of the Site where prior occupants reportedly used or stored hazardous materials are shown on Figures 6, 7, and 8. Due to the Site's long history, other former chemical-use areas likely also were present. During construction activities, if unanticipated contamination (*e.g.*, if soil discoloration or odors are noted), buried structures (*e.g.*, sumps, tanks, or abandoned piping), or hazardous debris are encountered that may pose a risk to human health or the environment, earthwork in the suspect area will be immediately stopped and worker access to the suspect area will be restricted. The area will be cordoned off using delineators and caution tape, or similar materials by the General Contractor. Subsequently, the Environmental Professional must be notified within 24 hours of discovery and a site visit will be performed to observe current Site conditions. If buried structures (*e.g.*, sumps, tanks, or abandoned piping) or hazardous debris are encountered, DEH will be notified within 48-hours of discovery. Key Site contacts are provided in Section 10 of this SMP.

6.3.1 Suspect Impacted Soil

If unanticipated contamination is discovered, during the initial visit, excavated and in-place suspect soil will be observed by the Environmental Professional for discoloration or readily apparent chemical odors. OVM screening as discussed in Section 6.1.2 will also be performed. If suspect impacted materials are observed, these soils will be designated as potentially contaminated and will be evaluated through analytical testing by the Environmental Professional so that appropriate handling and disposal alternatives can be determined.

Soil samples will be collected from the stockpile and in-place soil and analyzed for full list VOCs (EPA Test Method 8260B). Other analytical test methods may be recommended by the Environmental Professional and/or required by the DEH or landfill (if off-Site disposal is required). If COC are detected below their respective screening levels presented in Section 6.5.2, then reuse of the soil would be appropriate and no further action is needed. If COC are detected above these levels, the DEH will be notified within approximately 48 hours of receiving the analytical results.

The probable remedial approach will be over-excavation of the impacted soil following the soil management protocols outlined in this SMP and laboratory analyses of confirmation soil samples collected from the sidewalls and base of the excavation. Sidewall soil samples will be collected every approximately 50 lineal feet of excavation face. At least one sample will be collected from each sidewall. Each sample will be collected from freshly exposed soil in the approximate middle of the sidewall depth. Bottom confirmation samples will be collected every approximately 2,500 square feet of excavation base.

No further action is required if the results of the confirmation soil samples indicate that all chemical compounds are below screening levels. If the results of the confirmation samples contain chemical compounds that exceed their screening levels, and the remaining in-place soil is within the planned construction excavation limits, additional over-excavation will be performed

following the protocols outlined in this SMP. Alternatively, if the remaining in-place impacted soil is at the planned construction excavation boundary, possible remedial options may include in-situ characterization, over-excavation, capping the impacted materials, and/or other remedial strategies. The preferred soil management and/or remedial approach will need to be approved by DEH.

6.3.2 Buried Structures and/or Hazardous Debris

If buried structures and/or hazardous debris are encountered, during the initial Site visit, the Environmental Professional will use professional judgment, including evaluating any observed odors or soil staining and past land use activities to assess whether the encountered structure and/or hazardous debris poses a significant risk to human health or the environment. Residual sludge, tank contents, and/or debris that may be present will be characterized by the Environmental Professional through laboratory testing. Laboratory analyses selected will be based on field observation and professional judgment.

The structure/debris and any contents will be removed from the excavation and properly disposed in accordance with applicable laws and regulations. Representative soil samples will be collected beneath the structure/debris by the Environmental Professional. Laboratory analyses of the soil samples will be based on characterization of the structure/debris contents. If a chemical is detected in the soil sample above its screening level, the soil management protocols described in this SMP will be followed.

Tanks or sumps and associated piping will be removed in accordance with in accordance with applicable laws and regulations including the guidance document titled *Underground Storage Tank System and Sump Closure Requirements* dated November 16, 2015 prepared for the Unidocs Member Agencies. Following removal of the tank or sump and any associated piping, soil samples will be collected from the excavation by the Environmental Professional and analyzed as required by the regulatory guidance and under the supervision of DEH and/or City of Sunnyvale Fire Department inspectors. If not all of the pipe is removed, the contents inside the pipe will be removed and the ends of the pipe that remain in place will be capped.

6.4 SOIL DISPOSAL

Soil that requires off-Site disposal shall be evaluated in accordance with Google's gSAFE guidance document dated July 2017 that is included in Appendix C.

6.5 IMPORT FILL

6.5.1 Geotechnical Engineering Parameters

Imported fill shall meet the requirements of the Geotechnical Engineer. Typically the fill must be non-expansive inorganic material with a Plasticity Index (PI) of 15 or less. For the backfilling of deeper excavations, a higher PI may be allowable if approved by the Geotechnical Engineer. To help prevent significant caving during excavation activities, imported material should have sufficient fines. Samples of potential import sources should be delivered to the Geotechnical Engineer's office at least 10 days prior to the desired import start date. Information regarding the import source should be provided, such as any site geotechnical reports. If the material will be derived from an excavation rather than a stockpile, potholes will likely be required to collect samples from throughout the depth of the planned cut that will be imported. At a minimum, laboratory testing will include PI tests. Material data sheets for select fill materials (Class 2

aggregate base, ¾- inch crushed rock, quarry fines, etc.) listing current laboratory testing data (not older than 6 months from the import date) may be provided for our review without providing a sample. If current data is not available, specification testing will need to be completed prior to approval.

Soil corrosion characterization must also be evaluated prior to acceptance. The potential import source should not be more corrosive than the on-Site soils, based on pH, saturated resistivity, and soluble sulfate and chloride testing.

6.5.2 Environmental Parameters

To limit the potential introduction of contaminated fill onto the Site, possible sources of import fill must be evaluated. Adequate documentation will be required so it can be verified that the fill source is appropriate for the Site by the Environmental Professional. The documentation will include detailed information on previous land use of the fill source, any environmental site assessments performed and the findings, and the results of any analytical testing performed. If no documentation is available or the documentation is inadequate, or if no analytical testing has been performed, samples of the potential fill material will be collected and analyzed per the protocols established by the Department of Toxic Substances Control (DTSC). The analyses performed will be based on the fill source and knowledge of the previous land use. The sample frequency for potential fill material will be in accordance with that outlined in the technical document titled, "*Information Advisory on Clean Imported Fill Material*" (DTSC, October 2001 or most current version).

The analytical results for potential import sources will be compared to Tier 1 Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board (Water Board, January 2019 or most current version) except as noted below:

- For organochlorine pesticides (with the exception of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT, which are discussed below), results will be compared to direct exposure human health risk ESLs for residential shallow soil exposure (Water Board, January 2019 or most current version).

- The detected metal concentrations in soil samples collected from the Site are consistent with regional background concentrations published by Scott (1991)[4] and Duvergé (2011)[5]. Naturally occurring background concentrations of arsenic, chromium, lead, nickel, and thallium often exceed their respective Tier 1 ESL. CalEPA generally does not require cleanup of soil to below background concentrations. As such, the upper bound concentrations reported by Scott for chromium (170 mg/kg), lead (54 mg/kg), nickel (145 mg/kg) and thallium (3.8 mg/kg) will be substituted for the Tier 1 ESLs. Consistent with the ESL guidance document (January 2019), the 99th percentile upper estimate arsenic concentration published by Duvergé of 11 mg/kg will be substituted for the Tier 1 ESL. There is no established background concentration of vanadium published by Scott. The maximum detected concentration of vanadium (65 mg/kg) at the Site will be used as a Site-specific background concentration for comparison.

[4] To minimize inherent natural differences in soil composition, Scott's study was limited to properties located within an approximate 2-mile radius of the intersection of Highway 101 and 237 in Sunnyvale, California. The Site is located within Scott's study area.

[5] Duvergé (2011) conducted a study of regional background concentrations of arsenic in undifferentiated urbanized flatland soils in the San Francisco Bay Region.

- The Tier 1 ESLs for organochlorine pesticide compounds 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and/or the sum of these compounds will be replaced with the more conservative Total Threshold Limit Concentration (TTLC) of 1 mg/kg established in Title 22 California Code of Regulations. The TTLC is the level at which a solid waste is considered hazardous when evaluating waste disposal options.

Prior importing soil to the Site, a report will be prepared for the potential import source that will be provided to the DEH for review and approval. The report, at a minimum, will include the following components: summary of the Site's history, prior tenants and operations; chemical storage and use information; discussion of prior environmental studies; sampling and analyses plan for the characterization soil samples collected from the proposed excavation cut and/or soil stockpile; and data summary tables presenting the soil characterization data and comparison to the screening criteria presented in Section 6.5.2.

SECTION 7: GROUND WATER MANAGEMENT PROTOCOLS

7.1 DEEP FOUNDATIONS

The development plans include the construction of deep foundations. Auger cast pressure grouted displacement (APGD) piles will be used to help eliminate the potential for downward migration of contaminated ground water. This pile type has become more common in the Bay Area; they are a proven foundation element where a deep foundation is required. Benefits of APGD piles include the ability to penetrate dense layers, with low noise and vibration during installation as compared to driven pile types. In addition, APGD piles provide several advantages for sites with subsurface contamination, such as the minimal generation of soil spoils and mitigation of the potential for vertical migration of contamination.

The APGD piling method is a "*displacement*" method. The displacement pile is installed by drilling with a hollow stem auger, with special flighting near the tip, until the desired tip elevation is reached. During installation, the penetrated soils are displaced laterally away from the auger by means of mechanical compaction as the auger is advanced as opposed to being removed to the ground surface. The custom flight displacement auger provides a seal behind the auger tip. Due to the continuous slow rotation of the auger, the displacement tip, and the pressure grouting, a polished surface is not likely to occur[6]. After the auger tip reaches the desired depth, high strength grout is immediately injected under pressure through the hollow stem. Upon achieving sufficient grout pressure, withdrawal of the auger begins at a controlled rate. Upon retrieval of the auger, steel cages will then be wet-set in the grouted excavations under their own weight. The grout mixture is primarily composed of sand, cement, fly ash, water and admixtures. Plasticizers, water reducers and viscosity modifiers are typically used as admixtures.

The soil cuttings will be managed as described in Section 6. Ground water generated during the pile installation will be contained and shall be placed in holding tanks and disposed as described in Section 7.3 or used for dust control on the contaminated stockpiles.

To establish final design parameters of the deep foundation, Test Piles will be installed. Prior to Test Pile installation, the APGD Contractor may perform Cone Penetration Tests (CPTs) using CPT equipment under observation of the Geotechnical Engineer to further evaluate subsurface

[6] Confirmed by load testing; higher skin friction values compared to conventional augered piles, which correlates to more intimate and irregular surface than other (e.g. precast) displacement pile types.

conditions. Upon same day completion, the 1½ inch diameter CPT boring will be tremie grouted without delays from the bottom of the boring to the surface through the rod as the CPT is withdrawn to the surface; no CPT boring will be left open overnight.

7.2 UTILITY TRENCHES

If utility trenches that extend to an approximate depth of 5 feet or more, measures will be implemented to reduce the potential for vapor and ground water migration through trench backfill and utility conduits. Such measures shall include placement of low-permeability backfill "plugs" at selected intervals on-Site and at all locations where the utility trenches extend off-Site. In addition, utility conduits that are placed below ground water will be installed with water-tight fittings to reduce the potential for ground water to migrate into the conduits. The Civil Engineer will survey and record all '*plug'* placement locations.

7.3 EXCAVATION DEWATERING

If excavation dewatering is required, pumped water will be transferred from the excavations into holding tanks and then either pumped to the sanitary sewer under a POTW permit, treated and discharged to the storm drain system pursuant to a California Regional Water Quality Control Board – San Francisco Bay Region (Water Board) NPDES permit, and/or loaded into tanker trucks for off-Site disposal. If on-Site reuse for dust control is desired, water samples must be collected from the holding tank and analyzed for volatile organic compounds with gasoline-range total petroleum hydrocarbons (EPA Test Method 8260B) and diesel-range petroleum hydrocarbons (EPA Test Method 8015M). If the detected analytes do not exceed ground water ESLs, the water in the holding tanks can be reused on-Site for dust control.

If an extended period of ground water dewatering is anticipated, a Dewatering Plan will be submitted to the DEH for review and approval.

7.4 GROUND WATER MONITORING WELLS

Eight ground water monitoring wells associated with the Lockheed contamination case are located on-Site (Figure 4). Based on initial coordination meetings, Lockheed and Google desire to destroy the monitoring wells prior to Site demolition to avoid damaging the wells during construction and potentially creating preferential pathway for ground water contamination. Lockheed and Google are coordinating the preferred locations for the replacement ground water monitoring wells and Lockheed will obtain approval from Water Board. Following approval by the Water Board, the replacement wells will be installed after construction of the planned development and/or improvements in the public right-of-way. All decommission and reinstallation activities will be conducted by Lockheed in accordance with the requirements of the Santa Clara Valley Water District.

SECTION 8: SOIL VAPOR MANAGEMENT PROTOCOLS

This section provides air monitoring and soil vapor management protocols that must be followed during soil-disturbing activities in the exclusions zones identified in Section 6.1.

8.1 RESPIRATORY PROTECTION

Due to the elevated TCE vapors present in the exclusions zones and short-term exposure concerns to construction workers, NIOSH/MSHA-approved respirators equipped with

combination organic vapor and P-100 HEPA air purifying cartridges are required for workers entering excavations and trenches. In the case of the Lockheed and A.C. Ball Company VOC ground water plume exclusion zones, respiratory protection is required for any excavation that extends approximately 5 feet below existing grades. For the exclusion zone associated with the A.C. Ball Company former solvent UST systems, respiratory protection is needed during grading/trenching activities that extend below an approximate depth of 2 feet. If respirators are no longer desired to be worn by workers entering excavations, sampling or screening for TCE shall be conducted using the methods outlined in Section 8.2.

Please refer to the HSP included in Appendix B for additional details regarding respiratory protection measures.

8.2 AIR MONITORING IN TRENCHES/EXCAVATIONS

8.2.1 Screening Levels

TCE analytical data will be compared to EPA Region 9 indoor air screening levels presented in their July 9, 2014 memorandum titled "*EPA Region 9 Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion."* The accelerated and urgent commercial response action levels based on a 8-hour work day are 8 µg/m^3 and 24 µg/m^3, respectively. Ambient air monitoring results will be considered elevated if analytical data exceeds 8 µg/m^3. For other chemicals, commercial ambient air ESLs will be used for comparison. If these action levels are exceeded, response action are required to determine if mitigation and worker protection measures are necessary.

8.2.2 Sampling Approach and Frequency

If air monitoring in trenches and/or excavations is performed, sampling must be completed using at least one of the methods presented below:

- Personal air monitoring using TCE sampling badges (e.g., Radiello 130 or Radiello 145 samplers or equivalent);
- Screening air in the excavation using direct-read (real-time) portable gas chromatography equipment; and/or
- Air sampling using Summa canisters.

Sampling or screening for TCE will be conducted by the Environmental Professional for a minimum period of one full work day during soil-disturbing activities in the exclusion zones. Personal and Summa canister air samples will be analyzed and reported on an approximate 24-hour turnaround time. Screening with portable gas chromatography equipment will be conducted, at a minimum, on an hourly basis. If sampling or screening data collected over a minimum period of one full work day demonstrates that TCE is either (1) not detected above a reporting limit of 5 µg/m^3 in the excavation or (2) is present in the excavation at concentrations less than the EPA's Accelerated Response Action Level (8 µg/m^3), the use of respiratory protection during excavation entry may be discontinued.

Personnel entering the excavation will resume using respiratory protection and the Environmental Professional will resume sampling or screening for TCE, or other COC if

relevant, if any of the following conditions occur:

- The excavation is deepened by more than 1 foot;
- Ground water begins to enter the excavation;
- The excavation is enlarged by 20 feet or greater; or
- Excavation activities commence in a new excavation area within the exclusion zone.

Additionally, if excavation/trenching work continues after discontinuing the use of respirators, the Environmental Professional will perform trench/excavation monitoring using an OVM at a frequency of once per day for one week. Breathing zone air in the trench/excavation will be screened over approximately 1 to 5 minute durations. Breathing zone air will be considered as possibly elevated if 1) the OVM reading is over 500 ppb_v above background for greater than one minute or more, and 2) in the opinion of the Environmental Professional, the source of the vapors is COC originating from the trench/excavation and not from unrelated sources (e.g. construction equipment and materials). Under this scenario, personnel entering the excavation will resume using respiratory protection and the Environmental Professional will resume sampling or screening for TCE.

8.3 RESPONSE ACTIONS

It is anticipated that workers will not be in an area subject to VOC vapors for the entire work day. The goal of the SMP is that no worker will be exposed to TCE vapor in excess of EPA's recommended guidance of 8 $\mu g/m^3$ in a 8-hour period.

If sampling or screening data, with a reporting limit of 5 $\mu g/m^3$ or lower, demonstrates that TCE is present at concentrations greater than 8 $\mu g/m^3$, the use of respiratory protection during all excavation entry will continue. Should the TCE concentrations exceed the urgent response action level (24 $\mu g/m^3$), engineering controls presented in Section 8.4 will be implemented by the General Contractor until at least levels fall below 21 $\mu g/m^3$. At the discretion of the Project CIH, engineering controls may need to remain in-place until concentrations decrease below 8 $\mu g/m^3$.

8.4 MITIGATION OF VAPOR EMISSIONS

There are several methods available, as listed below, by which the levels of vapor emissions can be eliminated or reduced. Some of these can be deployed routinely in advance to avoid events of vapor emissions and reduce potential construction down time.

- Natural Ventilation: Delay work or discontinue work in an area for a sufficient time to allow vapor levels to be reduced to acceptable levels. Bay Area Air Quality Management District regulations must be followed.
- Mechanical Ventilation: Fans can be placed in the area of concern to reduce vapor levels to acceptable levels.
- Application of Water: Application of water will often reduce vapor levels. Water trucks will be on the Site to provide water for dust control and soil conditioning for compaction and can also be used to mitigate vapor emissions.

- Application of Foam: Application of foams can often reduce vapor levels. For example, Rusmar Foam Technologies offers several foams products for different uses and associated application equipment.

- Higher Level PPE: Higher levels of worker protection per the Health and Safety Plan can be implemented, such as Level C or B personal protective equipment per 29CFR 1910.134.

