CORNERSTONE EARTH GROUP

BLD2016-00458-160

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SAN MATEO COUNTY PLANNING AND BUILDING DEPARTMENT

Date: March 17, 2017
Project No.: 230-1-6

Prepared For: Mr. Jack Chamberlain
TICONDEROGA PARTNERS LLC
655 Skyway, Suite 230
San Carlos, California 94070

Re: Naturally Occurring Asbestos (NOA) Testing and Recommendations
Highland Estates Lots 9-11
2185 Cobblehill Place (Lot 9), 2184 Cobblehill Place (Lot 10),
88 Cowpens Way (Lot 11)
San Mateo, California

Dear Mr. Chamberlain:

As requested, this letter presents the data collected from naturally occurring asbestos (NOA) testing we performed for the above referenced project. Additionally, as requested, we have prepared a "Standard Operating Procedure" to be used if any NOA is encountered during grading of this project. As you know, Cornerstone previously prepared a geotechnical investigation for the project and presented our findings in our report titled, "Updated Geotechnical Investigation, Highland Estates Lots 5 through 11, Ticonderoga Drive/Cobblehill Place/Cowpens Way, San Mateo, California," dated October 30, 2015.

Lab Testing and Recommendations

Chrysotile and amphibole asbestos occur naturally in certain geologic settings in the San Francisco Bay area, most commonly in serpentinite and other ultramafic rocks. These are igneous and metamorphic rocks with a high content of magnesium and iron minerals. The most common type of asbestos is chrysotile, which is commonly found in serpentinite rock formations. When disturbed by construction, grading, quarrying, or surface mining operations, asbestos containing dust can be generated. Exposure to asbestos can result in lung cancer, mesothelioma, and asbestosis. In July 2001, the California Air Resources Board approved an Asbestos Airborne Toxic Control measure for Construction, Grading, Quarrying, and Surface Mining activities in areas where naturally occurring asbestos (NOA) will likely be found and to provide best dust mitigation measures and practices. The lots are within a mountainous area and areas of shallow bedrock could be encountered during construction. Regional mapping suggests, and site specific investigations supports the idea that the dominant rock type at the lot areas are sheared rock. The sheared rock that underlies the majority of the lots is unlikely to contain NOA bearing material. However, localized outcrops of serpentinite have been observed in portions of the canyon area and serpentinite was encountered within previous exploratory borings conducted within the lot areas.

As discussed in our geotechnical report, we performed one exploratory boring on Lot 11 during our investigation to supplement explorations performed previously by others. This boring exploration was performed close to previously identified serpentinite found in a nearby boring

performed by others. Samples collected within these previous borings conducted within identified serpentinite were not analyzed for NOA because at the time the borings were performed (several decades ago) NOA was not a concern.

We performed testing for naturally occurring asbestos (NOA) on a bulk sample of soil and bedrock from our boring within Lot 11 at a depth range of 8½ to 15 feet. Testing utilized Polarized Light Microscopy in accordance with the California Air Resources Board (CARB) Method 435. NOA was not detected within this sample. The analytical report is attached to this letter. We did not perform testing for Lots 9 and 10 because serpentinite is not mapped or encountered at these lots.

While we did not observe veins of asbestos bearing minerals in our boring, it is not known if rock masses beneath the ground surface could contain veins of asbestos bearing material. However due to the presence of serpentinite locally at the site, we recommend that random samples be collected during grading operations to test for asbestos, if serpentinite is observed. If NOA is found to be present during grading for Lots 9 through 11, we recommend that the attached "Standard Operating Procedure" be implemented and followed.

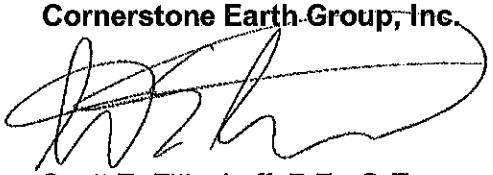
Closure

We hope this provides the information you need at this time. Recommendations presented in this letter have been prepared for the sole use of Ticonderoga Partners LLC specifically for the Highland Estates Lot 9-11 project located in San Mateo, California. Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices at this time and location. No warranties are either expressed or implied.

If you have any questions or need any additional information from us, please call and we will be glad to discuss them with you.

Sincerely,

Cornerstone Earth Group, Inc.



Scott E. Fitinghoff, P.E., G.E.
Senior Principal Engineer

SEF:mjs

Attachments: NOA Testing Report
Recommended Standard Operating Procedure (SOP) for NOA Intrusive Work

Copies: Addressee (1 by email)

ASBESTOS TEM LABORATORIES, INC.

