

SPACE PARK EXCAVATION PROTOCOL

***** This Protocol Shall Be Available On Site During Any Excavation Activity *****

Before Excavation:

1. The contract representative contacts Dig Alert (811) two days before beginning excavation to notify public utilities, whether concrete only or soil. Although Dig Alert only identifies utilities outside the building, the representative is still required to contact Dig Alert when excavating in a building. It is recommended only NGSS employees contact Dig Alert when conducting surface landscaping excavations.
2. The contract representative also contacts a qualified contractor to identify any private utilities, whether removing concrete only or soil, and whether excavating inside or outside a building. Applicable to construction work and not for general landscape maintenance.
3. All involved parties shall review available blue prints. Prints will be redlined to show changes based on identification of unidentified subsurface utilities and provided to Facilities Engineering.
4. Facilities to complete an excavation permit (KO-F078) and shall be accepted by qualified ESH representative prior to excavation. Hand digging or vacuum excavation must be conducted within 24 inches (2 feet) of identified utilities.
5. A qualified ESH representative shall inspect any underground utilizes prior to cutting or other disturbance.
6. If excavation 5 feet or greater in which a person will enter, the representative will have either a current annual permit or a project permit from CAL/OSHA.
7. Install fencing to prevent entry and signage: *Danger excavation, Unauthorized Keep Out. Otherwise, cover excavation using trench plate.* Fencing shall be a minimum of 6 feet in height, surround and protect the entire project perimeter, and be securely connected and lockable to deny unauthorized entry. Coverings should be added to fence sections where near or adjacent to public areas to reduce unwanted attraction to the project area.
8. If excavations 5 feet or greater in which a person will enter, the representative to notify Cal/OSHA 24 hrs prior to the excavation whether having an annual or project permit (Form 41-3).
9. A competent person will be assigned to excavation projects regardless of entry. Person does not need to be on site at all times, but needs to ensure compliance with applicable regulations and to make those inspections necessary to identify situations that could result in possible cave-ins hazardous atmospheres, or other hazardous conditions and to ensure that corrective measures are taken. The competent person may perform other duties.
10. Contact ESHM if removing a depth of two feet or more of soil or any soil containing unusual odor or staining.
11. Excavation of soil equal to or greater than 1 acre area will require the contractor to have a Storm Water General Permit to preventing non storm water and hazardous material discharges, maintaining acceptable pH and turbidity levels by implementing Erosion Controls/Best Management Practices.
12. Regardless of area, cover or berm storm drains down gradient. The project area perimeter also must have a berm to retain and prevent soil from spreading to areas where storm water may entrain it.
13. Work performed in areas with known soil contamination will ensure a consultant with current South Coast Air Quality Management District (SCAQMD) Rule 1166 permit is on contract for air monitoring and reporting support during project excavation work.
14. If excavated soil will be removed and placed elsewhere at Space Park, ESHM shall be consulted to determine if sampling is necessary.
15. If excavated soil-regardless of depth will be removed from the site, then sampling and analysis must be performed to determine the proper disposition of the soil either as clean fill or if it must be managed as hazardous. If soil excavation is to be done directly into trucks for ready transport, then sampling and analysis must be complete and soil disposition determined prior to excavation in accordance with the table 1 herein. If soils will be stockpiled on site following excavation, then sampling may be done after excavation, but under no circumstances shall soil be removed from the site without proper characterization using the analyses identified in table 1. Stockpiled soil will be sampled to a rough equivalence of one sample per 100 cubic yards (roughly 5 dump trucks) or fraction thereof. Sampling can be performed by the contractor if approved and witnessed by ESHM, but analyses must be performed by a laboratory as directed by ESHM. Sampling and analysis shall be scheduled to allow a minimum of 5 days (not including weekends) to provide results. If soils are not removed from the site and will be returned to fill at the same location on-site, follow the “during excavation” process below.

Exceptions to this sampling and analysis approach are as follows:

- a. Landscaping activities involving removal/replacement soil, plant matter and soil amendments to depths of up to two feet provided no known contamination or suspect contamination is encountered.
- b. Soil having no evidence of chemical contamination up to 1 cubic yard.

During Excavation (applies if soil is removed from the site, returned to excavation, or reused elsewhere on site):