- Soil Source: Assess if the elevated readings may be due to contaminated soil.

8.5 MITIGATION OF VAPOR INTRUSION INTO PLANNED OFFICE BUILDINGS

To effectively eliminate vapor intrusion concerns, the planned occupied spaces for the 100 and 200 Caribbean project will be designed with appropriate engineering features to reduce risk of vapor intrusion into buildings. At a minimum, this design will include passive sub-slab ventilation with a spray applied seamless vapor barrier (and with the ability to convert the system from passive to active ventilation). Vapor mitigation system engineering design drawings and specifications will be incorporated into the building engineering plans that will be provided to the City of Sunnyvale for their review and approval. Additionally, prior to installation, a vapor intrusion Mitigation Plan will be submitted to DEH for review and approval.

SECTION 9: SMP COMPLETION REPORT

The Environmental Professional shall prepare a SMP Completion Report for submittal to the regulatory agency for review and approval. The report will show sampling locations, a description of sampling protocols, and copies of the analytical reports; it will also describe variances to this SMP.

SECTION 10: SMP ROLES AND RESPONSIBILITIES

This section presents the key project team members and their roles and responsibilities as they relate to implementing this SMP. Site contacts are presented in Table 3.

Table 3. Key Site Contacts

Organization	Personnel	Responsibility	Email	Phone
Santa Clara County Department of Environmental Health	Aaron Costa	Project Manager	Aaron.costa@cep.sccgov.org	408-918-1954
Earth Safety Dynamics	Kevin R. Braun, C.I.H.	Project C.I.H.	krbraun1@aol.com	925-455-6601
Devcon Construction (General Contractor)	John Castagnoli	Project Manager	jcastagnoli@rewsprojects.com	408-942-8200
Cornerstone Earth Group	Kurt M. Soenen, P.E.	Environmental Professional	ksoenen@rewsprojects.com	408-245-4600
Engeo	Jeanine Ruffoni	Geotechnical Engineer	jruffoni@rewsprojects.com	408-574-4900

10.1 GENERAL CONTRACTOR

The General Contractor is retained by Google and is responsible for 1) confirming the SMP guidelines are integrated into the HSP, project specifications and construction plans 2) implementing the construction documents; 3) implementing the protocols in this SMP and communicating these requirements to their subcontractors; 4) maintaining a safe work area for the construction workers at the Site; and 4) prior to starting work, seeking clarification from

Google and/or the Environmental Professional should they have questions regarding this SMP or HSP.

10.2 ENVIRONMENTAL PROFESSIONAL

The Environmental Professional will provide guidance and support as needed during subsurface construction, perform real-time monitoring during subsurface construction, collect soil and ground water samples as needed for waste characterization, and observe activities performed by the General Contractor to evaluate conformance with this SMP. The Environmental Professional will be supported by the project certified industrial hygienist as needed during construction. The presence of the Environmental Professional's field personnel is for the purpose of providing observation and monitoring services. The Environmental Professional's work will not include supervision or direction of the work of the General Contractor. The General Contractor is responsible for the health and safety of their own employees. Neither the presence of the Environmental Professional's field representatives nor the observation by the Environmental Professional shall excuse the General Contractor in any way for defects in their work. The Environmental Professional is also not responsible for job or Site safety. Daily field reports documenting site activities will be prepared by the Environmental Professional and made available for review by authorized personnel for the duration of the project.

SECTION 11: LIMITATIONS

Contractors working on-Site are responsible for the health and safety of their employees and subcontractors. This document, an instrument of professional service, was prepared for the sole use of Google and their consultants and contractors, and may not be reproduced or distributed to others without written authorization from Cornerstone. Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

SECTION 12: REFERENCES

Cornerstone Earth Group, 2018a. *Phase II Soil, Soil Vapor, and Ground Water Quality Evaluation, Caribbean Office Campus, 1330-1338, 1340-1346, 1350, 1360-1368 Bordeaux Drive, and 360-364, 370-376, 380-382, and 390-394 West Caribbean Drive, Sunnyvale, California,* dated March 9, 2018.

Cornerstone Earth Group, 2018b. *Phase II Soil, Soil Vapor, and Ground Water Quality Evaluation, Borregas Office Campus, 140-146 West Caribbean Drive, 1325, 1383, and 1393-1395 Borregas Avenue, and 141 Caspian Court, Sunnyvale, California,* dated March 9, 2018.

DTSC. October 2001. *Information Advisory Clean Imported Fill Material.*

Duverge, Dylan Jacques. December 2011. *Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region*.

San Francisco Bay, Regional Water Quality Control Board. Revised January 2019. Environmental Screening Levels. https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.html

Scott, 1991. *Background Metal Concentrations in Soils in Northern Santa Clara County, California.*

State Water Resources Control Board. February 2016. *Maximum Contaminant Levels (MCLs).*

U.S. EPA. July 9, 2014. *EPA Region 9 Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion*

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FIGURES

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Vicinity Map

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

Project Number	678-3-2
Figure Number	Figure 1
Date	February 2018
Drawn By	RRN

370-376
West Caribbean Drive

360-364
West Caribbean Drive

140-146
West Caribbean Drive

380-384
West Caribbean Drive

200 Caribbean

Caribbean Drive

100 Caribbean

390-394
West Caribbean Drive

1393-1395
Borregas Avenue

Sunnyvale West Channel

1383
Borregas Avenue

1330-1370
Bordeaux Drive

Caspian Court

Caspian Drive

141 Caspian Court
(former AC Ball Facility)

1325
Borregas Avenue

Approximate
Site Boundary

North Mathilda Avenue

Bordeaux Drive

Borregas Avenue

Java Drive

N

0 300 600

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 4/15/2017

Project Number 678-3-2

Figure Number Figure 2

Drawn By RRN

Date February 2018

Site Plan

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

CORNERSTONE EARTH GROUP

200 Caribbean

Caribbean Drive

100 Caribbean

North Mathilda Avenue

Sunnyvale West Channel

Borregas Avenue

Bordeaux Drive

Caspian Court

Caspian Drive

Approximate Site Boundary

N

0 200 400

APPROXIMATE SCALE (FEET)

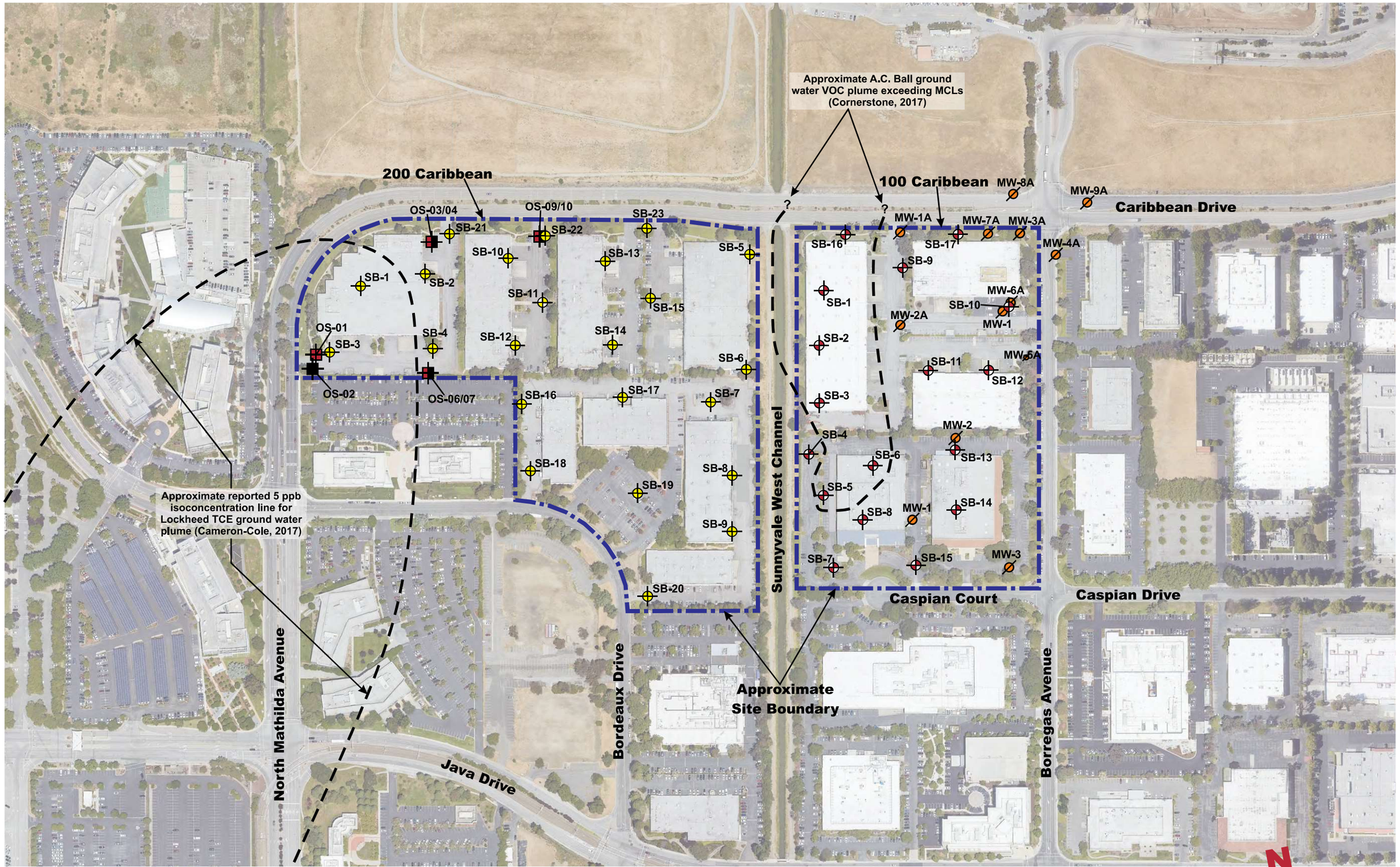
Base by Google Earth, dated 4/15/2017
Overlay by OLIN, Site Plan - L100.1, dated 4/16/2018

Conceptual Development Plan

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

Project Number	678-3-2
Figure Number	Figure 3
Date	March 2018
Drawn By	RRN

CORNERSTONE EARTH GROUP



Legend

- Approximate location of soil boring and vapor probe at 100 Caribbean (Cornerstone, September 2017)
- Approximate location of soil boring and vapor probe at 200 Caribbean (Cornerstone, June 2017)
- Destroyed monitoring well
- Approximate location of first transmissive zone well (Cameron-Cole, April 2016)
- Approximate location of second transmissive zone well (Cameron-Cole, April 2016)
- Approximate location of first and second transmissive zone wells are in the same approximate area

N

0 300 600

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 4/15/2017

Project Number 678-3-2

Figure Number Figure 4

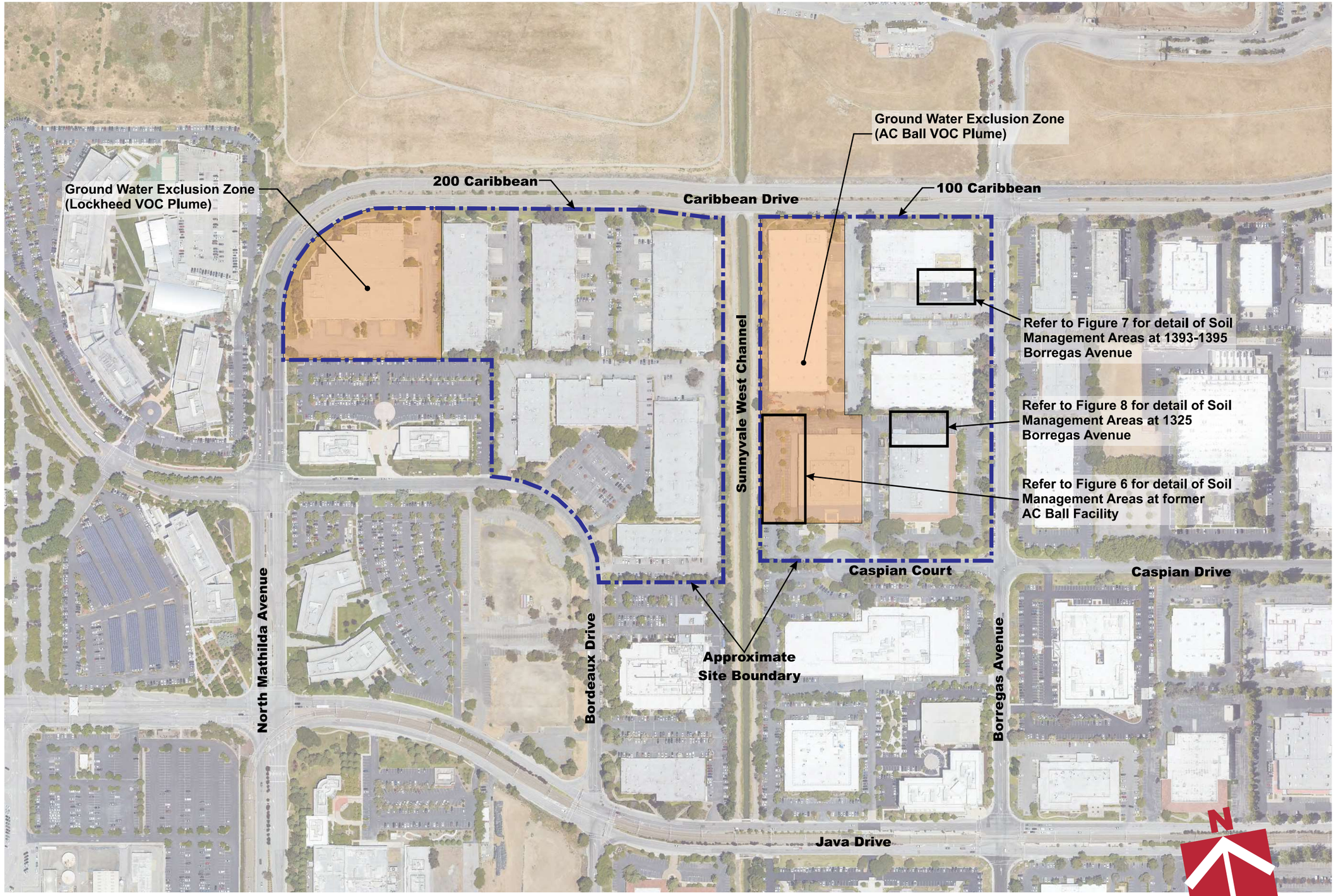
Drawn By RRN

Date March 2018

Boring and Sampling Locations

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

CORNERSTONE EARTH GROUP



Base by Google Earth, dated 4/15/2017

Project Number 678-3-2

Figure Number Figure 5

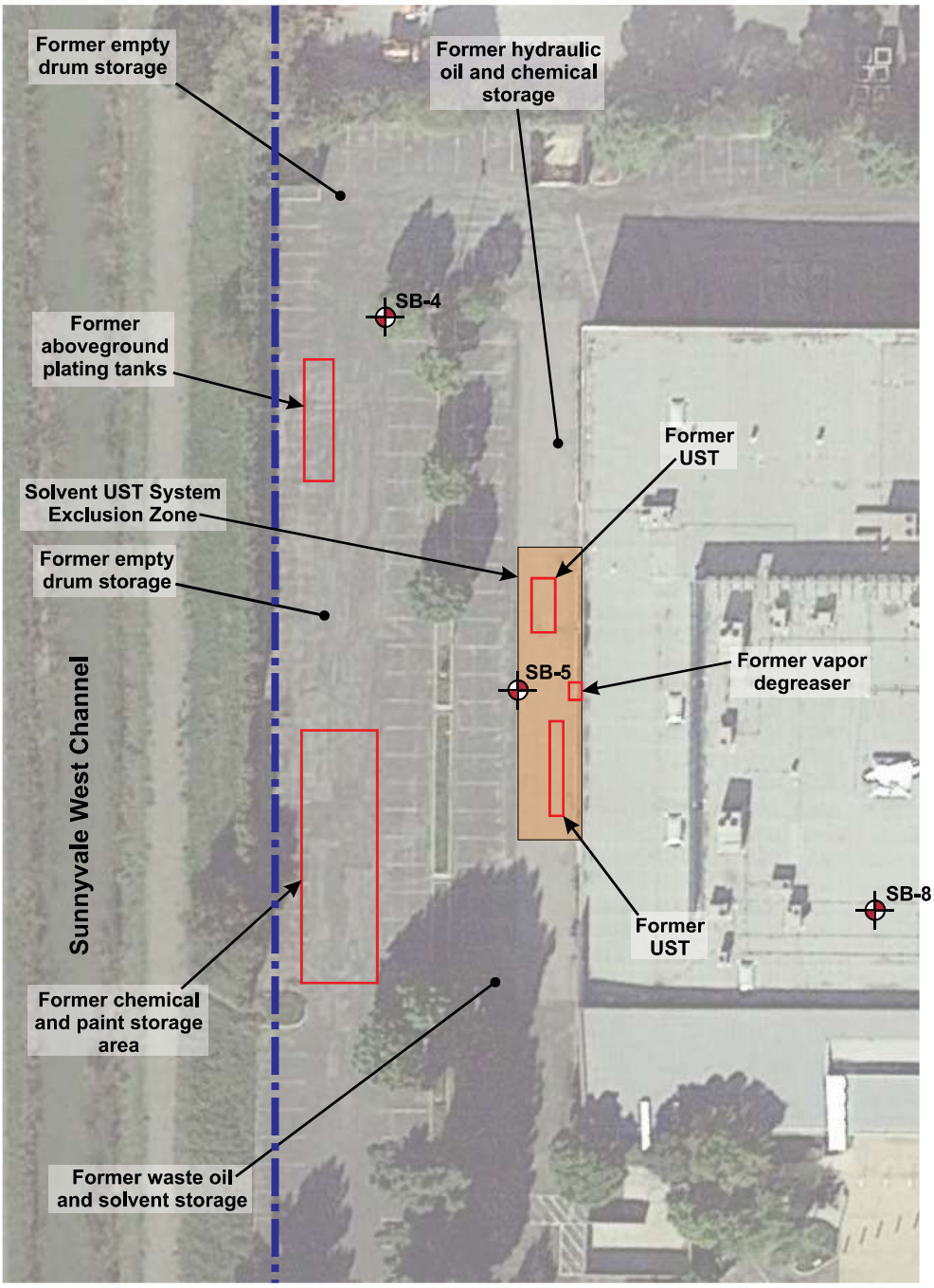
Drawn By RRN

Date March 2018

Site Management Areas

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

CORNERSTONE EARTH GROUP



Legend

Approximate location of soil boring and vapor probe (Cornerstone, September 2017)