CARB Method 435
Polarized Light Microscopy
Analytical Report

Laboratory Job # 1206-00077

630 Bancroft Way
Berkeley, CA 94710
(510) 704-8930
FAX (510) 704-8429

ASBESTOS TEM LABORATORIES, INC

CA DPH ELAP
Lab No. 1866

NVLAP
NVLAP Lab Code: 101891-0
Berkeley, CA

Oct/05/2015

Matt Schaffer
Cornerstone Earth Group, Inc.
1259 Oakmead Parkway
Sunnyvale, CA 94085

RE: LABORATORY JOB # 1206-00077
Polarized light microscopy analytical results for 1 bulk sample(s).
Job Site: 230-1-5
Job No.: Highland Estates Lots 5-11

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with the California Air Resources Board (ARB) Method 435 for the determination of asbestos in serpentine aggregate samples.

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Sample preparation follows a standard CARB 435 prep method. The entire sample is dried at 135-150 C and then crushed to ~3/8" gravel size using a Bico Chipmunk crusher. If the submitted sample is >1 pint, the sample was split using a 1/2" riffle splitter following ASTM Method C-702-98 to obtain a 1 pint aliquot. The entire 1 pint aliquot, or entire original sample, is then pulverized in a Bico Braun disc pulverizer calibrated to produce a nominal 200 mesh final product. If necessary, additional homogenization steps are undertaken using a 3/8" riffle splitter. Small aliquots are collected from throughout the pulverized material to create three separate microsope slide mounts containing the appropriate refractive index oil. The prepared slides are placed under a polarizing light microscope where standard mineralogical techniques are used to analyze the various materials present, including asbestos. If asbestos is identified and of less than 10% concentration by visual area estimate then an additional five sample mounts are prepared. Quantification of asbestos concentration is obtained using the standard CAL ARB Method 435 point count protocol. For samples observed to contain visible asbestos of less than 10% concentration, a point counting techinique is used with 50 points counted on each of eight sample mounts for a total of 400 points. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

While the CARB 435 method has much to commend it, there are a number of situations where it fails to provide sufficient accuracy to make a definitive determination of the presence/absence of asbestos and/or an accurate count of the asbestos concentration present in a given sample. These problems include, but are not limited to, 1) statistical uncertainty with samples containing <1% asbestos when too few particles are counted, 2) definitive identification and discrimination between various fibrous amphibole minerals such as tremolite/actinolite/hornblende and the "Libby amphiboles" such as tremolite/winchite/richterite/arfvedsonite, and C) small asbestiform fibers which are near or below the resolution limit of the PLM microscope such as those found in various California coast range serpentine bodies. In these cases, further analysis by transmission electron microscopy is recommended to obtain a more accurate result.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

POLARIZED LIGHT MICROSCOPY
CARB 435 ANALYTICAL REPORT

Contact: Matt Schaffer

Address: Cornerstone Earth Group, Inc.
1259 Oakmead Parkway
Sunnyvale, CA 94085

Samples Submitted: 1
Samples Analyzed: 1
Job Site / No. Highland Estates Lots 5-11
230-1-5

Report No. 336724
Date Submitted: Sep-30-15
Date Reported: Oct-05-15

SAMPLE ID	POINTS COUNTED	ASBESTOS %	ASBESTOS TYPE	LOCATION / DESCRIPTION
EB-1 (8.5-15)		<0.25%	None Detected	Soil/Bedrock
Lab ID # 1206-00077-001	400 - Total Points			No Asbestos Detected - ARB Exception I
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			

QC Reviewer _____ Analyst _____

ASBESTOS TEM LABORATORIES CHAIN OF CUSTODY – www.asbestostemlabs.com

CALIFORNIA: 630 Bancroft Way, Berkeley, CA 94710 Phone (510) 704-8930 Fax (510) 704-8429

NEVADA: 1350 Freeport Blvd. #104, Sparks, NV 89431 Phone (775) 359-3377 Fax (775) 359-2798

Please print and send completed CoC with your samples. If you wish to email CoC, send the form as an attachment to Berkeley <coc@asbestostemlabs.com> or Reno <sehrlich@asbestostemlabs.com>.

Company: Cornerstone Earth Group	Contact: Matt Schaffer	Phone/Fax: 408-515-3734	Email: mschaffer@cornerstoneearth.com
Address: 1259 Oakmead Parkway	City: Sunnyvale	State: CA Zip: 94085	Country: United States
Job Site: Highland Estates Lots 5-11		Job No: 230-1-5	P.O. No:

Reporting: ☐ Fax ☐ Phone ☒ Email ☐ Mail ☐ FTP ☐ EDD/State Form ☐ Verbal ☐ Pickup — **Billing:** ☐ Fax ☒ Email ☐ Mail ☐ Pre-Paid ☐ 3rd Party