1. Entrants shall wear personal protective equipment in accordance with task and potential exposures. There must be at least one person present outside the excavation when one person is in a trench excavation.
2. Periodically probe and hand dig to verify underground utilities.
3. Excavations greater than 2 feet will result in implementing Subsurface Protection Procedure.
4. Unless otherwise requested by the competent person, excavations 5 feet or greater in which a person will enter will be protected from cave in by a protective system such as sloping, benching and shield systems. Protective systems in excavations greater than 20 feet must be designed by a registered PE.
5. Upon excavation of greater than 1 cubic yard and odors or staining is detected suspected of containing chemical contaminants (e.g., gasoline, diesel fuel, solvents or other volatile organic compounds (VOCs), metals/salts, oily substances, etc.), subsurface work will halt, the cubic yard of soil shall be placed on and covered with plastic or placed in a closed container, ESHM notified, and SCAQMD Rule 1166 monitoring implemented.
 - a. If no odor or visible staining, the Hazard Communication Program and SCAQMD Rule 1166 monitoring do not apply (Exception: If areas of known/documented contamination such as at the Manhattan Beach site are excavated, Rule 1166 will be implemented for monitoring prior to commencing excavation).
 - b. Work may resume if VOC contamination, as measured with properly calibrated instrument and performed in accordance with Rule 1166, verifies concentrations less than 50 ppm.
 - c. Air monitoring records confirming this must be retained with the project file.
 - d. Measurement shall be done by a trained representative who monitors VOC contamination using an organic vapor analyzer by placing the probe inlet at a distance of no more than three inches from the surface of the excavated soil and slowly moving the probe across the soil surface, observing the instrument readout.
 - e. The VOC analyzer shall be calibrated to the proper hexane factor in accordance with SCAQMD Rule 1166.
 - f. If the measured concentration is above 50 parts per million, a consultant or representative initiates the SCAQMD Rule 1166 approved VOC Contaminated Soil Mitigation Plan. This Plan requires notification to SCAQMD prior to any further excavation, and the work must be governed by a valid Rule 1166 permit that is applicable to that work. ESHM must be notified whenever the permit provisions are implemented.
 - g. Each excavation requires its own permit notification unless formally coupled in the initial notification to the SCAQMD.
 - h. Segregate VOC contaminated soils from Non VOC contaminated soil.
 - i. Suppress any dust generation by using water spray, coverings or other suppressants in accordance with the VOC Contaminated Soil Mitigation Plan.
6. Note: excavations in areas with known contamination (e.g. recent spills or discovered releases of hazardous materials), must be done only under the oversight of ESHM and handled separate from this protocol. If such conditions are expected or encountered all work shall halt until a corrective action plan is approved for implementation by ESHM.
7. Workers shall be trained in accordance with Title 8 5192(d)(3) and is specific to the task and whether air monitoring concentrations are in excess of the Permissible Exposure Limit. At a minimum, contractors shall be receive 24 hours of instruction off-site and three days of actual field experience under a trained supervisor. An additional 16 hours of off-site training (totally 40 hours) will be required if concentrations exceed the permissible exposure limit requiring respirators to be worn. The material safety data sheet shall be reviewed and be available onsite. Training documentation as well as calibration certification must be submitted for ESHM review prior to resuming excavations.
8. Stage all soil whether or not contaminated on plastic sheeting and covered to prevent run off. Otherwise load into an appropriate container. Obtain containers in advance through ESHM by completing EHS Service Request Form:

Following Excavation:

1. Representative will sample to determine appropriate method of off-site disposal.
2. Schedule disposal with ESHM using the Hazardous Waste Profile Form (link above).
3. Fill brought onto site must be characterized based on knowledge of source such as a quarry or sample analysis results based on the source. Analysis must be approved by ESHM prior to depositing on site.
4. Documentation must be received from off-site location indicating soil does not contain hazardous constituents.
5. If SCAQMD Rule 1166 work was performed, a follow up report to SCAQMD is to be submitted within 30 days.
6. Spoils to be removed within 30 days of the excavation.
7. Backfill materials for soil boring excavations, which approach ground water (40 to 55 feet below ground surface-bgs), must preapproved by ESHM prior to use. Depths less than 15 feet bgs can be filled with on-site clean backfill from the excavation or tested and confirmed non-hazardous off-site soil.
8. Update blueprints.

Important: Protocol provides a summary of requirements without intent to replace NGAS procedures or applicable regulations.

Table 1. Soil Sampling and Analysis Requirements for Off-site Disposition

Excavation Type	Minimum Number of Samples	Sampling Location	Analyses to Perform
Excavation 10 ft. below ground surface (bgs) or shallower	One per 1,250 sq. ft. of surface area (note: if width of excavation <10 feet, then one sample every 100 linear feet)	One half of excavation depth up to 5 feet bgs	VOCs (EPA method 8260B, semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015 for both diesel and gasoline range organics), PCBs (EPA method 8082 or 8080A), Title 22/CAM heavy metals including lead (EPA methods 6010B and 7471A)
Excavation > 10 ft. bgs	One per each 10-ft vertical depth per 1,250 sq. ft. of surface area (the note above still applies)	Midway for each 10 ft vertical increment or portion thereof	VOCs (EPA method 8260B, semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015 for both diesel and gasoline range organics), PCBs (EPA method 8082 or 8080A), Title 22/CAM heavy metals including lead (EPA methods 6010B and 7471A)

References:

- Space Systems ESH&M Compliance Manual K0-1013M, Subsurface Protection Procedure
- Cal/EPA DTSC 2001 Fact Sheet "Information Advisory, Clean Imported Fill Material"
- California Government Code 4216.2(b)
- Title 8 CCR 1541(b)(2)
- Title 8 CCR 341.1
- Title 8 CCR 341(d)(5)
- Title 8 CCR 5194(h)
- South Coast Air Quality Management District, Rule 1166