N

0 60 120

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 11/2/2016

CORNERSTONE EARTH GROUP

Soil Management Area - Former AC Ball Facility

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

Project Number: 678-3-2

Figure Number: Figure 6

Date: March 2018

Drawn By: RRN

Legend

Approximate location of soil boring and vapor probe (Cornerstone, September 2017)

Destroyed monitoring well

N

0 30 60

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 11/2/2016

CORNERSTONE EARTH GROUP

Soil Management Area - 1393-1395 Borregas Avenue)

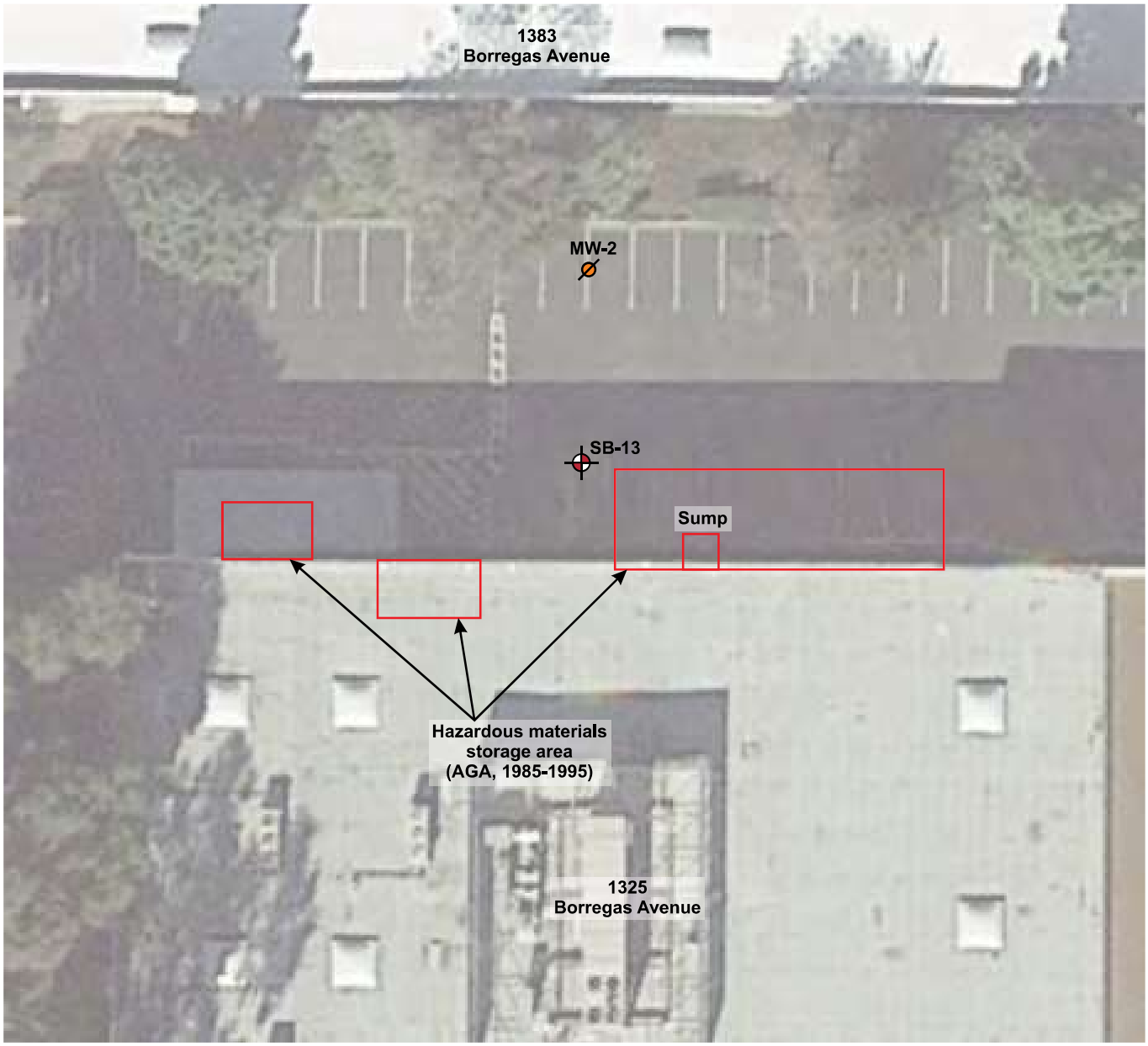
100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

Project Number: 678-3-2

Figure Number: Figure 7

Date: March 2018

Drawn By: RRN



Legend

Approximate location of soil boring and vapor probe (Cornerstone, September 2017)

Destroyed monitoring well

N

0 200 400

APPROXIMATE SCALE (FEET)

Base by Google Earth, dated 11/2/2016

CORNERSTONE EARTH GROUP

Soil Management Area - 1325 Borregas Avenue)

100 and 200 Caribbean Campus Project
Caribbean Drive
Sunnyvale, CA

Project Number 678-3-2

Figure Number Figure 8

Date March 2018

Drawn By RRN

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APPENDIX A – DATA SUMMARY TABLES FROM PRIOR STUDIES

CORNERSTONE EARTH GROUP

Table 1. Analytical Results of Selected Soil Samples - OCPs, Metals
(Concentrations in mg/kg)

Property	Boring ID	Sample ID	Soil Type	Date	Depth (feet)	4,4´-DDD	4,4´-DDE	4,4´-DDT	DDT Total	alpha-Chlordane	Dieldrin	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Vanadium	Zinc
140-146 West Caribbean Drive	SB-1	SB-1 (16.5-17)	Vadose Zone	9/19/2017	16.5-17	---	---	---	---	---	---	2.2	4	82	<0.28	<0.35	72	11	31	5.1	0.072	<1.4	91	49	50
	SB-2	SB-2 (4-4.5)	Native	9/19/2017	4-4.5	0.036	0.19	<0.002	0.226	<0.002	0.0066	---	3.8	---	---	---	---	---	---	7.7	0.04	---	---	---	---
		SB-2 (15-15.5)	Vadose Zone	9/19/2017	15-15.5	---	---	---	---	---	---	2.6	4	85	<0.38	<0.47	62	13	31	4.2	0.076	<1.9	72	61	55
	SB-3	SB-3 (3.5-4)	Native	9/19/2017	3.5-4	0.02	0.19	0.0024	0.2124	<0.002	0.0054	---	4.5	---	---	---	---	---	---	9.2	0.51	---	---	---	---
	SB-16A	SB-16A (3-3.5)	Fill and/or Reworked Native	9/22/2017	3-3.5	0.11	0.4	<0.0099	0.51	<0.0099	0.018	---	5.8	---	---	---	---	---	---	11	0.044	---	---	---	---
141 Caspian Court	SB-4	SB-4 (1-1.5)	Fill and/or Reworked Native	9/20/2017	1-1.5	---	---	---	---	---	---	2.4	3.7	170	0.39	<0.40	65	13	33	8	0.075	<1.6	82	44	53
		SB-4 (2.5-3)	Native	9/20/2017	2.5-3	0.0097	0.1	0.016	0.1257	<0.002	0.0063	---	6.4	---	---	---	---	---	---	10	0.041	---	---	---	---
	SB-5	SB-5 (2.5-3)	Fill and/or Reworked Native	9/20/2017	2.5-3	0.0052	0.15	0.04	0.1952	<0.0019	0.0057	---	5.3	---	---	---	---	---	---	9	0.044	---	---	---	---
	SB-6	SB-6 (1.5-2)	Fill and/or Reworked Native	9/20/2017	1.5-2	<0.002	0.0053	<0.002	0.0053	<0.002	<0.002	<1.6	7.5	110	0.55	1.8	15	5.4	17	6.6	0.029	3.7	30	19	72
	SB-7	SB-7 (3-3.5)	Fill and/or Reworked Native	9/19/2017	3-3.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<1.3	<2.7	240	<0.27	<0.34	44	8.9	25	8.5	0.1	<1.3	46	41	52
		SB-7 (5-5.5)	Native	9/19/2017	5-5.5	---	---	---	---	---	---	1.4	2.2	95	0.32	<0.26	43	8.3	22	4.3	0.053	<1.0	46	42	39
	SB-8	SB-8 (3-3.5)	Fill and/or Reworked Native	9/20/2017	3-3.5	0.0049	0.17	0.058	0.2329	<0.002	0.005	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1393-1395 Borregas Avenue	SB-9	SB-9 (2-2.5)	Fill and/or Reworked Native	9/18/2017	2-2.5	<0.002	0.01	<0.002	0.01	<0.002	<0.002	<1.4	5	170	0.37	<0.35	52	11	27	6.5	0.088	<1.4	67	42	47
		SB-9 (4-4.5)	Native	9/18/2017	4-4.5	0.011	0.1	0.005	0.116	0.0021	0.0026	---	5.1	---	---	---	---	---	---	8.5	0.044	---	---	---	---
	SB-10	SB-10 (4.5-5)	Native	9/18/2017	4.5-5	0.018	0.21	0.006	0.234	<0.002	<0.002	---	3.4	---	---	---	---	---	---	9.1	0.041	---	---	---	---
	SB-17	SB-17 (3.5-4)	Native	9/18/2017	3.5-4	0.076	0.045	0.0061	0.1271	<0.002	<0.002	---	3.6	---	---	---	---	---	---	13	0.032	---	---	---	---
1383 Borregas Avenue	SB-11	SB-11 (1-1.5)	Fill and/or Reworked Native	9/18/2017	1-1.5	<0.002	0.011	<0.002	0.011	<0.002	<0.002	<1.4	6.1	170	<0.29	<0.36	65	14	34	13	0.11	<1.4	89	52	52
	SB-12	SB-12 (1-1.5)	Fill and/or Reworked Native	9/18/2017	1-1.5	0.02	0.14	0.0042	0.1642	<0.002	<0.002	---	5.4	---	---	---	---	---	---	11	0.054	---	---	---	---
1325 Borregas Avenue	SB-13	SB-13 (1.5-2)	Fill and/or Reworked Native	9/19/2017	1.5-2	0.0023	0.035	<0.002	0.0373	<0.002	<0.002	---	<3.2	---	---	---	---	---	---	7.8	0.043	---	---	---	---
	SB-14	SB-14 (1-1.5)	Fill and/or Reworked Native	9/20/2017	1-1.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<1.4	8.3	140	0.5	**2.3**	31	4.8	17	6.9	0.024	5	38	22	80
	SB-15	SB-15 (1.5-2)	Fill and/or Reworked Native	9/19/2017	1.5-2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	---	5.2	---	---	---	---	---	---	6.9	0.053	---	---	---	---
Environmental Screening Criteria						2.7	1.8	1.9	1	0.48	0.037	11	11	390	5	1.9 (78)	170	23	180	54	13	6.9	145	390	340
Screening Level Basis						ESL[1]	ESL[2]	ESL[2]	TTLC[3]	ESL[4]	ESL[2]	ESL[1]	Duverge[5]	ESL[1]	ESL[1]	ESL[1,2]	Scott[6]	ESL[1]	ESL[1]	Scott[6]	ESL[1]	ESL[1]	Scott[6]	ESL[2]	ESL[1]

1 Tier 1 Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019. Value in parenthesis is the residential direct exposure human health risk ESL.
2 Residential direct exposure human health risk ESL - January 2019.
3 Total Threshold Limit Concentration - California Code of Regulations, Title 22.
4 ESLs for alpha-chlordane are not established; value is residential direct exposure human health risk ESL for chlordane.
5 Duverge, 2011. Establishing Backround Arsenic in Soil of the Urbanized San Francisco Bay Region.
6 Scott, Christina. December 1991. Background Metal Concentrations in Soils in Northern Santa Clara County. Value is maximum background detection by Scott.
< Not detected at or above laboratory reporting limit
--- Not Analyzed
BOLD Concentration exceeds selected environmental screening criteria

Table 2. Analytical Results of Selected Soil Samples - VOCs, TPHs
(Concentrations in mg/kg)

Property	Boring ID	Sample ID	Soil Type	Date	Depth (feet)	1,1 - DCE	Acetone	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	TPHg	TPHd	TPHo
140-146 West Caribbean Drive	SB-1	SB-1 (16.5-17)	Native	9/19/2017	16.5-17	0.0049	<0.041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	---	---	---
	SB-2	SB-2 (15-15.5)	Native	9/19/2017	15-15.5	0.0086	<0.063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.31	---	---
	SB-16A	SB-16A (3-3.5)	Fill and/or Reworked Native	9/22/2017	3-3.5	<0.0054	<0.054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.27	---	---
	SB-16	SB-16 (2-2.5)	Fill and/or Reworked Native	9/18/2017	2-2.5	<0.0048	0.21	<0.0048	<0.0048	<0.0048	0.0062	<0.0048	<0.24	---	---
141 Caspian Court	SB-4	SB-4 (12.5-13)	Native	9/20/2017	12.5-13	<0.0044	<0.044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	---	---	---
	SB-5	SB-5 (13.5-14)	Native	9/20/2017	13.5-14	<0.0042	<0.042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	---	---	---
	SB-6	SB-6 (1.5-2)	Fill and/or Reworked Native	9/20/2017	1.5-2	---	---	---	---	---	---	---	---	55	130
	SB-7	SB-7 (3-3.5)	Fill and/or Reworked Native	9/19/2017	3-3.5	---	---	---	---	---	---	---	---	4.2	<50
		SB-7 (5-5.5)	Native	9/19/2017	5-5.5	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---
	SB-8	SB-8 (6.5-7)	Native	9/20/2017	6.5-7	<0.0046	<0.046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	---	---	---
1393-1395 Borregas Avenue	SB-9	SB-9 (2-2.5)	Fill and/or Reworked Native	9/18/2017	2-2.5	---	---	---	---	---	---	---	---	14	79
		SB-9 (7-7.5)	Native	9/18/2017	7-7.5	<0.0042	0.28	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.21	---	---
	SB-10	SB-10 (9-9.5)	Native	9/18/2017	9-9.5	<0.0045	0.078	0.078	0.02	0.034	<0.0045	0.005	61	---	---
		SB-10 (12.5-13)	Native	9/18/2017	12.5-13	<0.0049	0.057	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.25	3.5	<50
1383 Borregas Avenue	SB-11	SB-11 (1-1.5)	Fill and/or Reworked Native	9/18/2017	1-1.5	---	---	---	---	---	---	---	---	24	<50
		SB-11 (12.5-13)	Native	9/18/2017	12.5-13	<0.0041	0.22	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	0.35	---	---
1325 Borregas Avenue	SB-14	SB-14 (1-1.5)	Fill and/or Reworked Native	9/20/2017	1-1.5	---	---	---	---	---	---	---	---	5.7	<50
Environmental Screening Criteria						0.54	0.92	3,900	3,800	2,200	0.92	2,200	100	260	1,600
Screening Level Basis						ESL[1]	ESL[1]	DTSC-SL[2]	RSL[3]	DTSC-SL[2]	ESL[1]	DTSC-SL[2]	ESL[1]	ESL[1]	ESL[1]

1 Tier 1 Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019.
2 Department of Toxic Substance Control Recommended Screening Level (DTSC-SL), HERO Note 3 - June 2018.
3 Regional Screening Level (RSL), USEPA Region 9 - November 2018.
< Not detected at or above laboratory reporting limit
--- Not Analyzed

Table 3. Analytical Results of Selected Ground Water Samples - VOCs, TPHg
(Concentrations in µg/L)

Property	Boring ID	Sample ID	Date	Screen Depth (feet)	Benzene	1,4-Dioxane	Acetone	Freon 113	PCE	TCE	cis-1,2-DCE	1,1 - DCE	1,1-DCA	1,2-DCA	Vinyl Chloride	1,1,1-TCA	TPHg
140-146 West Caribbean Drive	SB-1	SB-1 (15-20)	9/19/2017	15-20	<0.50	**6.2**	<50	2.4	1.4	**17**	**6.4**	**76**	**12**	<0.50	**0.65**	2.7	81
	SB-2	SB-2 (15-20)	9/19/2017	15-20	<0.50	**9**	<50	4.1	1.8	**17**	**7.1**	**150**	**13**	**0.91**	**0.66**	3	130
	SB-3	SB-3 (15-20)	9/19/2017	15-20	<0.50	**5.8**	<50	3.9	2.8	**20**	**7.7**	**140**	**26**	**0.63**	**0.59**	2.1	130
	SB-16	SB-16 (15-20)	9/18/2017	15-20	<0.50	---	54	0.87	<0.50	**9.4**	4.2	**31**	**15**	<0.50	<0.50	1.5	<50
141 Caspian Court	SB-4	SB-4 (15-20)	9/20/2017	15-20	<0.50	<2.0	<50	<0.50	2.8	2	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<50
	SB-5	SB-5 (15-20)	9/21/2017	15-20	<0.50	<2.0	<50	<0.50	2.7	3	1.2	1.5	<0.50	<0.50	**1.2**	<0.50	<50
	SB-6	SB-6 (15-20)	9/22/2017	15-20	<0.50	<2.0	<50	<0.50	**5.8**	3.2	<0.50	1.5	<0.50	<0.50	<0.50	<0.50	<50
	SB-7	SB-7 (15-20)	9/19/2017	15-20	<0.50	<2.0	<50	<0.50	3.1	0.82	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<50
	SB-8	SB-8 (15-20)	9/19/2017	15-20	<0.50	<2.0	<50	<0.50	4.8	2.1	<0.50	0.8	<0.50	<0.50	<0.50	<0.50	<50
1393-1395 Borregas Avenue	SB-9	SB-9 (15-20)	9/18/2017	15-20	<0.50	---	69	<0.50	1.5	1.3	<0.50	1	<0.50	<0.50	<0.50	<0.50	<50
	SB-10	SB-10 (15-20)	9/18/2017	15-20	0.74	---	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	66
	SB-17	SB-17 (15-20)	9/18/2017	15-20	<0.50	---	67	<0.50	1.5	<0.50	<0.50	1.2	<0.50	<0.50	<0.50	<0.50	<50
1383 Borregas Avenue	SB-11	SB-11 (15-20)	9/18/2017	15-20	0.53	---	<50	<0.50	1.2	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<50
	SB-12	SB-12 (15-20)	9/18/2017	15-20	<0.50	---	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<50
1325 Borregas Avenue	SB-13	SB-13 (15-20)	9/19/2017	15-20	<0.50	---	<50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	<0.50	<0.50	<50
	SB-14	SB-14 (15-20)	9/20/2017	15-20	<0.50	---	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<50
	SB-15	SB-15 (15-20)	9/19/2017	15-20	<0.50	---	<50	<0.50	3	3.8	<0.50	0.88	<0.50	<0.50	<0.50	<0.50	<50
Environmental Screening Criteria					1	0.38	1,500	1,200	5	5	6	6	5	0.5	0.5	200	760
Screening Level Basis					MCL[1]	ESL[2]	ESL[2]	MCL[1]	MCL[1]	MCL[1]	MCL[1]	MCL[1]	MCL[1]	MCL[1]	MCL[1]	MCL[1]	ESL[3]

1 Maximum Contaminant Level (MCL), State Water Resources Control Board - October 2018.
2 MCL not established. Value is Tier I Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019.
3 MCL not established. Value is residential direct exposure human health risk ESL, RWQCB, San Francisco Bay Region - January 2019.
< Not detected at or above laboratory reporting limit
--- Not Analyzed
Bold Concentration exceeds selected environmental screening criteria.