Results Due:* ☐ 2 hr ☐ 4 hr ☐ 6 hr ☐ 8 hr ☐ 24 hr ☐ 48 hr ☒ 3 day (circled) ☐ 4 day ☐ 5 day ☐ [struck out] ☐ Time due:____ * Contact lab to confirm TAT

Asbestos Air: ☐ PCM (NIOSH 7400A ☐ TEM AHERA ☐ TEM CARB Mod. AHERA ☐ TEM EPA Yamate Level ☐ TEM NIOSH 7402, Issue 2 ☐ ISO 10312 ☐ ISO 13794

Asbestos Bulk: ☐ PLM Standard (EPA 600/R-93-1 ☐ PLM 400 PC ☐ PLM 1000 PC ☐ PLM 400 PC Grav. Red. ☐ PLM 1000 PC Grav. Red. ☐ TEM EPA Qualitative ☐ TEM EPA Quantitative
☐ TEM Chatfield (Semi-Quant) ☐ PLM Vermiculite Attic Insulation ☐ Custom Analysis: Type:

Asbestos Soils: ☐ CARB 435 Prep Only ☒ CARB 435 PLM 400 PC ☐ CARB 435 PLM 1000 PC ☐ EPA Soil Screening Qualitative ☐ TEM EPA/CARB Quantitative

Asbestos Dust: ☐ ASTM D-5755 Fiber Count ☐ ASTM D-5756 Wt. % ☐ ASTM D-5756 Mass ☐ ASTM D-6840-99 Dust Wipe ☐ Total Particulates (Grav.)

Asbestos Water: ☐ 100.2 Potable Drinking Water ☐ 100.1 Non Potable Water

Lead: ☐ Paint Chips ☐ Dust Wipe ☐ Air Cassette ☐ Soil — Lead Waste Characterization: ☐ TTLC ☐ STLC ☐ TCLP

Sample Storage: *☐ No Test, Hold Sample Until:____ *☐ Post Test, Hold Sample Until:____

Custom Order: ☐ Reanalysis by:____ ☐ Sensitivity:____ ☐ Composite ☐ Other:

Sample #	Sample Type	Date Collected	Time On	Time Off	Total Time (min)	Flow Rate (lpm) On	Off	Average	Volume or Area Sampled	8 Hour TWA Requested	Description
EB-1(8.5-15')	Soil/Bedrock	7/28/15								☐	
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Submitted By Matt Schaffer	[signature]	Received By	[signature]
Date/Time Submitted	9-30-15 / 1300	Date/Time Received	9/30/15 / 1300
Submitted By	[signature]	Received By	[signature] 10-30-15
Date/Time Submitted	9/30/15 1410	Date/Time Received	[signature]

*All samples will be held for 3 months from the date of receipt at ATEM. Additional sample storage time may be obtained through ATEM Customer Service

ASBESTOS TEM LABORATORIES CHAIN OF CUSTODY – www.asbestostemlabs.com

CALIFORNIA: 630 Bancroft Way, Berkeley, CA 94710 Phone (510) 704-8930 Fax (510) 704-8429
NEVADA: 1350 Freeport Blvd. #104, Sparks, NV 89431 Phone (775) 359-3377 Fax (775) 359-2798

Please print and send completed CoC with your samples. If you wish to email CoC, send the form as an attachment to Berkeley <coc@asbestostemlabs.com > or Reno <sehrlich@asbestostemlabs.com>.

Company: Cornerstone Earth Group				*Contact:* Matt Schaffer					*Phone/Fax:* 408-515-3734					*Email:* mschaffer@cornerstoneearth.com		
Address: 1259 Oakmead Parkway				*City:* Sunnyvale					*State:* CA *Zip:* 94085					*Country:* United States		
Job Site: Highland Estates Lots 5-11									*Job No:* 230-1-5					*P.O. No:*		
Reporting	☐ Fax	☐ Phone	☒ Email	☐ Mail	☐ FTP	☐ EDD/State Form	☐ Verbal		☐ Pickup	**Billing**	☐ Fax	☒ Email	☐ Mail	☐ Pre-Paid	☐ 3rd Party	
Results Due:*	☐ 2 hr	☐ 4 hr	☐ 6 hr	☐ 8 hr	☐ 24 hr	☐ 48 hr	(☒ 3 day)	☐ 4 day	☐ 5 day	☐ Other	☐ Time due:	* Contact lab to confirm TAT				
Asbestos Air	☐ PCM (NIOSH 7400A	☐ TEM AHERA	☐ TEM CARB Mod. AHERA	☐ TEM EPA Yamate Level	☐ TEM NIOSH 7402, Issue 2	☐ ISO 10312	☐ ISO 13794									
Asbestos Bulk	☐ PLM Standard (EPA 600/R-93-1	☐ PLM 400 PC	☐ PLM 1000 PC	☐ PLM 400 PC Grav. Red.	☐ PLM 1000 PC Grav. Red.	☐ TEM EPA Qualitative	☐ TEM EPA Quantitative									
	☐ TEM Chatfield (Semi-Quant)	☐ PLM Vermiculite Attic Insulation	☐ Custom Analysis: Type:													
Asbestos Soils	☐ CARB 435 Prep Only	☒ CARB 435 PLM 400 PC	☐ CARB 435 PLM 1000 PC	☐ EPA Soil Screening Qualitative	☐ TEM EPA/CARB Quantitative											
Asbestos Dust	☐ ASTM D-5755 Fiber Count	☐ ASTM D-5756 Wt. %	☐ ASTM D-5756 Mass	☐ ASTM D-6840-99 Dust Wipe	☐ Total Particulates (Grav.)											
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EB-1(8.5-15')	Soil/Bedrock	7/28/15								☐	
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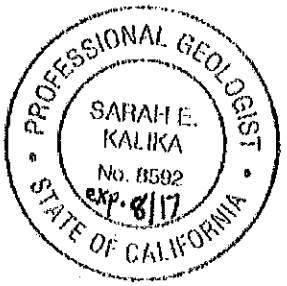
Submitted By Matt Schaffer		**Received By**	
Date/Time Submitted	9-30-15 / 1700	**Date/Time Received**	9/30/15 / 13:00
Submitted By		**Received By**	
Date/Time Submitted	9/30/15 1910	**Date/Time Received**	

*All samples will be held for 3 months from the date of receipt at ATEM. Additional sample storage time may be obtained through ATEM Customer Service

CORNERSTONE EARTH GROUP

Type of Services	**Recommended Standard Operating Procedure (SOP) for NOA Intrusive Work**
Location	**Lots 9 to 11** **Highland Estates** **San Mateo County, California**
Client	**Ticonderoga Partners, LLC**
Client Address	**655 Skyway Parkway, Suite 230** **San Carlos, CA 94070**
Project Number	**230-1-6**
Date	**March 17, 2017**



Prepared by **Sarah E. Kalika, PG, CAC**
Senior Project Geologist

Reviewed by **Scott E. Fitinghoff, P.E., G.E.**
Principal Geotechnical Engineer

1259 Oakmead Parkway | Sunnyvale, CA 94085
T 408 245 4600 | F 408 245 4620

1270 Springbrook Road, Suite 101 | Walnut Creek, CA 94597
T 925 988 9500 | F 925 988 9501

www.cornerstoneearth.com

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CORNERSTONE EARTH GROUP

Type of Services	**Recommended Standard Operating Procedure (SOP) for NOA Earthwork**
Location	**Lots 9 to 11 – Highland Estates San Mateo County, California**

SECTION 1: INTRODUCTION

1.1 OBJECTIVES

This document presents the recommended Standard Operating Procedure (SOP) for earthwork that may or will disturb soils and or bedrock that contain naturally occurring asbestos (NOA) if encountered at the Site.

1.2 NATURALLY OCCCURRING ASBESTOS HAZARD SUMMARY

Asbestos is the common name for the fibrous form of certain naturally occurring iron-magnesium-silicate minerals. Six asbestos minerals are currently regulated by the EPA and the State of California. These six minerals are classified in two different groups based on their crystallographic structure and chemistry: a) chrysotile (serpentine group) and; b) amosite, crocidolite, actinolite, athophyllite and tremolite (amphibole group). All regulated forms of asbestos are considered potentially hazardous and classified as a known human carcinogen by State, Federal and international agencies. As defined in H&SC §25316 and §25260, asbestos is both a hazardous substance and a hazardous material.

Human health effects of asbestos are dependent primarily upon exposure to airborne asbestos fibers, which can be inhaled deeply into lungs. Exposure to asbestos through inhalation can result in health impacts including respiratory disease (asbestosis, a non-cancerous fibrosis of the lungs) and lung cancer (mesothelioma, cancer of the lung lining). In addition, asbestos and tobacco smoke in tandem have higher incidents of lung cancer. The longer a person is exposed to asbestos and the greater the intensity of exposure, the greater the chances for development of health problems.

1.3.2 NOA Intrusive Work

"NOA intrusive" work includes any construction, repair, and/or maintenance work activities that disturb NOA-containing soils, including but not limited to: digging, drilling, excavating, grading, repairing, removing, trenching, filling, gardening, and other soil movement where exposure to NOA may occur.