CORNERSTONE EARTH GROUP

Table 4. Analytical Results of Selected Soil Vapor Samples
(Concentrations in µg/m³)

Property	Boring ID	Date	Probe Depth (feet)	Benzene	Toluene	Ethylbenzene	1,1 - DCE	1,1,1-TCA	1,1-DCA	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Ethyl Toluene	4-Methyl-2-Pentanone (MIBK)	Acetone	Carbon Disulfide	Chloroform	cis-1,2-DCE	Cyclohexane	Dichlorodifluoromethane	Freon 113	Heptane	Hexane	Isopropanol	o-xylene	PCE	Styrene	TCE	Tetrahydrofuran	trans-1,2-DCE	Trichlorofluoromethane	Vinyl Chloride
140-146 West Caribbean Drive	SV-1	9/21/2017	6.5	<4.4	<5.9	<13	**22,000**	<12	**300**	<13	<14	<12	<7.2	<42	<17	<15	**1,900**	<8.2	<13	<16	<14	<11	<23	<12	<20	<3.0	**990**	<6.6	160	<12	**1,700**
	SV-2	9/21/2017	6	<3.2	<4.3	<9.3	**12,000**	330	170	100	<10	62	<5.3	<30	<13	<11	58	<6.0	<9.8	1,200	<10	<8.2	<17	<8.9	**530**	<2.2	**2,800**	<4.8	<15	<9.0	<9.0
	SV-16	9/21/2017	5.5	<0.33	14	<0.96	<1.2	<0.91	<0.73	7.5	<1.0	<0.90	<0.55	<3.2	<1.3	<1.1	<1.5	<0.62	<1.0	<1.2	<1.0	<0.85	<1.7	6.2	<1.5	16	<0.52	<0.50	<1.6	<0.94	<0.94
	SV-3	9/21/2017	5.5	<5.2	<5.3	<9.2	**34,000**	<7.1	150	<4.8	<4.2	<4.3	<5.5	<14	<18	<9.0	**3,300**	<7.8	<8.1	630	<6.3	<8.8	<13	<9.0	**570**	<3.9	**1,900**	<4.1	100	<6.4	**420**
141 Caspian Court	SV-4	9/25/2017	5.5	6.9	<0.47	<1.0	130	50	42	30	11	14	<0.57	<3.3	<1.4	<1.2	87	5.2	26	140	<1.1	<0.89	<1.8	<0.97	**810**	<0.24	**580**	<0.53	9.9	<0.98	**36**
	SV-5	9/25/2017	5.5	<0.36	<0.48	<1.0	<1.3	1,000	<0.79	35	15	10	<0.58	<3.4	<1.4	<1.2	<1.6	<0.67	7.7	130	<1.1	<0.91	<1.8	<0.99	**1,200**	<0.25	**150**	<0.54	<1.7	<1.0	<1.0
	SV-6	9/25/2017	6	<0.33	8.5	<0.96	23	93	<0.73	30	16	13	<0.54	<3.2	<1.3	<1.1	<1.5	<0.62	<1.0	300	<1.0	<0.85	<1.7	5.3	**2,900**	<0.23	**120**	<0.50	<1.6	20	<0.93
	SV-7	9/25/2017	5	<0.33	<0.44	<0.96	<1.2	21	<0.73	12	<1.0	<0.89	<0.54	<3.1	<1.3	<1.1	<1.5	<0.62	8.1	140	<1.0	<0.84	<1.7	<0.92	**1,300**	<0.23	**65**	<0.50	<1.6	<0.93	<0.93
	SV-8	9/25/2017	5	<0.33	<0.44	<0.96	13	930	<0.73	<0.98	<1.0	<0.90	<0.54	<3.2	<1.3	<1.1	<1.5	<0.62	<1.0	560	<1.0	<0.85	<1.7	<0.92	**2,000**	<0.23	**120**	<0.50	<1.6	31	<0.93
1393-1395 Brregas Avenue	SV-9	9/21/2017	5.5	<0.33	16	<0.96	<1.2	13	<0.73	6.1	<1.0	6.5	<0.54	<3.2	<1.3	<1.1	<1.5	<0.62	<1.0	57	<1.0	<0.85	<1.7	5.9	**480**	<0.23	**17**	<0.50	<1.6	<0.94	<0.93
	SV-10	9/21/2017	6.5	<0.33	<0.44	<0.96	<1.2	<0.90	<0.73	<0.98	<1.0	<0.89	5.1	<3.1	<1.3	29	<1.5	<0.62	<1.0	<1.2	<1.0	<0.84	<1.7	<0.92	<1.5	<0.23	<0.51	18	<1.6	<0.93	<0.93
	SV-17	9/21/2017	5.5	10	34	<0.96	33	<0.91	9.1	6.5	<1.0	5.9	<0.55	37	30	<1.1	24	25	<1.0	34	80	99	<1.7	6.1	9.8	<0.23	11	<0.50	<1.6	<0.94	**7.7**
1383 Borregas Avenue	SV-11	9/21/2017	4.5	5.5	38	11	28	48	<0.76	19	7.9	18	<0.57	32	<1.4	<1.2	<1.5	<0.65	<1.0	240	5.1	<0.88	<1.8	13	**1,000**	<0.24	**30**	<0.52	<1.7	20	<0.97
	SV-12	9/21/2017	5	<0.35	7.9	<1.0	5	39	<0.77	<1.0	<1.1	<0.95	<0.58	34	<1.4	<1.2	<1.6	<0.66	<1.1	63	<1.1	<0.90	<1.8	<0.97	**16**	<0.24	<0.54	<0.53	<1.7	22	<0.99
1325 Borregas Avenue	SV-13	9/25/2017	5	<0.34	<0.46	<0.98	<1.2	50	<0.75	41	18	12	<0.56	<3.2	<1.4	<1.1	<1.5	<0.64	<1.0	200	<1.1	<0.87	<1.8	<0.94	**380**	<0.24	<0.53	<0.51	<1.6	33	<0.96
	SV-14	9/25/2017	5.5	<0.33	<0.44	<0.95	<1.2	9.6	<0.72	<0.97	<1.0	<0.88	<0.54	<3.1	<1.3	<1.1	<1.5	<0.61	<1.0	11	<1.0	<0.84	<1.7	<0.91	**33**	<0.23	<0.51	<0.50	<1.6	<0.92	<0.92
	SV-15	9/25/2017	5	<0.34	<0.45	<0.98	<1.2	39	<0.75	20	14	9.6	<0.56	<3.2	<1.3	<1.1	<1.5	<0.63	<1.0	34	<1.1	<0.86	<1.8	<0.94	**1,300**	<0.24	**62**	<0.51	<1.6	7.1	<0.95
Commercial ESL[1]				14	44,000	160	10,000	150,000	260	NE	NE	NE	440,000	4,500,000	NE	18	1,200	NE	NE	NE	NE	NE	NE	15,000	67	130,000	100	NE	12,000	NE	5.2

1 Commercial Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019.
< Not detected at or above laboratory reporting limit
NE Not Established
BOLD Concentration exceeds selected environmental screening criteria

CORNERSTONE EARTH GROUP

Table 1. Analytical Results of Selected Soil Samples - OCPs, Petroleum Hydrocarbons, Metals
(Concentrations in mg/kg)

Property	Boring ID	Sample ID	Soil Type	Date	Depth (feet)	4,4´-DDD	4,4´-DDE	4,4´-DDT	DDT Total	Dieldrin	TPHd	TPHo	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Vanadium	Zinc
390-394 West Caribbean Drive	SB-4	SB-4 (1-1.5)	Fill and/or Reworked Native	4/26/2017	1-1½	0.018	0.28	<0.002	0.298	<0.002	22	53	5.4	250	0.53	<0.30	85	19	51	24	0.09	<1.2	100	65	74
360-364 West Caribbean Drive	SB-5	SB-5 (5-5.5)	Native	4/25/2017	5-5½	<0.002	<0.002	<0.002	<0.002	<0.002	---	---	5.5	---	---	---	---	---	---	7.5	0.079	---	---	---	---
	SB-23	SB-23 (2-2.5)	Fill and/or Reworked Native	4/25/2017	2-2½	0.0056	0.056	<0.0019	0.0616	<0.0019	74	240	8	**490**	0.83	1.7	63	13	37	12	0.097	4.2	73	64	94
		SB-23 (4-4.5)	Native	4/25/2017	4-4½	0.02	0.12	<0.002	0.14	<0.002	---	---	4.3	---	---	---	---	---	---	14	<0.0088	---	---	---	---
1330-1370 Bordeaux Drive	SB-7	SB-7 (1-1.5)	Native	4/24/2017	1-1½	0.031	0.25	<0.002	0.281	0.0041	---	---	3.8	---	---	---	---	---	---	10	0.15	---	---	---	---
	SB-8	SB-8 (1-1.5)	Fill and/or Reworked Native	4/24/2017	1-1½	0.012	0.11	<0.0019	0.122	<0.0019	4.7	<49	3.8	240	0.63	<0.32	72	14	39	11	0.084	<1.3	67	56	61
	SB-9	SB-9 (1-1.5)	Native	4/24/2017	1-1½	0.025	0.65	0.076	0.751	<0.0099	---	---	4	---	---	---	---	---	---	11	0.1	---	---	---	---
	SB-17	SB-17 (1-1.5)	Fill and/or Reworked Native	4/24/2017	1-1½	<0.002	<0.002	<0.002	<0.002	<0.002	2.7	<50	4.7	270	0.63	<0.38	71	14	38	10	0.12	<1.5	62	62	55
	SB-18	SB-18 (3-3.5)	Native	4/24/2017	3-3½	0.044	0.23	<0.002	0.274	0.0036	---	---	2.6	---	---	---	---	---	---	9	0.22	---	---	---	---
	SB-19	SB-19 (1-1.5)	Native	4/25/2017	1-1½	0.024	0.31	<0.002	0.334	0.0037	---	---	3.5	---	---	---	---	---	---	11	<0.010	---	---	---	---
	SB-20	SB-20 (1-1.5)	Fill and/or Reworked Native	4/25/2017	1-1½	0.013	0.13	<0.002	0.143	<0.002	4.9	<50	2.6	150	0.49	<0.28	52	9.9	28	6	0.074	<1.1	47	40	46
370-376 West Caribbean Drive	SB-13	SB-13 (4-4.5)	Native	4/25/2017	4-4½	<0.002	<0.002	<0.002	<0.002	<0.002	---	---	3	---	---	---	---	---	---	7.1	0.047	---	---	---	---
Environmental Screening Level						2.7	1.8	1.9	1	0.037	260	1,600	11	390 (15,000)	5	1.9	170	23	180	54	13	6.9	145	390	340
Screening Level Basis						ESL[1]	ESL[2]	ESL[2]	TTLC[3]	ESL[2]	ESL[1]	ESL[1]	Duverge[4]	ESL[1,2]	ESL[1]	ESL[1]	Scott[5]	ESL[1]	ESL[1]	Scott[5]	ESL[1]	ESL[1]	Scott[5]	ESL [2]	ESL [1]

1 Tier 1 Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019. Value in parenthesis is the residential direct exposure human health risk ESL.
2 Residential direct exposure human health risk ESL - January 2019.
3 Total Threshold Limit Concentration - California Code of Regulations, Title 22.
4 Duverge, 2011. Establishing Backround Arsenic in Soil of the Urbanized San Francisco Bay Region.
5 Scott, Christina. December 1991. Background Metal Concentrations in Soils in Northern Santa Clara County. Value is maximum background detection reported by Scott.
< Not detected at or above laboratory reporting limit
--- Not Analyzed
BOLD Concentration exceeds environmental screening criteria.

Table 2. Analytical Results of Selected Ground Water Samples - VOCs, TPHg
(Concentrations in µg/L)

Property	Boring ID	Sample ID	Date	Screen Depth (feet)	PCE	TCE	cis-1,2-DCE	1,1 - DCE	4-Isopropyltoluene	Freon 113	TPHg
390-394 West Caribbean Drive	SB-1	SB-1 (10-15)	4/26/2017	10-15	<0.50	**7.9**	0.63	<0.50	<1.0	<0.50	<50
	SB-2	SB-2 (10-15)	4/26/2017	10-15	<0.50	1.6	<0.50	<0.50	<1.0	<0.50	<50
360-364 West Caribbean Drive	SB-5	SB-5 (10-15)	4/26/2017	10-15	<0.50	1.9	<0.50	1.9	<1.0	<0.50	<50
	SB-6	SB-6 (10-15)	4/24/2017	10-15	<0.50	1.4	<0.50	1.1	4.3	<0.50	<50
	SB-15	SB-15 (10-15)	4/25/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-23	SB-23 (10-15)	4/25/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
1330-1370 Bordeaux Drive	SB-7	SB-7 (10-15)	4/24/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-8	SB-8 (10-15)	4/24/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	0.58	<50
	SB-9	SB-9 (10-15)	4/25/2017	10-15	0.7	<0.50	<0.50	<0.50	<1.0	0.52	<50
	SB-16	SB-16 (10-15)	4/24/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-17	SB-17 (10-15)	4/24/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-18	SB-18 (10-15)	4/24/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-19	SB-19 (10-15)	4/25/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-20	SB-20 (10-15)	4/25/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
380-384 West Caribbean Drive	SB-10	SB-10 (10-15)	4/26/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-11	SB-11 (10-15)	4/26/2017	10-15	<0.50	0.94	<0.50	<0.50	<1.0	<0.50	<50
	SB-12	SB-12 (10-15)	4/26/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
370-376 West Caribbean Drive	SB-13	SB-13 (10-15)	4/25/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
	SB-14	SB-14 (10-15)	4/25/2017	10-15	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	<50
Environmental Screening Level					5	5	6	6	NE	1,200	760
Screening Level Basis					MCL[1]	MCL[1]	MCL[1]	MCL[1]	NE	MCL[1]	ESL[2]

1 Maximum Contaminant Level (MCL), State Water Resources Control Board - October 2018.
2 MCL not established. Value is residential direct exposure human health risk Environmental Screening Level (ESL). RWQCB, San Francisco Bay Region - January 2019.
< Not detected at or above laboratory reporting limit
BOLD Concentration exceeds MCL
NE Not Established

CORNERSTONE EARTH GROUP

Table 3. Analytical Results of Selected Soil Vapor Samples - VOCs, Fixed Gases
(Concentrations in µg/m³, unless stated otherwise)