The following recommended procedures are required to be followed when performing NOA intrusive work to ensure that safeguards are in place to prevent or minimize NOA exposures to anyone at the Site and to prevent untrained or unauthorized personnel from performing intrusive

work at the Site. The following procedures will be overseen by the OSHA Competent Person (with appropriate training and experience) appointed on behalf of the Property Owner:

- Verify that selected contractors and their employees will comply with federal and state OSHA requirements;
- Require employees to follow established Site-specific health and safety requirements prior to starting NOA intrusive work;
- Require reasonable restrictions to Site access to reduce potential exposures to non-workers;
- Implement dust control practices that utilize water;
- Manage any NOA-containing soils in accordance with the SOP and in compliance with applicable, relevant, and appropriate provisions of state and federal law such as the California Air Resources Board (CARB) Final Regulation Order, Section 93105, Asbestos Airborne Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations; also Section 93106, Airborne Toxic Control Measure for Surfacing Applications"; and,
- Comply with all applicable, relevant, and appropriate federal, state, and local requirements.

1.7 NOA CONTRACTOR QUALIFICATION

NOA is exempt from regulation as a hazardous waste (by DTSC interpretation, not OSHA) when it is managed in-place, therefore a special contractor licensing is not needed for NOA intrusive work. However, it is recommended that all personnel performing NOA intrusive work activities at the Site attend NOA Awareness training prior to the commencement of work and comply with applicable OSHA training and personal protective requirements.

SECTION 2: NOTIFICATION

2.1 Notification to Bay Area Air Quality Management District

If the Site is greater than 1 acre and if soils and bedrock containing NOA are discovered at the Site, Bay Area Air Quality Management District (BAAQMD) requires notification within 24-hours of discovery and submittal of the following documents:

- Asbestos Dust Mitigation Plan (ADMP) Application for the discovery of asbestos, ultramafic rock, or serpentine; and
- Asbestos Dust Mitigation Plan, including procedures for perimeter air monitoring if within a developed residential or commercial area within ¼ mile of any sensitive receptors.

The purpose of the ADMP is to provide requirements and guidelines to control and monitor emissions of asbestos during Site grading and earthwork activities associated with the removal action. These requirements are designed to comply with the California Air Resources Board (CARB) Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (Section 93105 of the California Code of Regulations [CCR]).

If the Site is less than 1 acre, an Asbestos Dust Mitigation Plan must be prepared and procedures identified within must be adhered to during Site work, but the ADMP need not be submitted to BAAQMD for review.

SECTION 3: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

3.1 HEALTH AND SAFETY REQUIREMENTS

3.1.1 Health and Safety Plan

Site-specific health and safety requirements will be identified for the Site under the supervision of a certified industrial hygienist, certified asbestos consultant, or other qualified professional in accordance with current health and safety standards as specified by Cal/OSHA. These requirements will be addressed in a Health and Safety Plan (HASP) that identifies proposed NOA intrusive work activities, and specifies Site characteristics, current conditions, history, physical and chemical hazards, and methods of handling and controlling NOA so as to prevent or minimize exposures.

All personnel who perform NOA intrusive work at the Site must follow these requirements. Contractors doing fieldwork in association with this recommended SOP will either adopt and abide by these Site-specific requirements or develop their own HASPs, which, at a minimum, meet the requirements. A copy of a "Plan Acceptance Form" will be included in the HASP; all contractors and other personnel conducting NOA-intrusive work will read the requirements and sign the "Plan Acceptance Form" prior to starting the work.

3.1.2 Competent Person

The Owner will designate a Competent Person. A "Competent Person" is one who:

- Is capable of identifying existing and predictable conditions in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees;
- Is also capable of identifying existing asbestos hazards in the workplace, and selecting the appropriate control strategy to reduce asbestos exposure;
- Has authority to take prompt corrective measures to eliminate such identified hazards.

The Competent Person may be an asbestos consultant, safety officer or technician familiar with sampling techniques and potentially asbestiform mineral formations. The Competent Person may utilize the assistance of other trained professionals as appropriate. All personnel performing the NOA intrusive activities specified in the SOP will be responsible for operating in compliance with the most current requirements of:

- Title 8, California Code of Regulations, § 5144 (8 CCR 5144) Respiratory Protection
- Title 8, California Code of Regulations, § 5194 (8 CCR 5194) Hazard Communication
- Title 8, California Code of Regulations, § 3203 (8 CCR 3203) Injury and Illness Prevention Program
- California Air Resources Board's (CARB) Section 93105 – "Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining

Operations" and CARB Section 93106 – "Asbestos Airborne Toxic Control Measure for Surfacing Applications" as applicable
- Other pertinent requirements (e.g., local ordinances, etc.)

3.1.2.1 Exposure Assessment

The competent person and/or a certified industrial hygienist will conduct an exposure assessment at the initiation of NOA-intrusive activity not previously assessed to determine where airborne asbestos fibers may exceed the OSHA Permissible Limit (PEL) of 0.1 fibers per cubic centimeter (f/cm3) during that operation.

The PEL listed above is identified as the time weighted average (TWA) concentration for a normal eight-hour work day in a 40-hour workweek, to which nearly all workers repeatedly may be exposed without adverse health effects (Title 8, CCR, Section 5155). However, exposure to asbestos concentrations greater than the PEL can result in the following levels of exposure:

- Acute (short-term) Exposure – Exposure at this level can result in shortness of breath, chest or abdominal pain, and irritation of the skin and mucous membranes.
- Chronic (long-term) Exposure – Exposure at this level can results in reduced pulmonary function, breathing difficulty, dry cough, broadening and thickening of the end of the fingers, and blush discoloration of the skin and mucous membranes.

3.1.3 Personal Protective Equipment

Personal protective equipment (PPE) and clothing are used to isolate individuals from NOA as well as physical hazards. Unless otherwise indicated by the results of air monitoring, the minimum level of protection for workers performing NOA intrusive activities is generally Level D (as defined by the EPA [July 1998]) and should include the following:

1. Work coveralls
2. Reflective/visible safety vests
3. Work gloves
4. Steel-toed boots
5. Safety glasses, as necessary
6. Hard hat, as necessary
7. Hearing protection, as necessary

Experience indicates that it is reasonable to expect that significant airborne asbestos concentrations in the work area will remain below acceptable levels as long as stringent dust control measures are implemented.

Respirators and protective suits are required if soil concentrations indicate asbestos is present at greater than 1% (by CARB 435 analysis) or if air monitoring indicates possible excessive exposures. In this case, dust control measures will be increased or work activities will cease. However, the level of protection may be upgraded as deemed necessary by the competent person and/or by a certified industrial hygienist.

3.1.4 Medical Surveillance

A medical surveillance program is recommended for all personnel performing NOA intrusive work. Employers are required to establish a medical surveillance program for all employees who are or

will be exposed to asbestos at or above the PEL of 0.1 f/cm3 of air, in accordance with OSHA (29 CFR 1910.1001).

3.1.5 Other (Hearing Protection, Heat Stress, etc)

Hearing protection, heat stress and other hazards associated with the work activities jobsite personnel may encounter while using equipment, vehicles and heavy equipment will be addressed by their own Injury and Illness Prevention Program (IIPP).

3.2 DUST CONTROL

Site dust control procedures are necessary during NOA intrusive work to control the potential generation of dust and asbestos exposure to workers, Site occupants, and/or neighbors. These procedures include a variety of dust control methods and practices designed to minimize the generation and spreading of dust that could contain asbestos fibers. Experience has shown that if dust control is maintained, asbestos emissions can be kept below allowable levels.

3.2.2 Wet Control Measures

During NOA intrusive work, the NOA-containing soil/bedrock will be adequately wetted prior to and during disturbance (excavating, loading, transporting, compacting, etc.) to minimize dust generation. If temporary stockpiling of NOA-containing soil is needed, the stockpiles will also be kept adequately wetted.

If visible dust is observed exiting the work area, dust control measures will be increased. Increased dust control measures could include increasing water application, or stopping work if excessive winds are present.

3.2.3 Engineering Controls

Alternatively, stockpiles of NOA-containing soil/bedrock will be covered with heavy plastic sheeting and anchored to minimize dust generation. A mist curtain can be erected downwind of the work area to capture any migrating dust.

3.2.4 Cease Operations

All earth-moving activities associated with NOA intrusive work will cease in times of high wind conditions, defined as sustained winds that generate dust emissions at the Site which cross the Site boundary despite dust mitigation measures.

3.4 SOIL/BEDROCK MANAGEMENT AND HANDLING

3.4.1 Stockpiling of NOA-Containing Soil/Bedrock

Whenever possible, excess NOA-containing soil/bedrock generated from NOA intrusive work will be loaded directly onto trucks for off-Site transport without stockpiling. If temporary stockpiling is necessary, the material will be kept adequately wetted or covered with plastic sheeting, which will be secured in place. Additionally, soil stockpiles should be bermed to prevent run-on and runoff. The excavated soil will be placed on heavy plastic sheeting or other impermeable surface (concrete foundation, dumpster, etc.) to avoid contaminating the underlying soil or landscape

features, if present. These control measures will be inspected daily whenever stockpiling operations begin at the Site.

3.4.2 Disposal of NOA-Containing Soil/Bedrock

Any excess NOA-containing soil/bedrock generated from NOA intrusive work may be placed on-Site below a warning barrier, in accordance with recommendations presented by DTSC. Alternatively, excess NOA-containing soil/bedrock generated during NOA intrusive work will be disposed of off-Site at an appropriately permitted landfill facility. If requested by the landfill, samples of the material will be collected to characterize the waste; the samples will be analyzed for asbestos by CARB Test Method 435. The analytical results will then be forwarded to the desired appropriately licensed landfill facility for approval prior to disposal.