Property	Boring ID	Date	Probe Depth (feet)	Benzene	Toluene	1,1 - DCE	1,1,1-TCA	2,2,4-Trimethylpentane	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIBK)	Acetone	Carbon Disulfide	cis-1,2-DCE	Chloroform	Cyclohexane	Freon 12	Freon 113	Heptane	Hexane	Isopropanol	m,p-Xylene	PCE	TCE	Tetrahydrofuran	trans-1,2-DCE	Trichlorofluoromethane	Vinyl Chloride	Ethanol	Oxygen (%)	Carbon Dioxide (%)	Methane (%)
390-394 West Caribbean Drive	SV-1	5/1/2017	5.5	**15**	<1.0	100	<2.2	<0.98	<3.8	<2.5	<4.8	<1.7	490	<11	<1.4	<11	77	<1.8	12	<1.6	<10	**92**	**2,700**	<1.4	83	<2.4	**27**	<2.4	---	---	---
	SV-2	5/1/2017	4.5	10	6.9	<1.0	<1.1	14	<1.9	<1.3	53	<0.85	<1.4	<5.7	<0.71	<5.8	16	14	9.5	<0.83	<5.0	<1.1	**160**	<0.71	<1.7	<1.2	<0.27	14	---	---	---
	SV-3	5/1/2017	5	13	<0.55	120	<1.1	<0.51	<2.0	<1.3	<2.5	<0.88	**1,500**	<5.9	<0.73	<6.0	260	<0.95	<0.28	<0.86	6.1	**250**	**1,700**	<0.74	120	<1.2	**160**	<1.2	---	---	---
	SV-4	5/1/2017	5	7.6	<0.59	<1.1	<1.2	<0.54	<2.1	<1.4	<2.7	<0.93	110	<6.2	<0.78	<6.3	<2.1	<1.0	<0.30	<0.92	<5.6	<1.2	100	<0.78	<1.9	<1.3	5.1	24	---	---	---
	SV-21	5/1/2017	6	**19**	12	<1.1	<1.2	<0.53	38	6.6	99	18	160	<6.1	<0.76	<6.2	<2.0	39	16	<0.89	11	<1.2	36	13	5.9	<1.3	**17**	<1.3	1.1	16	0.4
360-364 West Caribbean Drive	SV-5	4/28/2017	5	7.1	<0.49	16	<0.99	<0.79	<3.3	<0.60	<3.5	<1.4	<1.6	<6.4	<0.68	<6.5	<1.4	<1.1	<0.93	<1.9	<5.7	<1.7	<0.56	<0.55	<1.8	<1.0	**9.6**	<3.2	---	---	---
	SV-6	5/1/2017	5	<0.35	<0.55	<1.0	<1.1	<0.51	<2.0	<1.3	<2.5	<0.88	<1.4	<5.8	<0.73	<5.9	<2.0	<0.94	<0.28	<0.86	<5.2	13	<1.5	<0.73	<1.8	<1.2	<0.28	<1.2	---	---	---
	SV-15	4/28/2017	5	6.2	8.9	<1.2	<0.90	<0.72	<3.0	<0.54	<3.1	19	<1.5	<5.8	<0.62	<5.9	12	18	<0.84	<1.7	<5.2	<1.5	<0.51	<0.50	<1.6	11	<0.93	<2.9	---	---	---
	SV-23	4/28/2017	5	7.9	8.8	<1.1	<1.2	12	29	<1.4	110	31	<1.5	<6.0	<0.75	<6.1	<2.0	100	8.7	<0.88	<5.4	<1.2	<1.5	4.7	<1.8	<1.3	<0.28	<1.3	1.2	13	0.12
1330-1370 Bordeaux Drive	SV-7	4/27/2017	5	4.5	9.8	<1.2	<0.88	9.7	23	<0.53	95	<1.3	<1.4	<5.7	6.4	<5.8	<1.2	91	12	<1.7	<5.1	<1.5	<0.50	<0.49	<1.6	<0.92	<0.91	<2.8	---	---	---
	SV-8	4/27/2017	5	7.8	12	<1.2	16	5.6	24	<0.54	95	<1.3	<1.5	<5.8	<0.62	<5.9	470	62	5.3	<1.7	8.4	24	<0.51	<0.50	<1.6	15	<0.92	<2.9	---	---	---
	SV-9	4/27/2017	5	8.4	17	<1.2	9.9	10	<3.0	<0.55	<3.2	46	<1.5	<5.9	9.3	<6.0	280	140	33	<1.7	9	**100**	<0.52	<0.50	<1.6	10	<0.94	<2.9	---	---	---
	SV-16	4/27/2017	5	4.8	12	<1.1	<0.86	10	<2.8	<0.52	31	65	<1.4	<5.6	8.2	<5.6	<1.2	100	27	<1.6	10	<1.4	<0.49	<0.48	<1.5	<0.89	<0.89	<2.8	---	---	---
	SV-18	4/28/2017	5	4.8	6.4	<1.1	<0.83	7.5	28	<0.50	100	38	<1.4	<5.4	<0.57	<5.4	<1.1	66	14	<1.6	5.5	<1.4	<0.47	<0.46	<1.5	<0.86	<0.86	<2.7	---	---	---
	SV-19	4/28/2017	5	6.6	<0.44	<1.2	<0.89	<0.71	<3.0	<0.54	40	<1.3	<1.5	<5.8	<0.61	<5.9	<1.2	<1.0	<0.84	<1.7	<5.1	<1.5	<0.51	<0.50	<1.6	<0.92	<0.92	<2.9	---	---	---
	SV-20	4/28/2017	5	<0.32	<0.43	<1.1	<0.88	<0.70	<2.9	<0.53	30	<1.3	<1.4	<5.7	<0.61	<5.8	<1.2	<1.0	<0.82	<1.7	<5.1	<1.5	<0.50	<0.49	<1.6	15	<0.91	<2.8	---	---	---
380-384 West Caribbean Drive	SV-11	5/1/2017	5	6.2	<0.57	<1.1	<1.2	<0.52	<2.1	<1.4	<2.6	<0.90	<1.5	<6.0	<0.75	<6.1	<2.0	6.8	<0.29	<0.89	<5.4	<1.2	<1.5	<0.76	<1.8	<1.3	<0.28	<1.3	---	---	---
	SV-12	5/1/2017	5	12	<1.1	<2.0	<2.2	<1.0	<3.9	<2.6	<5.0	<1.7	<2.9	<12	<1.4	<12	<3.9	14	<0.56	<1.7	<10	<2.2	<2.9	<1.4	<3.4	<2.4	<0.54	<2.5	---	---	---
	SV-22	5/1/2017	5	6.9	5.8	<1.1	<1.2	13	<2.2	<1.4	34	<0.95	<1.6	<6.4	<0.79	<6.4	<2.1	17	11	<0.94	<5.7	<1.2	11	<0.80	<1.9	<1.3	<0.30	16	1.6	15	<0.00012
370-376 West Caribbean Drive	SV-13	4/28/2017	5	9.7	13	<1.0	<1.1	8.6	<1.9	<1.3	39	51	<1.4	<5.7	5.5	<5.8	<1.9	110	17	<0.84	6.6	<1.1	<1.4	8	<1.7	8.8	<0.27	<1.2	---	---	---
	SV-14	4/28/2017	5	14	26	<1.2	<0.93	8.8	<3.1	<0.56	<3.2	84	<1.5	<6.0	14	<6.1	27	200	43	<1.8	13	<1.6	<0.53	<0.52	<1.6	47	<0.96	<3.0	---	---	---
Commercial ESL[1]				14	44,000	10,000	150,000	NE	730,000	440,000	4,500,000	NE	1,200	18	NE	NE	NE	NE	NE	NE	15,000	67	100	NE	12,000	NE	5.2	NE	NE	NE	NE

1 Commercial Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019.
< Not detected at or above laboratory reporting limit.
NE Not Established
--- Not Analyzed
BOLD Concentration exceeds Commercial ESL.

CORNERSTONE EARTH GROUP

APPENDIX B – HEALTH AND SAFETY PLAN

PROJECT HEALTH AND SAFETY PLAN

100 and 200 Caribbean Campus Project
West Caribbean Drive and Borregas Avenue
Sunnyvale, California

***Plan Prepared For*:**

Cornerstone Earth Group, Inc.
1259 Oakmead Parkway
Sunnyvale, CA 94085
(408) 245-4600

***Prepared By*:**
Earth Safety Dynamics
70 Rockrose Street
Livermore, CA 94551
(925) 455-6601

(Revision 1)

July 11th, 2018

Limitations

Services provided by Earth Safety Dynamics, Inc. and its subcontractors have been provided in accordance with generally accepted professional practices for the nature and conditions of similar work completed in the same or similar localities, at the time the work was performed. The scope of work for the project was conducted within the limitations prescribed by the client. This Health and Safety Plan reflects conditions as reported to Earth Safety Dynamics at the time of production, and is not meant to represent a legal opinion. This Plan is provided as a framework and may be adopted by tiered subcontractors, or they may develop their own equally protective Plan. No other warranty, expressed or implied, is made. This Plan was prepared for the sole use of Cornerstone Earth Group and their designees and may not be duplicated or used by any other party without the expressed consent of the client.

Kevin R. Braun, CIH
Certified Industrial Hygienist

ABIH Certification # 7029

July 11th, 2018

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Appendices

List of Abbreviations and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
A.L.	Action Level
A.P.R.	Air Purifying Respirator
ATCM	Airborne Toxic Control Measure
C	Ceiling Limit (8 CCR 5155)
COPC	Contaminant Of Potential Concern
c.y.	Cubic Yard
bgs	Below Ground Surface
Cal/OSHA	California Department of Labor; Division of Occupational Safety and Health
CHHSL	California Health Hazard Screening Level
C.I.H.	Certified Industrial Hygienist (American Board of Industrial Hygiene)
dBA	Decibels; A-Weighted Range
ESL	Environmental Screening Level
ESLI	End of Service Life Indicator
GFCI	Ground Fault Circuit Interrupter
IDLH	Immediately Dangerous to Life or Health
LEL	Lower Explosive Limit
MSHA	Mine Safety and Health Administration
M.U.C.	Maximum Use Concentration
NIOSH	National Institute for Occupational Safety and Health
NEA	Negative Exposure Assessment
NOA	Naturally Occurring Asbestos
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit (8 CCR 5155)
PID	Photoionization Detector
PNAs	Polynuclear (or Polycyclic) Aromatic Hydrocarbons
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation & Recovery Act
REL	Recommended Exposure Limit; NIOSH
SAR	Supplied Air Respirator
SSO	Site Safety Officer
STLC	Solubility Threshold Limit Concentration
TCLP	Toxicity Characteristic Leaching Procedure
TLV	Threshold Limit Value (American Conference of Governmental Hygienists)
TPH	Total Petroleum Hydrocarbons
TTLC	Total Threshold Limit Concentration
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
WET	Waste Extraction Test

SECTION 1
INTRODUCTION

On behalf of Cornerstone Earth Group, Inc. (Cornerstone), Earth Safety Dynamics, Inc. has developed this site Health And Safety Plan (HASP) to inform personnel of potential hazards associated with earthwork activities for the planned commercial development at the 100 and 200 Caribbean Campus in Sunnyvale, California (Site).

Individual contractors performing soil-intrusive activities will be required to prepare their own Plans that are equally or more protective than this HASP. Each contractor is responsible for designating a medical provider and own safety and emergency response personnel and is responsible for the health and safety of their own employees.

The development, referred to as the 100 and 200 Caribbean Campus project, consists of a 40-acre Site consisting of 10 parcels developed with 13 commercial buildings. The Sunnyvale West Outfall Canal bisects the Site, separating the 100 Caribbean and 200 Caribbean development projects. The Site is located within a relatively large geographical area underlain by multiple plumes of Volatile Organic Compound (VOC) - impacted ground water. This contamination appears both to have originated from previous site uses and to have been transported from a number of nearby off-site sources.

Contaminants found in soil, soil gas, and groundwater are outlined in the Site Management Plan prepared by Cornerstone Earth Group. This summarizes previous investigations and is the primary source document used to prepare this Health and Safety Plan:

March 15, 2018; Cornerstone Earth Group: Site Management Plan: 100 and 200 Caribbean Campus Project

(Site history, including previous property uses and sources of contamination and suspected contamination, is presented in the source document and is incorporated by reference and not repeated here.)

The main contaminants of concern (COCs) identified in this document as persisting in the soil, soil vapor, and groundwater include PCE, TCE, cis-1,2 DCE, trans-1,2 DCE, 1,1-DCE, vinyl chloride, 1,2-DCA, 1,1-DCA, and 1,4-dioxane.

The parcel being redeveloped currently is occupied by a number of structures that will be demolished before earthwork begins.

The potential exists for encountering contaminated/hazardous soils, underground storage tanks (USTs), and possible hazardous building materials during various phases of the project. Work will not proceed in areas of VOC contamination until notification has been made to the Santa Clara County Department of Environmental Health and the Bay Area Air Quality Management District (BAAQMD) under Regulation 8, Rule 40, Section 402. (Notification must be made a minimum of five days before commencement of excavation.)

EH&S personnel will be contacted by the General Contractor before work in areas of identified contamination is performed, or if any indications of additional (unforeseen) contamination are encountered, including but not limited to:

- Stained or discolored soil
- Characteristic or unidentified odor
- Visible unidentified residues
- Underground Storage Tank(s)

This HASP establishes the policies and procedures that protect workers and the public from potential hazards posed by work with these materials at this site. All work performed by the General Contractor and subs will be executed in

a manner that minimizes the probability of injury, accident, or incident.

This HASP is written and all Site activities will be conducted in accordance with all applicable Federal OSHA and California Division of Occupational Safety and Health requirements contained respectively in 29 CFR 1910.120 and 1926, and California Title 8, § 1529, and 1500 – 1938, and 5192.:

1) United States Department of Labor, OSHA Standards, specifically:

- Title 29 CFR Part 1910.120 - Hazardous Waste Site Operations and Emergency Response
- Title 29 CFR Part 1926 - Safety and Health Regulations for Construction

2) California Occupational Safety and Health Regulations, specifically:

- Title 8 CCR §1532.1 – Lead in Construction
- Title 8 CCR §5192 - Hazardous Waste Operations and Emergency Response
- Title 8 CCR §5194 - Hazard Communication
- Title 8 CCR §5095-5100 - Hearing Conservation
- Title 8 CCR Chapter 4, Subchapter 4 - Construction Safety Orders
- Title 8 CCR §3203 and §1509 - Injury and Illness Prevention Programs

3) USEPA Standard Operating Safety Guides, July 1988.

4) NIOSH/OSHA/USCG/USEPA: *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985

SECTION 2
PROJECT DESCRIPTION

The Site is bound by West Caribbean Drive and the Sunnyvale Landfill to the north, Borregas Avenue and commercial development to the east, Caspian Court and commercial development to the south, Bordeaux Drive and undeveloped land to the southwest, and office buildings and commercial buildings occupied by Yahoo! Inc. to the west.

The developer is planning to demolish the buildings and redevelop the Site with Class A office space. For 200 Caribbean, the planned 5-story approximately 505,140 square foot building will have a ground floor footprint of approximately 207,828 square feet.

The planned five-story building at 100 Caribbean will consist of approximately 536,750 square feet of office space with a ground floor footprint of approximately 187,356 square feet.

Building demolition is tentatively scheduled to start in December 2018 with Site development activities anticipated to begin in Summer 2019.

The new buildings will be supported by drilled, cast-in-place, displacement augercast piles. Augercast piles are concrete piles that are cast in place using a hollow-stem auger that drills to the design depth and then the sand-cement grout (4,000 to 6,000 psi grout) is pumped through the hollow-stem as the drill stem is extracted. We anticipate that drilling spoils will be minor. Various types of steel reinforcing, including rebar cages or H-piles may be installed into the still-wet grout after drilling to satisfy bending moment requirements.

Excavation and spoil generation and handling or disposal will be required utility trenching, pile caps, and grade beams. Dewatering and water management likely will be required for deeper excavations.

The potential for direct contact with hazardous soils and exposure to particulate bound contaminants and VOCs exists during demolition and disposal of existing subsurface encumbrances and excavation and stockpile or disposal of spoils. Normal dust control and decontamination and personal hygiene during Site activities are expected to help prevent exposure to these substances. Site personnel involved in operations covered by the Hazardous Waste Operations and Emergency Response standard (as defined in 29 CFR 1910.120 and 8 CCR 5192) are bound to satisfy Cal-OSHA requirements for work in those areas, and they will be trained in accordance with that standard. All others working on Site will be trained in accordance with the Hazard Communication (8 CCR 5144). Dust control and other engineering control measures will be strictly enforced by the General Contractor to maintain exposures as low as reasonably achievable on Site and at neighboring properties.

Contractor tasks affected by this HASP may include exploratory excavation and dewatering activities, demolition of existing foundations, pavement and cap materials, demolition and disposal of various subsurface obstructions, trenching and removal/replacement of existing sewer laterals, handling of some auger spoils, and excavation and stockpiling of soils from grade beams and pile caps, and loading and disposal of contaminated soils and rubble.

SECTION 3
ORGANIZATION AND RESPONSIBILITIES

The General Contractor shall maintain a policy of providing its employees, with information and procedures in accordance with the requirements of the California OSHA Hazard Communication Standard in order to protect them and the adjacent community from any adverse effects that might result from work at a job site involving potentially hazardous substances. All personnel working on this project will follow the health and safety procedures set forth in their HASP. Visitors will not be allowed entry unless they have read and agreed to comply with this plan. The HASP acknowledgment will be signed by all Cornerstone employees who actively participate at this project.

The Cornerstone Earth Group, Inc. Staff Organizational Chart is presented in Figure 1. The responsibilities and authorities for key personnel are discussed below.

3.1 SITE SAFETY OFFICER (SSO)

The General Contractor's Site Safety Officer shall have the following responsibilities:

- Health surveillance of all Site workers.
- Documenting that safety procedures in effect for project activities are in compliance with appropriate federal, state, and local regulations
- Maintaining personnel exposure air monitoring records (if performed) for Site workers
- Providing and ensuring proper use of appropriate personal protective equipment (PPE) by Site workers
- Consulting with project CIH regarding PPE assignment and adjustments based on exposure data

The SSO will maintain a safety log (in the Appendices), which will be kept for Site activities. This log will include safety meeting topics, training records, air monitoring information, and any incidents related to employee health and safety. The SSO has responsibility for implementing and enforcing all aspects of this HASP for site workers. He or she will oversee any personnel monitoring and in consultation with the project CIH will decide when action levels have been reached which require work stoppage. The SSO establishes and enforces the protective equipment to be used by site personnel for all site activities.

3.2 EMPLOYEE SAFETY RESPONSIBILITY

Although the General Contractor is responsible for providing a safe and healthful workplace, each employee is responsible for his/her own safety as well as the safety of those around him/her. All Site personnel are aware that they are responsible for isolation and correction of unsafe conditions, either by direct action (fix it themselves) or by alerting their respective supervisors after isolating the problem. All employees shall use provided equipment in a safe and responsible manner as directed by his supervisor.

3.2.1 Buddy System

No work will be performed in any designated exclusion zone without benefit of the "buddy system". Workers will be paired in buddy teams at the start of each shift for any and all hazardous waste operations or emergency response work to be undertaken during the day. Buddy teams will remain in communication for the duration of the shift.

3.3 LOGS, REPORTS, AND RECORD KEEPING

Recordkeeping is an important component of any effective health and safety program. Safety records for site activities shall be updated daily. The following logs, reports, and records shall be maintained in the appendices of this HASP:

- Safety meetings;
- Training logs - Site specific and visitors;
- Weekly safety inspection logs;
- Employee/visitor sign-in;
- Ambient and personal air monitoring results

SECTION 4
JOB HAZARD ANALYSIS

This section discusses chemical, physical, and environmental hazards to workers on the site.

4.1 CHEMICAL HAZARDS

The chemicals listed in Table 4.1 are believed or suspected to be present on this Site.

Contaminants of potential concern (COPCs) in soil, soil vapor, and ground water include trichloroethylene (TCE), dichloroethylene (DCE), vinyl chloride (VC). The target compound for monitoring will be TCE, as this is present in the highest concentrations compared to its PEL. Table 1 presents the summary of the COPC that may be encountered at the Site.

ORGANIC COMPOUNDS

Volatile Organic Compounds (VOCs):

Solvent residues are the primary organic contaminants identified as possibly existing on site that present potential exposure. Hazardous components and subcomponents of these wastes are expected to include:

- PCE
- DCE
- DCA
- TCE
- Vinyl Chloride
- 1,4 - dioxane

cis - 1,2 - Dichloroethylene (cDCE)

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. Breathing high levels of 1,2-dichloroethene can cause nausea, drowsiness, and fatigue and can be fatal in high concentrations. Animal studies have shown liver and lung damage and anemia, and the effects were more severe with longer exposure times. High concentrations resulted in heart damage as well. One study indicated it as a possible fetotoxin. The EPA has determined that *cis*-1,2-dichloroethene is not classifiable as to its human carcinogenicity.