SECTION 4: IMPLEMENTATION OF SOP

4.1 FIELD DOCUMENTATION

4.1.1 Field Logs

The competent person will conduct inspections during the NOA intrusive work and will prepare daily field logs documenting Site activities; these logs will be made available for inspection by the Project Coordinator and will be included in the Completion Report for the work

Each daily field log should contain, but is not limited to, the following information:

- Project name and location;
- Name of the NOA Contractor;
- Name of the person who approved the work;
- Names of workers performing the work at the Site;
- Name of the Competent Person and field personnel;
- On-site weather conditions; and
- A chronological description of the work event.

4.1.2 Photographs

Photographs of NOA intrusive activities will be taken periodically during the work to further document the activities performed.

4.1.3 Recordkeeping

All records of documentation (e.g., field logs, reports, photographs, and other documents) prepared under the SOP will be maintained by The Competent Person at the Site and at the Owner's administrative offices. The records will be available for inspection upon request by the public and government representatives.

4.2 SITE PREPARATION

4.2.1 Work Area Delineation and Security Measures

The work area will be properly cordoned off prior to the initiation of the NOA intrusive work. Unauthorized persons will not be allowed to enter the work area. If gates are present around the work area, they will be locked after working hours. Additionally, clear warning signs should be posted to communicate access to the area is restricted to authorized personnel only. An appropriate display of the potential health risk would read as follows:

WARNING
Authorized Personnel Only
This area is known to contain Naturally Occurring Asbestos, which is a known carcinogen that can cause lung cancer. Do not enter this area without appropriate personal protective equipment and proper decontamination setup.

4.2.2 Utility Survey and Clearance

To attempt to locate public underground utilities, the contractor will mark the work area with white spray paint and contact Underground Service Alert (USA) at least 48 hours prior to any excavation work. In addition, as-built drawing and site plans will be reviewed to locate on-Site underground utilities.

4.2.3 NOA Dust Migration Control

Methods to be used to control the potential migration of NOA (via dust generation or migration of soil) from the work area shall be established and in place prior to the start of the work. Engineering controls will be used to control dust generation, and all personnel performing intrusive work activities at the Site will attend NOA awareness training.

4.2.4 Permits

The Owner or contractor will obtain all applicable permits, submit work orders, and notify the appropriate agencies prior to starting the NOA intrusive work.

4.3 FIELD WORK

4.3.1 Confined Space Entry Requirements

A work area is defined as a "confined space" if it has a configuration that hinders the activities of any employees who must enter, work in, and exit them. In addition, there are many instances where employees who work in confined spaces face increased risk of exposure to serious hazards. OSHA uses the term "permit-required confined space" (permit space) to describe those spaces that meet both the definition of "confined space" and pose health or safety hazards. If confined space work is required at the Site as part of the NOA intrusive activities, the contractor shall comply with all OSHA regulations pertaining to confined spaces.

4.3.2 Excavation

It is anticipated that excavation, soil/bedrock movement, compaction, drilling, or other necessary work activities will be performed with a variety of heavy machinery for ripping, moving, loading, or compacting the NOA. Work that requires excavation using heavy equipment will adhere to CCR, Title 8, Section 1540, Excavation. Water trucks and/or fire hoses will be used for dust control.

Care will be taken during activities that will disturb NOA-containing soil to minimize dust generation; this may include performing excavation more slowly or lowering drop heights during excavation and soil loading.

4.3.3 Soil Staging and Storage Operations

As described in Section 4.4.1, if temporary stockpiling of NOA-containing soils is necessary, the material will be placed on plastic sheeting or other impermeable surface, kept adequately wetted to minimize dust and covered with plastic sheeting and anchored or managed by one or more of the engineering controls listed in Section 4.4.1 of this SOP. Stockpiles will be inspected daily to maintain these control measures during stockpiling at the Site.

4.3.4 Air Monitoring

Air monitoring for dust and/or asbestos for worker protection (personal monitoring) and/or public protection (perimeter monitoring) may be required during the work depending on the extent, location, and timing of the planned NOA disturbance based on a review of the planned NOA intrusive work.

4.4 TRANSPORTATION PLAN FOR OFF-SITE DISPOSAL

If excess NOA-containing soil is generated, requiring off-haul from the Site for disposal, the soil/bedrock will be transported to an appropriately permitted landfill by an appropriately-licensed transporter. All transportation activities will be performed in accordance with all applicable federal, state, and local laws, regulations, and ordinances.

4.4.1 Loading of Excess Soil/Bedrock

Excess soil/bedrock will be loaded into trucks in or adjacent to the work area when at all possible. If deemed necessary, a gravel pad will be constructed along the construction exit. If trucks are to travel on NOA-affected soils, wet washing will be needed for NOA removal. The washing will take place on the gravel where signage will be placed stating "Wash out area, no track out allowed." All trucks and vehicles that have driven into the exclusion zone will be completely washed (all exterior surfaces, tires and wheels) before exiting the Site to control track-out of NOA. The rinse water will be contained in drums. In this area, the trucks handling NOA will also have their loads wetted prior to tarping and transport to the landfill.