1.2 – dichloroethane (Ethylene dichloride, DCA)
Nervous system disorders, liver and kidney diseases, and lung effects have been reported in humans ingesting or inhaling large amounts of 1,2-dichloroethane. In laboratory animals, breathing or ingesting large amounts of 1,2-dichloroethane have also caused nervous system disorders and liver, kidney, and lung effects. Animal studies also suggest that 1,2-dichloroethane may damage the immune system. Kidney disease has also been seen in animals ingesting low doses of 1,2-dichloroethane for a long time. Studies in animals indicate that 1,2-dichloroethane does not affect reproduction. The EPA has determined that 1,2-dichloroethane is a probable human carcinogen and the International Agency for Cancer Research (IARC) considers it to be a possible human carcinogen.

Gasoline
Gasoline is a colorless, pale brown, or pink liquid, and is very flammable. Typically, gasoline contains more than 150 chemicals, including small amounts of benzene, toluene, ethylbenzene, xylene and sometimes lead or other additives such as methyl tert-butyl ether (MTBE). How the gasoline is made determines which chemicals are present in the gasoline mixture and how much of each is present. The actual composition varies with the source of the crude petroleum, the manufacturer, and the time of year.

Many of the harmful effects seen after exposure to gasoline are due to the individual chemicals in the gasoline mixture, such as benzene and lead. Inhaling high concentrations of gasoline is irritating to the lungs, and ingestion is irritating to the lining of the stomach when swallowed. Inhaling in high levels of gasoline for short periods or swallowing large amounts of gasoline may also cause harmful effects on the nervous system, including coma and the inability to breathe, while less serious effects include dizziness and headaches.

There is not enough information available to determine if gasoline causes birth defects or affects reproduction. Automotive gasoline is currently undergoing review by the EPA for cancer classification.

Trichloroethylene (TCE)
Most of the trichloroethylene used in the United States is released into the atmosphere from industrial degreasing operations. Acute (short-term) and chronic (long-term) inhalation exposure to trichloroethylene can affect the human central nervous system (CNS), with symptoms such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness. Liver, kidney, immunological, endocrine, and developmental effects have also been reported in humans. A recent analysis of available epidemiological studies reports trichloroethylene exposure to be associated with several types of cancers in humans, especially kidney, liver, cervix, and lymphatic system. Animal studies have reported increases in lung, liver, kidney, and testicular tumors and lymphoma. EPA currently is reassessing the cancer classification of trichloroethylene. In Utero exposure to low levels of TCE has been linked to heart valve defects in the developing fetus.

Vinyl Chloride
Vinyl chloride is known also as chloroethene, chloroethylene, ethylene monochloride, or monochloroethylene. At room temperature, it is a colorless gas, it burns easily, and it is not stable at high temperatures. Vinyl chloride exists in liquid form if kept under high pressure or at low temperatures. Vinyl chloride has a mild, sweet odor, which may become noticeable at 3,000 parts vinyl chloride per million parts (ppm) of air. However, the odor is of little value in preventing excess exposure. The primary target of vinyl chloride acute exposure is the CNS. Signs and symptoms include dizziness, ataxia, inebriation, fatigue, numbness and tingling of the extremities, visual disturbances, coma, and death. Prolonged absorption of vinyl

chloride can induce hepatotoxicity and hepatic cancers, including angiosarcoma. The U.S. Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have classified vinyl chloride as a known human carcinogen. Vinyl chloride has caused angiosarcoma of the liver in heavily exposed individuals.

Monitoring will be done for organics any time that odors are detected or stained soils are encountered. Sustained reading of ≥ 10 ppm total VOCs (measured with a PID or other organic vapor monitor) in a worker breathing zone will require work stoppage and/or use of respiratory protection as directed by the SSO in consultation as required with the project CIH.

Representative breathing zone and perimeter monitoring will be done for TCE compounds in accordance with Section 8 of this Plan.

Tetrachloroethylene (Perchloroethylene; PCE)

Tetrachloroethylene is widely used for dry-cleaning fabrics and metal degreasing operations. Effects resulting from acute (short term) high-level inhalation exposure of humans to tetrachloroethylene include irritation of the upper respiratory tract and eyes, kidney dysfunction, and neurological effects such as reversible mood and behavioral changes, impairment of coordination, dizziness, headache, sleepiness, and unconsciousness. The primary effects from chronic (long term) inhalation exposure are neurological, including impaired cognitive and motor neurobehavioral performance. Tetrachloroethylene exposure may also cause adverse effects in the kidney, liver, immune system and hematologic system, and on development and reproduction. Studies of people exposed in the workplace have found associations with several types of cancer including bladder cancer, non-Hodgkin lymphoma, multiple myeloma. EPA has classified tetrachloroethylene as likely to be carcinogenic to humans.

TABLE 4.1 MAJOR CONTAMINANTS OF POTENTIAL CONCERN ON-SITE				
Compound or Class	Description	Exposure Limits	Exposure Routes	Exposure Signs and Symptoms
Gasoline	Mixture of aliphatic and aromatic hydrocarbons. Colorless to light yellow liquid with characteristic odor	PEL = 300 ppm (AL = 25 ppm)	Inhalation Ingestion	Headache, narcosis, defatting dermatitis.
cis-dichloroethylene (cDCE)	Colorless liquid with a slightly acrid, chloroform-like odor	PEL = 200 ppm	Inhalation Ingestion	Irritation of eyes and respiratory system; CNS depression
Dichloroethane (ethylene dichloride; DCA)	Colorless liquid with a mild, chloroform-like odor	PEL = 1 ppm STEL = 4 ppm REL = CA **	Inhalation Ingestion Absorption	Irritation of eyes and respiratory system; skin redness, CNS depression, possible carcinogen
Tetrachloroethylene (PCE) $[\ ]_{max}$ = 0.43 ppm	Colorless liquid with a mild, chloroform-like odor	PEL = 25 ppm STEL = 100 ppm REL = CA **	Inhalation Ingestion Absorption	Irritation of eyes and respiratory system; skin redness, CNS depression, possible carcinogen
Trichloroethylene (TCE) $[\ ]_{max}$ = 0.50 ppm ††	Colorless liquid with a slightly acrid, chloroform-like odor	PEL = 25 ppm STEL = 100 ppm TLV = 10 ppm	Inhalation Ingestion	Irritation of eyes and respiratory system; CNS depression
Vinyl Chloride (VC) $[\ ]_{max}$ = 0.67 ppm ††	Colorless gas with a pleasant odor at high concentrations	PEL = 1 ppm REL = CA **	Inhalation	Lassitude, abdominal pain, GI bleeding, enlarged liver, cyanosis. Carcinogen

Notes

PEL Permissible Exposure Limit; 8 CCR 5155
STEL Short-Term Exposure Limit; 8 CCR 5155
TLV Threshold Limit Value (ACGIH)
AL Project Action Level for Respiratory Protection
ppm parts per million (by volume)
ppb parts per billion (by volume)
$\mu g/m^3$ micrograms per cubic meter
* California Action Level as defined in 8 CCR 1532.1 or Project Action Level
** Exposure to carcinogens maintained As Low As Reasonably Achievable
† Recommended Exposure Limit ; National Institute for Occupational Safety and Health (NIOSH)
†† Maximum detected concentration in soil gas

4.2 Exposure Prevention

Engineering controls (consisting primarily of an aggressive dust control program) are expected to be sufficient to control exposures to particulate - bound site contaminants.

The maximum detected VOC concentrations in soil gas are below their respective PELs.

$mg/m^3 = [(mg/m^3 \text{ dust}) \times (mg/kg \text{ TCE})]/10^6$

Using an assumed maximum TCE concentration of 1.0 mg/kg (see Cornerstone site characterizatio) in generated dust, the Action Level (AL) of 7 $\mu g/m^3$ (based on EPA's accelerated response action level) would be reached at total dust concentrations of approximately 700 mg/m^3, a value well in excess of the PEL for total nuisance dust and in fact impossible to achieve.

Dust becomes visible (depending on lighting, reflectivity, background, etc.) generally at or below a concentration of 2 mg/m^3. Specifications call for no visible fugitive dust evolution during earthwork, so the PEL for dust and particulate-bound contaminants is unlikely to be reached or exceeded. Required engineering controls (No earthwork will be performed without active dust suppression, achieved through application of water before and during soil-disturbing activities.) and personal protective equipment (PPE) requirements combined with general hygiene requirements (wash arms, face, and hands before eating or smoking) will prevent exposures due to inhalation or ingestion of contaminated dust.

Screening for organic vapors in soil vapor will be performed during initial disturbance of contaminated soils and during removal of selected subsurface utilities. A wash facility will be located on Site at all times. In addition, the SSO and Site Supervisor shall observe and warn the crew members to be aware of the initial symptoms of chemical exposure. The severity of exposure depends primarily on the specific activities undertaken and the care with which the activities are performed.

Any crew member will be removed from the work site and placed under watch immediately if these initial symptoms are noted:

- Dizziness or stupor
- Nausea, headaches, or cramps
- Irritation of the eyes, nose, or throat
- Euphoria
- Chest pains and coughing
- Rashes or burns

Level C protection may be required only in the event that unexpected contaminant concentrations are encountered or dust control efforts prove ineffective. Action levels for respiratory protection are established for the site based on maximum known concentrations. Respiratory protection will be utilized in accordance with Section 6.4 – 6.10 if the following sustained (≥ 5 minutes) breathing zone concentrations are recorded:

Contaminant	Action Level
Nuisance Dust (total)	5.0 mg/m^3
Organic Vapor (total VOC)	10 ppm
TCE	1 ppb (7 $\mu g/m^3$)
COPCs (other)	0.5 x PEL

4.2.1 Hazard Communication Program

The General Contractor shall implement a Hazard Communication Program. The purpose of this program is to transmit information about the various chemical hazards in the workplace to the workers using various media. The transmittal of information will be accomplished by means of a comprehensive hazard communication program, which will include container labeling and other forms of warning, Material Safety Data Sheets, and employee training in accordance with Title 8 CCR §5194. The program will be available at the GC's office for review by all employees. The GC will fulfill the hazard communication requirements through formal safety training, departmental safety

meetings, and job site safety meetings. Material Safety Data Sheets for all chemicals likely to be encountered on this job will be maintained and available on site.

4.3 PHYSICAL HAZARDS

To minimize physical hazards, the General Contractor shall develop standard safety protocols that will be followed at all times. Hazard analyses are produced, updated frequently, and reviewed daily with all affected crew members for every jobsite operation. Failure to follow safety protocols or continued negligence of these policies will result in expulsion of a crew member from the Site as well as possible termination of employment.

Site personnel must be familiar with the field activities that will be conducted at the site. They will be trained to work safely under various field conditions. In addition, Site workers will be required to use work practices designed to minimize physical hazards.

Hard hats, safety vests, and leather work boots will be required in all areas of the site.

4.3.1 Tripping, Slipping, and Falling Hazards

Site workers will be reminded daily to maintain sure footing on all surfaces. Use of safety harnesses and fall arrest/restraint will be required for any personnel working 6 or more feet above any surface, including on manlifts, and whenever they are exposed to impalement hazards.

To minimize tripping hazards caused by construction debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. This "house cleaning" effort will be enforced by the SSO at the end of each day.

4.3.2 Head, Eye, and Back Injuries

As minimum requirements, hard hats and safety glasses will be donned prior to entering any active work area or performing any related job tasks. (This includes visitors, outside service contractors, etc.) Personnel will be trained in and required to use proper lifting techniques for all lifts.

4.3.3 Falling Objects

All project tasks can be accomplished without any object free-falling to the ground. No personnel shall work under equipment or elevated loads at any time. Areas beneath elevated work will be barricaded and posted with warning signs.

4.3.4 Heavy Equipment and Traffic

The use of heavy excavators, scrapers, and other equipment on Site presents the greatest potential for injury to personnel. In order to minimize these hazards, designated routes will be established for transport of material through the Site, and specific traffic patterns will be established. All trucks will be equipped with operable backup alarms and shall use spotters for backing procedures.

Personnel needing to approach heavy equipment during operation will observe the following protocols:

1. Make eye contact with the operator.
2. Signal the operator to cease heavy equipment activity.
3. Approach the equipment and inform the operator of intentions.

Only qualified personnel, as determined by the Site Superintendent, will operate heavy equipment. Those crew members directly involved with spotting for the operator will be the only personnel allowed within the operating radius of the heavy equipment. All other personnel will remain a safe distance away from these operations.

General Contractor personnel and subcontractors will follow all Site traffic rules and instructions, including use of reflective safety vests. Barricades will be erected around any work sites within an open right-of-way, and all personnel will remain within barricaded area. Road and lane closures will be permitted by the City of Mountain View. Only trained flaggers will be used to direct traffic around and through the work area.

4.3.5 Site Pre-inspection of Equipment

Only equipment that is in safe working order will be permitted on site. To maintain this policy, all equipment brought onto the project Site will be inspected for structural integrity, smooth operational performance, and proper functioning of all critical safety devices in accordance with the manufacturer's specifications. This inspection will be performed by a qualified equipment operator. Also, every operator will perform and document a Daily Equipment Inspection at the start of each work shift and turn the form in to the foreman by the end of shift.

Equipment found during this inspection not conforming to operational and safety requirements will not be put into service until all necessary repairs are made to the satisfaction of the inspection group.

4.3.6 Operator Qualifications

Only qualified operators familiar with the equipment to be used will be permitted to operate. Subcontractors will supply proof of operators' qualifications to operate in a safe manner, including certification for any equipment requiring it (lift trucks, etc.).

4.3.7 Electrical Hazards

The GC will implement an Assured Grounding Program for the project. To prevent accidents caused by electric shock, the SSO will inspect electrical connections on a daily basis. He will shut down and lock out any equipment that is found to have frayed wiring or loose connections until a qualified electrician can be contacted and repairs effected.

Electrical equipment will be de-energized and tested by qualified personnel before any electrical work is done. All equipment will be properly grounded before and during all work.

Due to expected wet conditions, ground fault circuit interrupters (GFCIs) will be used for all power cords between the power source and tool, unless the presence of a potentially explosive atmosphere precludes this procedure. Generators used to supply power will be grounded and equipped with GFCIs.

4.3.8 Welding Hazards

Personnel who will be performing or observing welding operations are required to use approved welding shields or glasses. Welding shields and glasses are to be inspected prior to each use for scratches and pits that would inhibit their ability to shield harmful ultraviolet light.

Workers will be required to wear protective clothing to shield the skin from slag and harmful ultraviolet light produced by welding operations. Persons working near welding operations that could ignite chemical protective clothing must wear flame retardant outer apparel (Nomex or equivalent).

4.3.9 Fire and Explosion

All flammable liquids will be stored in UL-Approved safety containers in designated areas. Oxygen and acetylene cylinders will be stored secured upright in separate areas except when on carts for immediate use. All high-pressure cylinders will be transported with caps in place, and all valves and gauges will be inspected before each use. Monitoring for explosive vapors will be performed before any hot work undertaken in exclusion zone(s), and no hot work will be permitted if combustible gas or vapor concentrations at the lowest point exceed 10 percent of the Lower Explosive Limit (LEL).

4.4 ENVIRONMENTAL HAZARDS

4.4.1 Weather and Heat Stress

With the possible combination of ambient factors such as high air temperature, high relative humidity, low air movement, high radiant heat, and protective clothing use, the potential for heat stress is a concern. The potential exists for:

- Heat Rash is caused by continuous exposure to hot and humid air and aggravated by chafing clothes. Heat rash decreases ones ability to tolerate heat.

- Heat Cramps are caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs of heat cramps include muscle spasm and pain in the extremities and abdomen.

- Heat Exhaustion is caused by increased stress on various organs to meet increased demands to cool the body. Signs of heat exhaustion include shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; and listlessness.

- Heat Stroke is the most severe form of heat stress. The body must be cooled immediately to prevent severe injury or death. Signs and symptoms of heat stroke are red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and coma.

Daytime temperatures at the Site may be expected to range from 2° C to 27° C (35° F to 80° F). Wearing an impermeable suit with rubber boots, gloves, hard hat, and full-face respirator imposes an additional 6° C to 11° C (10° F to 20° F) burden on the worker. For the purposes of this Environmental Health and Safety Plan, it is assumed that workers at the Site wearing Level C protective gear (if required) with impermeable suits will experience the same additional temperature burdens as described above. It is therefore possible that workers wearing Level C safety gear, with an impermeable suite, could be exposed to working temperatures inside their suits of approximately 8° C to 38° C (45° F to 100 °F). The project Action Level for heat stress observation is set at 70° F. Whenever the ambient temperature is greater than or equal to this action level, the SSO will alert his crew to be vigilant for symptoms of heat stress. The SSO will also advise the crew to increase the amount of water intake.

Heat stroke, heat cramps, and heat exhaustion are covered in detail during general and site-specific training program. In addition, this information is discussed during safety "tailgate" meetings. Workers are encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade during warm weather. Water and electrolyte-containing beverages will be provided on-site and will be available for consumption during work breaks.

Protective Measures

Regular monitoring and other precautions relating to heat stress have been prescribed by NIOSH. The following protective measures will be taken by workers at the Site if ambient temperatures exceed 75° F**.**

1) Workers will take rest periods every two to four hours. Rest periods will be a minimum of fifteen minutes. Liquids (particularly electrolyte-replenishing fluids) will be available to all workers during rest periods.

2) Workers will wear lightweight clothing under impervious suits (i.e. short sleeve shirts are acceptable depending on anticipated chemical exposure levels).

3) NIOSH recommends that workers wearing impervious clothing receive physiological monitoring at regular

intervals when the ambient air temperature approaches or exceeds 70°F. Physiological monitoring will consist of the following measurements (taken during prescribed rest periods):

a) Measure heart rate (HR) as early as possible in the rest period and record.

b) Check for the physical reactions related to heat stress. Physical reactions include fatigue, irritability, anxiety, and decreased concentration, dexterity or movement.
If the measured heart rate exceeds 110 beats per minute, or any of the above physical symptoms are noted, the work period will be shortened by 30 percent (NIOSH 1985). Work may resume after the heart rate and physical condition of the worker has returned to normal.

Cold Stress
Cool and wet conditions are possible during the execution of this work. The Site Safety Officer (SSO) and workers will be alert for signs and symptoms of cold stress (hypothermia). This is commonly caused by prolonged exposure to cool / windy conditions while wearing clothing that has become wet, either from precipitation, dust control measures, or paradoxically by perspiration caused by heavy work in protective suits.

The SSO will monitor the ambient air temperature using a thermometer in the support zone. At temperatures below 40° F, actual temperature or corrected for wind chill, the most current published ACGIH cold stress standard will be followed.

Field personnel will be observed for the following signs and symptoms:

- Pain in the extremities
- Uncontrolled shivering
- Malaise or reduced responsiveness

Any team member who exhibits these signs will be monitored for cold stress. Any individual with an oral temperature of less than 97° F will be taken immediately to a warming shelter.

A warming shelter will be provided on any job site where the ambient temperature is less than 40° F. Breaks will be taken in the shelter as needed according to ACGIH TLV for cold stress.

4.4.2 Hearing Conservation Program

The General Contractor shall implement a comprehensive Hearing Conservation Program and requires use of hearing protection for all personnel working on or within 50 feet of heavy equipment or within any areas designated by management. This hearing conservation program shall comply with both the California and Federal Hearing Conservation Standards.

4.4.3 Confined Space Entry

All trenches deeper than five feet in Areas 1 and 6 and other areas with identified contamination will be treated as Non-Permit-Required Confined Spaces in accordance with the GC's Confined Space Entry Program. Initial and hourly monitoring will be performed throughout the work area for flammable gases or vapors, oxygen, carbon monoxide, and total VOCs. Continuous monitoring will be performed during all hot work and work involving use of internal combustion engines of any type in or around occupied spaces.

Work will cease and all spaces will be evacuated immediately in the event any meter goes into "alarm" mode, or any of the following parameters for acceptable entry is exceeded:

Parameter	Acceptable Range
Oxygen	19.5% - 23%
Combustible Gas	≤ 10% LEL
H_2S	≤ 2 ppm
CO	≤ 10 ppm
VOCs (total)	≤ 10 ppm

The space will not be re-entered for any reason until the condition has abated or the condition has been further evaluated and deemed safe by the Site Safety Officer in consultation with the project Industrial Hygienist.

4.5 HAZARD ANALYSIS SUMMARY

This work involves significant risk from several sources. Physical hazards and construction activity present a higher than normal risk due to the confined work areas, use of protective equipment, and proximity to traffic. These risks will be minimized by adequate traffic control, planning, and worker education.

Excavation work at the site presents two principal exposure routes: ingestion and inhalation of dust contaminated with metals and particulate-bound organics. These risks will be minimized by use of engineering controls as well as appropriate personal protective equipment and personal hygiene.
Aggressive dust control measures required by the management plan as well as this site safety plan are expected to prevent potential overexposures to particulate and particulate-bound contaminants. A requirement for Level C respiratory protection is therefore not anticipated unless unanticipated contaminant concentrations are encountered or vapors accumulate in the work area in excess of project action levels. Dust monitoring will be performed in the work area using a real-time aerosol monitor (MIE PDRAM or equivalent), and organic vapor screening and representative personal and ambient air sampling will be performed as detailed in Section 8 to confirm compliance with the Permissible Exposure Limits. Perimeter monitoring also may be performed in order to evaluate site engineering and administrative controls.

Potential for generation of airborne contamination is expected to occur during earthwork activities that disturb or aerate contaminated soils. Monitoring equipment may be used to identify downwind releases and upwind (background) concentrations. Respirators may be used to minimize exposure of workers in these areas only in the event that dusty conditions or air monitoring data indicate such a need. Otherwise, work will proceed without respiratory protection unless or until additional soil sampling or air monitoring results indicate protection is required or advisable. Protective clothing ensembles for each of the levels of protection are described in Section 6.

4.6 TASK SPECIFIC RISK ASSESSMENT

TASK: Dewatering, Drilling; Installation and Grouting of Auger Cast Pressure Grouted Displacement (APGD) Piles
SPECIFIC HAZARDS: Utilities, Noise, heavy equipment operation, vehicular traffic, falls/engulfment, TCE Exposure, caustic burns.
CONTROL MEASURES: A survey for underground utilities shall be conducted over the full lateral extent of horizontal bores prior to any drilling. Personnel shall wear hearing protection while inside the operating radius of the equipment, and shall otherwise maintain a minimum distance of 40 feet from the equipment. Only qualified and experienced operators will operate equipment. Hard hats, safety glasses, gloves and work boots are mandatory for all personnel. Spotters/flaggers will be used to direct traffic and spot trucks. All ground personnel will maintain a minimum clearance of six feet from the rotating auger system and bores unless fall restraint is used. Monitoring for VOCs will be performed using a ppbRAE™ (or other real-time monitor with equivalent sensitivity) during all dewatering and soil disturbance in areas of known or suspected VOC contamination. All workers with potential exposure to grout mixes will wear gloves and protective coveralls along with eye protection.

TASK: Excavation, Grading and Loading / Disposal of Contaminated Soils
SPECIFIC HAZARDS: Utilities, noise, heavy equipment and truck/scraper operations, vehicular traffic, particulate contaminants and projectiles, hazardous vapor, contaminated ground water.
CONTROL MEASURES: A survey for underground utilities shall be conducted prior to any excavation. Personnel will use care when walking around excavation edges. Level "D" personal protection will be used unless otherwise specified by Client or Cornerstone Site Safety Officers. The work area will be clearly marked. Ground personnel shall maintain eye contact with the equipment operator and wear hearing protection while inside the operating radius of the equipment, and shall otherwise maintain a minimum distance of 40 feet from the equipment unless spotting for the operator. Only qualified and experienced operators will operate equipment. Hard hats, safety glasses, gloves and work boots are mandatory for all personnel, and rubber overboots and tyvek suits (or equivalent) will be worn by all personnel performing job tasks with potential for soiling by contaminated materials. An aggressive program of dust control will be utilized to help prevent visible dust generation and will thereby reduce the potential for airborne contaminants. Sufficient water will be applied to exposed soils to maintain surfaces above 70 percent of soil capacity, thereby preventing dust suspension. Spotters/flaggers will be used to direct traffic and spot trucks and flag other traffic across or through scraper spreads. Haul trucks will be securely tarped before transport of hazardous or contaminated material on any public road outside of project limits. Spilled material will be cleaned immediately from vehicles and (open) road surface and returned to excavation. Screening for organic vapor will be performed during dewatering operations and soil disturbance and in areas of known VOC contamination.

TASK: Demolition of subsurface encumbrances
SPECIFIC HAZARDS: Utilities, equipment, slips, trips, & falls, noise, contact with contaminated materials, atmospheric hazards, fire and explosion
CONTROL MEASURES: All utilities will be disconnected and disconnect verified by SSO or his designee before commencement of any demolition activity. The work area will be surrounded by a barricade to exclude ground personnel from projectile and impalement hazards. All potentially exposed personnel shall wear hearing protection. Only qualified and experienced operators (as detailed in Section 4.3.6 of this HASP) will operate equipment. Hard hats and safety glasses will be required at all times. All hazardous building materials (asbestos, etc.) will have been removed and removal verified in writing by "soft demolition" subcontractor before commencement of demolition. Dust control will be utilized to reduce the potential for airborne concrete dust. Disturbance of structures coated with lead-based paint will be performed in accordance with this HASP, 8 CCR 1532.1. Air monitoring and sampling will be conducted in accordance with Section 8 of this HASP.

Any USTs encountered will have contents evacuated and internal atmosphere completely inerted (0% LEL) before any permitted removal is performed.

TASK: Demolition of utilities and process piping/sewer laterals and/or Line Breaking
SPECIFIC HAZARDS: Utilities, equipment, slips, trips, & falls, noise, contact with contaminated residues, trench entry, atmospheric hazards, unanticipated chemical reactions.
CONTROL MEASURES: All utilities and process piping will be disconnected and disconnect verified by SSO before commencement of any demolition activity. The work area will be surrounded by a barricade to exclude unauthorized personnel. All exposed personnel shall wear hearing protection as dictated by noise levels. Only qualified and experienced operators (as detailed in Section 4.3.6 of this HASP) will operate equipment. Hard hats and safety glasses will be required at all times. All hazardous materials (asbestos insulation, etc.) will have been removed and removal verified in writing by "soft demolition" subcontractor. Lines will be drained and purged whenever possible. All trenches will be properly shored or sloped before entry, and will be treated as non-permit required confined spaces. Air monitoring and sampling will be conducted in accordance with Section 8 of this HASP.

TASK: Sampling of Stockpiles
SPECIFIC HAZARDS: Slips, trips, & falls, contact with contaminated materials
CONTROL MEASURES: Extreme care will be taken by workers climbing stockpiles, especially covered piles that may have voids below tarps. Rubber boots, coveralls, and nitrile gloves will be used by workers in direct contact with stockpile material. Respiratory protection will be required only if higher than expected levels of contaminants are encountered during excavation.

SECTION 5
WORK AND SUPPORT AREAS

To help prevent migration of contamination caused by personnel or equipment, work areas and personal protective equipment are clearly specified prior to beginning operations. The following designated work areas or zones are suggested by the NIOSH/ OSHA/USCG/EPA document, “Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities”. The work area will be divided into three zones: an exclusion (or "hot") zone (EZ), a contamination reduction zone (CRZ), and a support zone. The excavation and/or shoring contractor is responsible for establishing these work zones; the recommended zones are summarized below.

5.1 EXCLUSION ZONE

The exclusion zones will consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. Individual EZs are described in the SMP and incorporated by reference here.

It is anticipated that each EZ will encompass open excavations in contaminated (known or suspected) areas of the site prior to installation of clean base as well as areas in the vicinity of the sewer line and the immediate confines of any stockpiles. The size and configuration of each area may vary according to air monitoring results. Each exclusion zone boundary will be clearly and conspicuously marked. A single entry and exit point will be established at each zone. Entry shall be limited to essential personnel or pre-approved visitors.

5.2 CONTAMINATION REDUCTION ZONE

The CRZ will be established between the exclusion zone and support zone. In this area, personnel will begin the sequential decontamination process required to exit the exclusion zone. To prevent off-site migration of contamination and to facilitate personnel accountability, all personnel will enter and exit the exclusion zone through the CRZ. All vehicles and equipment exiting areas where they may have contacted contaminated materials (Exclusion Zones) will traverse a trackout prevention area consisting of a minimum 50 foot paved area. Alternatively, rumble strips or a 20-foot pad of 6-inch minus rock may be used to dislodge materials from wheels and undercarriage. In no event will visible trackout to public roadways be permitted. Potentially contaminated material that is removed will be added to stockpile area, and rinsates generated by decontamination activities will be used for dust control on the contaminated stockpiles, which will be located in lined and bermed areas.

5.3 SUPPORT ZONE

The support zone will consist of a clearly marked area where the administrative area, break areas, and changing facilities are located. Smoking, drinking, and eating will be allowed only in designated areas. Sanitation facilities (with hand wash) are provided in the support zone.

5.4 ACCESS CONTROLS

The General Contractor shall establish the physical boundaries of each zone and shall instruct all workers and visitors on the limits of the restricted areas. No one shall be allowed to enter a restricted area without the required protective equipment for that area. The contractor's SSO shall ensure compliance with all restricted area entry and exit procedures.

The General Contractor's SSO shall also designate a decontamination corridor through which personnel may exit from a contaminated area and enter into adjacent clean break areas.

Visitors should check in immediately upon arrival. Only authorized visitors will be allowed access to active work areas. Each visitor will be required to provide and wear the necessary protective equipment for use during site visits and shall be escorted by the Supervisor while on site. All visitors, subcontractors and other personnel will be required to sign a safety plan acknowledgement sheet to certify that they have read and will comply with this site health and safety plan. Failure to comply with this site entry procedure will result in expulsion from the site.

SECTION 6
PROTECTIVE EQUIPMENT

The following lists define the required personal protective equipment for each work location and task within a specific zone.

6.1 EXCAVATION EXCLUSION ZONE(S)

Tasks: All Site Workers
EPA Level: D/C *
Respiratory Protection: None *
Head: Hard hat
Hand: Work Gloves
Suit: None †
Foot: Work Boots; Rubber boots or work boots with overboots only to prevent contact with ground water or as needed to facilitate decontamination
Eye: Safety Glasses; Face Shields**
Special Requirements: † Coveralls and gloves needed only as required to prevent soiling by contaminated ground water or other materials. Workers not in direct contact with soils or ground water may substitute work clothes and gloves for coveralls and Nitrile/Liner system.

Comments: Hearing protection is required within 50 feet of operating heavy equipment and all other areas found to present noise levels in excess of 85 dBA.

* Respiratory protection will be necessary only in the event that sustained levels of contaminants in worker breathing zones exceed project action levels or sampling results indicate individual components or aggregate concentrations in excess of respective or derived Permissible Exposure Limits (PELs). Respirators will also be necessary if areas of higher than expected concentrations of soil contaminants are encountered or engineering controls are unable to maintain airborne dust concentrations below established action levels. Respiratory protection will be used in accordance with State and Federal respiratory protection standards as well as Cornerstone's Respiratory Protection Program.

** Face shields required only as needed for splash hazards from contaminated ground water and other free liquids.

6.2 CONTAMINATION REDUCTION ZONE

Tasks: All decontamination procedures
EPA Level: D
Respiratory Protection: None.
Head: Hard hat.
Hand: Work gloves.
Suit: None *
Feet: Work Boots
Eye: Safety Glasses / Face Shield
Special Requirements: Coveralls will be available on site for use in unusual tasks that would otherwise result in excess soiling of work clothing. Waterproof suit, rubber boots, and face shield required for pressure washing of tools and equipment.
Comments: See Section 4.6

6.3 SUPPORT ZONE

Personnel working in the support zone will use the following Level "D" protective gear:

- Work Boots
- Hard hat
- Safety glasses
- Safety Vest

6.4 RESPIRATOR CARTRIDGES

Should conditions require an upgrade to Level "C" protection for some tasks, crew members working in Level "C" will wear NIOSH/MSHA-approved respirators equipped with combination organic vapor and P-100 HEPA air purifying cartridges. These cartridges hold approval for:

- Dusts, fumes and mists with a TLV of 0.05 mg/m^3 or greater
- Asbestos containing dusts and mists
- Radon daughters and radionuclides
- Organic Vapors

6.5 CARTRIDGE CHANGES

All cartridges will be changed a minimum of once daily or more frequently as indicated by increased breathing resistance or End of Service Life Indicator (ESLI). However, water saturation of the HEPA filter or extremely dusty conditions may necessitate more frequent changes. Changes will occur whenever personnel begin to experience increased breathing resistance, notice any unusual odor inside the respirator, or experience excessive heat generation in the cartridges.

6.6 INSPECTION AND CLEANING

Respirators will be inspected daily before use by the individual user(s) and will be checked periodically by the General Contractor's SSO. All respirators and associated equipment will be decontaminated, cleaned, and disinfected by the user after each shift using materials that will be provided on site.

6.7 FIT TESTING

Annual respirator fit tests are required of all personnel wearing negative pressure respirators. Qualitative fit tests will utilize isoamyl acetate or irritant smoke. Fit tests must incorporate the style and size of respirator to be used. Additionally, a positive and negative pressure seal check shall be conducted each time any tight-fitting respirator is donned.

6.8 FACIAL HAIR

No personnel with facial hair that interferes with the respirator's sealing surface will be permitted to wear a respirator.

6.9 CORRECTIVE LENSES

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses who also must don full-face respiratory protection, special spectacles designed for use with respirators will be provided. Eyeglasses rated as safety glasses (ANSI Approval Z87 displayed on frame) are acceptable provided they are fitted with rigid side shields.

6.10 MEDICAL CERTIFICATION

In accordance with the Respiratory Protection Standard and the General Contractor's Respiratory Protection Programs, only workers who have been certified by a physician as being physically capable of respirator use will be issued a respirator. Documentation of this approval will be maintained on site.

SECTION 7
DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 PERSONNEL DECONTAMINATION

Decontamination of personnel shall be accomplished to ensure that any material that they may have contacted in the exclusion zone is removed in the contamination reduction zone:

Step 1: Segregated equipment drop
Deposit equipment used on-site on plastic drop cloths or in containers with plastic liners.

Step 2: Overboot and glove wash
Scrub overboots and gloves with soap and water if visibly soiled.

Step 3: Overboot and glove rinse
Rinse boots and gloves with water.

Step 4: Outer glove removal
Remove outer gloves and deposit in container with plastic liner.

Step 5: Suit and boot removal
Remove Tyvek suit with assistance of helper or buddy as needed. Deposit in container with plastic liner. Pull off rubber boots.

Step 6: Respirator removal (Level C)
Remove respirator. Avoid touching face with gloves. Place respirator in wash basin.

Step 7: Inner glove removal (if used)
Remove inner gloves and dispose of in container with plastic liner.

Step 8: Wash
Wash hands, face, and neck before breaks and lunch.

All rinsates and dislodged soils and other potentially contaminated material will be added to stockpiles or directly to haul trucks for disposal.

7.2 EQUIPMENT DECONTAMINATION

Brushing and establishment of a track-out zone will suffice for decontamination of vehicles. No visible trackout will be permitted onto public roadways, and any visible tracked material must be removed at least twice daily through wet sweeping or use of a HEPA- filtered vacuum system. A separate decontamination pad will be established for the decontamination of all equipment leaving hazardous waste exclusion zones. The following steps will be performed sequentially:

Step 1: Gross Contamination Removal
Gross soil deposits will be removed manually from tracks, tires, drives, etc. using digging bars, scrapers, etc. before moving onto decontamination pad.

Step 2: Pressure Wash
All surfaces that cannot be sufficiently decontaminated manually and by track out buffer will be pressure washed with surfacted water to remove any remaining adhering contamination.

Step 3: Final water rinse
A final rinse is performed to remove dissolved contaminant, water, and surfactant residues.

7.3 SUSPECTED CONTAMINATION

Any employee suspected of sustaining skin contact with hazardous materials will proceed to the contamination reduction zone and wash off the contamination. If chemical contact causes injury, the employee will remove clothing, shower, don clean clothing, and immediately be taken to the First Aid Station.