Another option is to place heavy plastic sheeting beneath the trucks in the loading area to contain soil spilled during loading operations. Loading operations shall adhere to the following procedures:

1. Wet NOA-containing soils adequately prior to loading into trucks to minimize dust generation;
2. Maintain 6 inches or more of freeboard when loading trucks;
3. Minimize drop heights during loading so that no visible dust is generated;
4. Spray each truck with water to thoroughly wet any spilled soil on it, and remove spilled soil from each truck after loading and before it drives off the plastic sheeting;
5. Clean off plastic sheeting prior to driving to prevent tracking NOA-containing soil away from the work area;

6. Wet and cover all loads prior to leaving waste soil loading area; and
7. Fold plastic sheeting inward and prevent material from leaving the plastic after the end of waste loading activities.

Removal of any visible track-out onto the paved public road where vehicles exit the Site (or closest paved road to NOA-intrusive activity) will be performed. This shall be accomplished by wet sweeping or using a HEPA filter equipped vacuum device periodically throughout each workday.

4.4.2 Dust Control During Transportation

Loads will be adequately wetted and then covered with tarps prior to the trucks leaving the Site to prevent dust generation during transportation. The condition of the trucks used to transport the soil/bedrock will be such that no spillage can occur from holes or other openings in cargo compartments. As mentioned above, the trucks will be cleaned of any spilled soil/bedrock prior to leaving the Site to prevent the spreading of soil and subsequent dust generation.

If necessary, wet sweeping or a vehicle equipped with a HEPA filter vacuum device shall be used to remove any track-out of soil onto paved public truck access roads. This shall be performed as needed to minimize track-out and dust generation.

4.4.6 Shipment Documentation

The necessary documents, such as the truck weigh tags and/or waste manifest forms, must be completed and accompany the driver to the landfill. The following information shall be documented and retained by the Property Owner:

- Project name and address;
- Analytical results for transported soil;
- Dates(s) of transportation;
- Location of facility where soil was transported;
- Total amount of soil transported; and
- Copy of the manifest.

Pursuant to 49 CFR 172.500, the U.S. DOT does not presently require placarding on transport vehicles for hazardous materials (such as asbestos wastes), which are classed as "Other Regulated Material" (ORM).

Pursuant to 49 CFR 172.301, the proper DOT shipping name and identification number (e.g., RQ, Asbestos, 9, NA2212, III) must appear on all hazardous material containers of 110 gallons or less capacity.

4.5 DECONTAMINATION

4.5.1 Work Area

Any NOA-containing soil/bedrock spilled or tracked in or outside the work area should be cleaned up (wet sweeping, shoveling, etc.) and either placed beneath the indicator fencing or off-hauled for disposal. Control procedures should be implemented during decontamination activities to prevent dust generation. The NOA Contractor shall provide potable water and wasting facilities for field personnel. The support area will be established prior to the initiation of NOA intrusive work.

4.5.2 Workers

Workers should minimize the amount of dirt or dust that may contain NOA on their hands, face, clothing, and shoes. Footwear must be cleaned with a brush and water. These activities must be performed prior to leaving the work area. Washtubs with soap and water and rinse tubs will be provided for the cleaning of reusable equipment, and sanitation facilities will be provided for washing of hands and face. Wash water collected in the wash tubs will be placed in an on-Site receptacle for disposal off-site. Water used for decontamination can be used for dust control on NOA-containing soil/bedrock or discharged slowly to the NOA-containing soil/bedrock and allowed to infiltrate/evaporate.

4.5.3 Vehicles and Equipment

Decontamination of equipment and Site vehicles must be performed to reduce the physical transfer of NOA from the work area. Before being removed from the work area, all vehicles and equipment in contact with NOA must be thoroughly rinsed/hosed down with water to remove residual soil particles that may be asbestos-bearing; if water is used for decontamination a water supply will be present for this purpose. A wash area may be established near the exit of the work area. The decontamination wash water will be collected and stored in an on-Site container (e.g., Baker tank). The decontamination water will be disposed of off- Site. Water used for decontamination can be used for dust control on NOA containing soil/bedrock or discharged slowly to the NOA-containing soil/bedrock allowed to infiltrate/evaporate.

The cabs of all vehicles and equipment that were used in the work area should be cleaned with a wet rag or sponge as needed to keep them free from accumulated dust and dirt.

Any disposable equipment not to be washed and reused will be placed in drums for proper disposal.

SECTION 5: LIMITATIONS

Cornerstone Earth Group, Inc. 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.