7.4 SANITATION / HYGIENE

Before any eating, smoking, or drinking, personnel will exit exclusion zones and wash hands, arms, neck, and face. Separate - sex sanitation facilities will be available in the support zone if ten or more employees are to be accommodated.

7.5 OTHER DECONTAMINATION PROCEDURES

All decontamination liquids and disposable clothing will be handled as contaminated waste and disposed of properly at the direction of the client.

SECTION 8
EXPOSURE MONITORING

Personal and ambient air monitoring will be conducted by Site Safety personnel as necessary in order to determine airborne contamination levels. Air sampling to ensure and document that exposure control measures in use are adequate to protect personnel against the contaminants present on site will be conducted in accordance with 8 CCR Sections 5155 and 5192.

Objective data (site characterization data and integrated aerosol measurements) may be used to document the lack of airborne hazard as long as dust control measures are implemented in accordance with Construction Safety Orders and this Plan and no odors or other indication of contaminant levels exceeding those anticipated are encountered.

Representative personal exposure (worker breathing zone) samples will be obtained for TCE for workers entering any excavations or other exclusion zones.

Perimeter air monitoring for dust during excavation and grading activities at the Site can be conducted at the Site by the Environmental Professional if requested by Google. The following procedures would be followed:

Prior to the beginning of excavation or grading activities, a windsock or anemometer will be used to monitor the wind direction at the Site

and to help determine the location of monitors along the fence lines. Fence line dust monitoring will be conducted at three locations. Each monitor will be positioned within the breathing zone at approximately 5 feet above the ground level.

Perimeter dust monitoring will include the collection of air samples at one upwind location and two downwind locations. The monitoring will be performed using three DataRAM PDR-1000 particulate monitors. These meters log the detected airborne dust concentrations.

The particulate meters will be monitored to evaluate if excessive dust is migrating off-Site. Each time the meters are checked, the differences between the average upwind dust concentration and the average downwind concentration will be compared to the ambient air quality standard of 150 µg/m³ (8-hour average) for respirable dust. If this standard is exceeded, increased dust control measures will be implemented. The California Ambient Air Quality Standard for respirable particulate matter (PM10) is 50 $\mu g/m^3$ over an averaging time of 24 hours. Based on an 8-hour construction work day, 150 $\mu g/m^3$ over an averaging time of 8 hours will average 50 $\mu g/m^3$ over 24 hours (16 hours of non-activity). Significant concentrations are defined as exceeding 150 $\mu g/m^3$ over an averaging time of 8 hours

All personal and ambient sampling will be performed in accordance with either NIOSH/OSHA or EPA methods, and results will be shared with full crew at the next scheduled safety meeting.

Noise levels will be evaluated and safe (85 dBA or less) perimeters established for all operations and equipment. Dosimetry will be performed for non-routine job tasks and those requiring frequent transit of areas requiring hearing protection to determine requirements for these tasks.

All exposure monitoring records will be kept in the appendices of this Plan and made available to all employees and their designated representatives on request.

SECTION 9
EMERGENCY RESPONSE

Prior to start of field activities, the SSO shall plan emergency egress routes and discuss them with all personnel who will be conducting the field work. Initial planning includes establishing and posting of emergency warning signals and evacuation routes in case of an emergency.

9.1 EMERGENCY SERVICES

A tested system shall exist for rapid and clear distress communication. All personnel shall be provided concise and clear directions and accessible transportation to local emergency services. A map outlining directions to the nearest hospital will be posted on site.

The following emergency equipment shall be present on the site:

- Fire extinguishers
- Industrial first aid kit
- Portable eye washes, capable of supplying 15 minutes of water

9.2 EMERGENCY EVACUATION FROM EXCLUSION AND CONTAMINATION REDUCTION ZONES

Any personnel requiring emergency medical attention shall be evacuated immediately from exclusion and contamination reduction zones. Personnel shall not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an

essential part of life saving first aid. For others, decontamination may aggravate the injury or delay lifesaving treatment. If decontamination does not interfere with essential treatment, it should be performed.

If decontamination can be performed:
- Wash external clothing and cut it away.

If decontamination cannot be performed:
- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination; instruct them about specific decontamination procedures.
- Send along site personnel familiar with the incident

9.3 FIRST AID

Only qualified personnel shall give first aid and stabilize an individual needing assistance. Life support techniques such as CPR and treatment of life threatening problems such as airway obstruction and shock will be given top priority. Professional medical assistance shall be obtained at the earliest possible opportunity.

At least two persons currently certified in first aid and CPR will be on Site at all times during Site activity. To provide first-line assistance to field personnel in the case of sickness or injury, the following items will be immediately available:

- First aid kit
- Portable emergency eye wash
- Supply of clean water

9.4 EMERGENCY ACTIONS

Only individuals with minor injuries requiring minor medical attention (beyond first aid provided at the job site) will be transported to the hospital in company vehicles. If actual or suspected serious injury occurs, these steps shall be followed:

- Remove the exposed or injured person(s) from immediate danger.
- Render first aid if necessary. Affected personnel will be decontaminated after critical first aid is give.
- Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.
- Other personnel in the work area shall be evacuated to a safe distance until the site supervisor determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work shall not commence until all hazard control issues are resolved.
- Notify SSO and Project Manager of incident.
- Notify Cal/OSHA within 8 hours of serious injury or death.

9.5 GENERAL EVACUATION PLAN

In the general case of a large fire, explosion, or toxic vapor release, a site evacuation shall be ordered and shall follow these steps:

- Sound alarm (repeated long blast) and advise SSO and client representative.
- Evaluate the immediate situation and wind direction. All personnel will evacuate in the upwind or crosswind direction to the designated assembly area immediately outside the main gate. (Specific routes will depend on wind direction – check wind directions on site and choose route that will avoid areas downwind of any release.)
- All personnel will assemble in a designated upwind area when the situation permits, and a head count will be taken.
- Determine the extent of the problem.

• Coordinate with emergency response personnel to dispatch or direct a response team in protective clothing and self-contained breathing apparatus on site to evacuate any missing personnel or to correct the problem. If no trained Emergency Response Team is available on site, the off site emergency response provider designated below will be summoned immediately and directed by SSO upon arrival.

9.6 EMERGENCY PHONE NUMBERS

Fire /Medical Emergency 911

Large Spill Response (800) 800-7472
Philip Services Corporation
60 22nd St # 688
Oakland, CA 94612

Cal/OSHA (Regional): (415) 703-5210

Environmental Representative:
Kurt Soenen, Cornerstone Earth Group, Inc.
Mobile: (408) 605-3037

Project CIH: Kevin Braun
Office (925) 455-6601
Mobile (925) 980-0568

The following personnel and contacts are to be determined:

Site Safety Officer/Project Manager

Superintendent

Client / Owner Representative

Medical Services (650) /940-7000
El Camino Hospital
2500 Grant Road
Mountain View, CA 94040

Note: Each contractor will have own designated Medical Service provider.

Spill Release: Office of Emergency Services
State O.E.S. (800) 852-7550
When calling for assistance from outside emergency responders, use the procedures for reporting emergencies as outlined in Section 9.7.

Directions to Hospital:
Leaving the Site, head East on Caribbean Drive. Merge onto Highway 237 West for 4.5 miles and continue onto Grant Road. Continue on Grant Rd for 1 mile, turn right onto North Drive. The hospital is on the left; follow signs for Emergency Department.

Note: Only those individuals with minor (non life-threatening) injuries are to be transported by project personnel. Emergency medical services will be summoned for all other injuries and illnesses.

9.7 STANDARD PROCEDURES FOR REPORTING EMERGENCIES

When calling for assistance in an emergency situation, the following information should be provided:

1. Call the appropriate emergency phone number (Posted on site; see above).

2. Provide the following information upon request:
• Name of person making the call.
• Telephone number at location of person making call.
• Name of person(s) exposed or injured.
• Nature of emergency.
• Actions already taken.

3. Remain on line until instructed by dispatch to hang up.

Note: When calling 911 from a cell phone, calls are routed through CHP central dispatch. Additional information regarding nature of emergency, appropriate response agency and measure, etc. may be required.

SECTION 10
TRAINING REQUIREMENTS

All workers using respiratory protection will be trained in accordance with 8 CCR 5144. All field employees engaged in Hazardous Waste Operations (as outlined in the Scope and Application of the HAZWOPER Standards; 29 CFR 1910.120 and 8 CCR 5192) take a training class and pass a written examination in compliance with Federal and State Hazardous Waste Operations and Emergency Response standards). (This is not anticipated for the listed activities absent EPA requirements.)

All personnel entering exclusion zones or other regulated areas will be trained in Hazard Awareness and Control and the provisions of this site Health and Safety Plan and will be required to sign the Health and Safety Plan Acknowledgement Page.

SECTION 11
MEDICAL SURVEILLANCE PROGRAM

All workers using respiratory protection will receive clearance by a Physician or Licensed Healthcare Practitioner (PLHCP) prior to such use.

All personnel working in areas where they may be exposed to any contaminant or combination of contaminants in concentrations at or above permissible exposure limits (without regard to use of respiratory protection) are required to participate in the Company's Medical Surveillance Program. This program is initiated when the employee starts work on the project with a complete physical and medical history and is continued as required. Other medical consultants will be retained if additional expertise is required.

Medical Surveillance Elements

Item	Initial	Annual
Medical History	X	X
Work History	X	X
Visual Acuity	X	X
Pulmonary Function *	X	X
Audiometry	X	X
Chest X-Ray	X	
Complete Blood Count	X	X
Blood Chemistry (SMAC)	X	X
Blood Lead / ZPP	X	X
Urinalysis	X	X
Dermatology Exam	X	X

* Pulmonary function test at discretion of physician after review of Pulmonary Fitness Questionnaire.

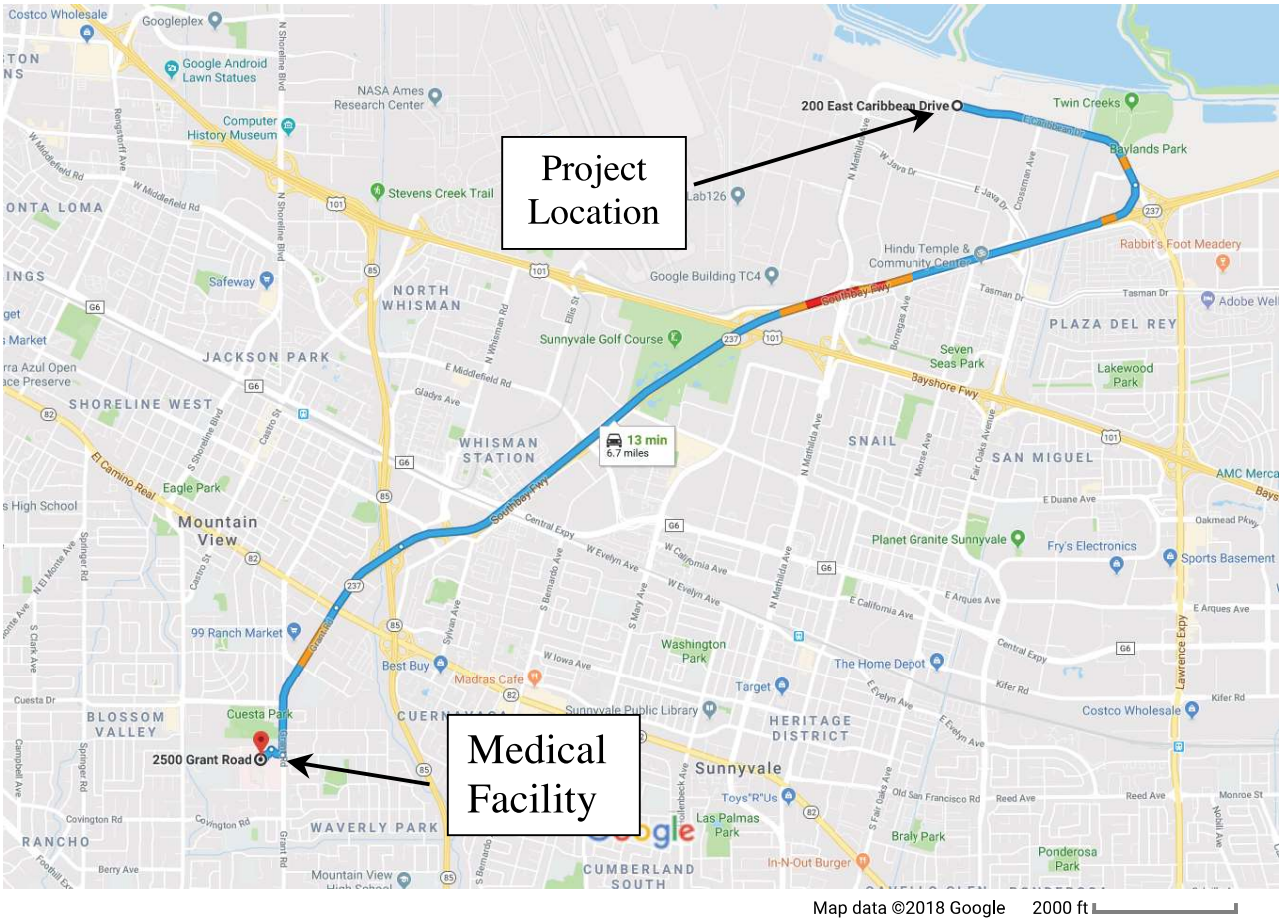
Figure 1:

Project Health and Safety Organization

To Be Determined

Figure 2: Hospital Directions

Google Maps 200 E Caribbean Dr, Sunnyvale, CA 94089 to 2500 Grant Rd, Mountain View, CA 94040 Drive 6.7 miles, 13 min



Health and Safety Plan Acknowledgement

I have read, understand, accept and will abide by all provisions of this Health and Safety Plan. I also agree to inform my supervisor and/or the Site Safety Officer of any conditions which are or appear to be unsafe.

Date	Time	Name (Print)	Signature

APPENDIX A: CHANGES TO THIS HEALTH AND SAFETY PLAN

APPENDIX B: SAFETY INSPECTION REPORTS

APPENDIX C: EMPLOYEE EXPOSURE MONITORING RECORDS

APPENDIX D: OSHA LOG 300 SUMMARY

APPENDIX E: EMPLOYEE MEDICAL SURVEILLANCE AND IMMUNIZATION RECORDS

APPENDIX F: RESPIRATOR FIT TEST RECORDS

APPENDIX G: EMPLOYEE TRAINING RECORDS

APPENDIX H: SAFETY MEETING FORMS

APPENDIX I: INCIDENT REPORTS

CORNERSTONE EARTH GROUP

APPENDIX C – SOIL DISPOSAL GUIDANCE

Rev. 7/2017
No. 99

gSAFE

Topic

EHS Process to Haul Soil Off Site (Americas)

Applicability

This guidance applies to soil that will leave the site.
This gSafe should only be used as a reference and not a definitive resource.
Contact EHS if you have any questions about the process.

All soil being shipped off site requires appropriate documentation and EHS approval.

Process for Project Executives, Project Managers and Designees

To ship potentially impacted soil off site to approved disposal facility, follow these steps:

1. Hire environmental consultant to sample soil (see soil sampling section below)
2. Have environmental consultant compare analytics to hazwaste criteria. Have them prepare a letter confirming the status - hazardous, state hazardous only, non-hazardous, clean fill
3. Seek a final disposal location and send the analytical results to the disposal location
4. Send the following to EHS for approval:
    a. Analytical results
    b. Letter from environmental consultant with status documenting the data and evaluation of the results
    c. Profile from landfill
    d. Scanned copy of manifest or non-haz manifest for soil off-haul (not required, but ensures the manifests will be signed when dropped off)
    e. Estimated volume (not required, but estimate speeds up the process)
5. Allow 3 days for review by EHS, once approved, drop off the manifest/non-haz manifest (BOL) and EHS will sign
6. Contractor ships soil off site with signed shipping documents
    a. Return shipping documents to EHS within 7 days
    b. Send weigh tickets to EHS, if applicable

To ship clean dirt off site to a residential, commercial, or reclamation site:

1. Conduct recommended sampling
2. A letter summarizing the analytical results, comparison to appropriate screening levels and an explanation as to why this soil is clean and appropriate for the proposed reuse should be prepared.
3. Submit this letter to EHS for approval.
4. Seek an appropriate site or sites for reuse and send this letter to them.
5. Destination needs to provide acceptance either with profile, letter or email. Provide this acceptance to EHS and summarize proposed documentation to document off haul.
6. After off haul approval from EHS, conduct off haul used approved documentation approach and submit these documents to EHS after off haul is completed. These documents should at a minimum include :
    a. Origination
    b. Destination
    c. Date
    d. Volume or truck loads

Soil sampling

Work with EHS and Environmental Consultant on required soil sampling. Representative samples from the stockpiled soil shall be collected. At minimum, soils must be screened for the following analytical criteria. Note that different laboratories can have very

different detection limits even using the same methods. Ensuring the detection limits are adequate for the purpose intended is an important step in selection of both method and laboratory. Based on the end-site requirements, additional testing may be required:

Analytical Parameter	Sampling Method
Metals	6020
Volatile Organic Compounds (VOCs)	8260B and 5035
Semi-volatile Organic Compounds (SVOCs)	8270
Petroleum Hydrocarbons (TPH-g/d/mo)	8015B
Polychlorinated Biphenyls (PCBs)	8082
Pesticides	8081
pH	9045C
Asbestos	Carb 435

EHS Needs to approve and sign all profiles and shipping docs

EHS will need to approve and sign:

- Hazardous Waste Manifest
- Non-hazardous waste shipping document / Bill of Lading (BOL)
- Profile with disposal site

EHS will use the analytical data to determine if the soils meet Federal and State (California) Hazardous Waste Criteria and disposal site criteria. EHS will help determine soil generator, if applicable. All soil shipping documents (BOL and manifests) must be sent to EHS for final records retention. EHS will handle the regulatory management of the manifests.

Contact EHS ehs-env@google.com with questions.

Standard soil ownership (lease may confirm otherwise):

- Google owned = Google waste
- Google operated (full service = owner 100% responsible) = LL waste
- Google operated (triple net = vendor 100% responsible) = Google waste
- Superfund site = contact EHS

Questions

Learn more @ go/safety

Questions? ehs-env@