

**California Department of Resources
Recycling and Recovery – CalRecycle**

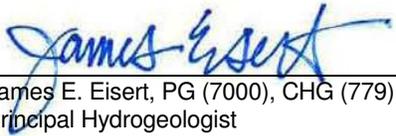
**Pre- and Post-Removal
Activity Results for the
Glenview Incident**

1680 Claremont Drive
San Bruno, California

November 2010



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**Pre- and Post-Removal
Activity Results for the
Glenview Incident**

1680 Claremont Drive
San Bruno, California

Prepared for:
CalRecycle

Prepared by:
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Our Ref.:
RV009832.0000.00003

Date:
November 2010

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1. Introduction	1
2. Background	4
3. Objective	4
4. Scope of Work Performed	5
5. Results	5
5.1 Pre-Removal Activities	5
5.2 Post-Removal Activities	6
5.2.1 Confirmation Soil Sampling	6
5.2.2 Data Validation	7
5.2.3 Data Evaluation	7
6. Conclusion	8
7. Additional Information	9
8. References	10
Table	
Table 1: Cleanup Goals for Metals in Soil, Glenview Fire Incident	8
Figures	
Figure 1. Site Vicinity Map (Source: CalRecycle 2010)	1
Figure 2. Pre-Incident Condition (Source: CalRecycle 2010)	2
Figure 3. Impacted Homes at the Glenview Fire Incident. (Source: CalRecycle 2010)	3
Appendices	
A Pre- and Post-Removal Photographs	
B Site Assessment Information	
C NES Report	
D Laboratory Data Sheets	

1. Introduction

ARCADIS U.S., Inc. (ARCADIS) has prepared this report on behalf of the California Department of Resources Recycling and Recovery (CalRecycle) to present the results of pre- and post-removal cleanup activities at 1680 Claremont Drive, San Bruno, San Mateo County, California (“the Site”). The Site is one of 35 residential properties destroyed by the Glenview Fire Incident in San Bruno, California. Figure 1 shows the site vicinity. Figure 2 shows the pre-incident condition of the neighborhood. Figure 3 shows the addresses of the impacted homes.

Figure 1. Site Vicinity Map (Source: CalRecycle 2010)

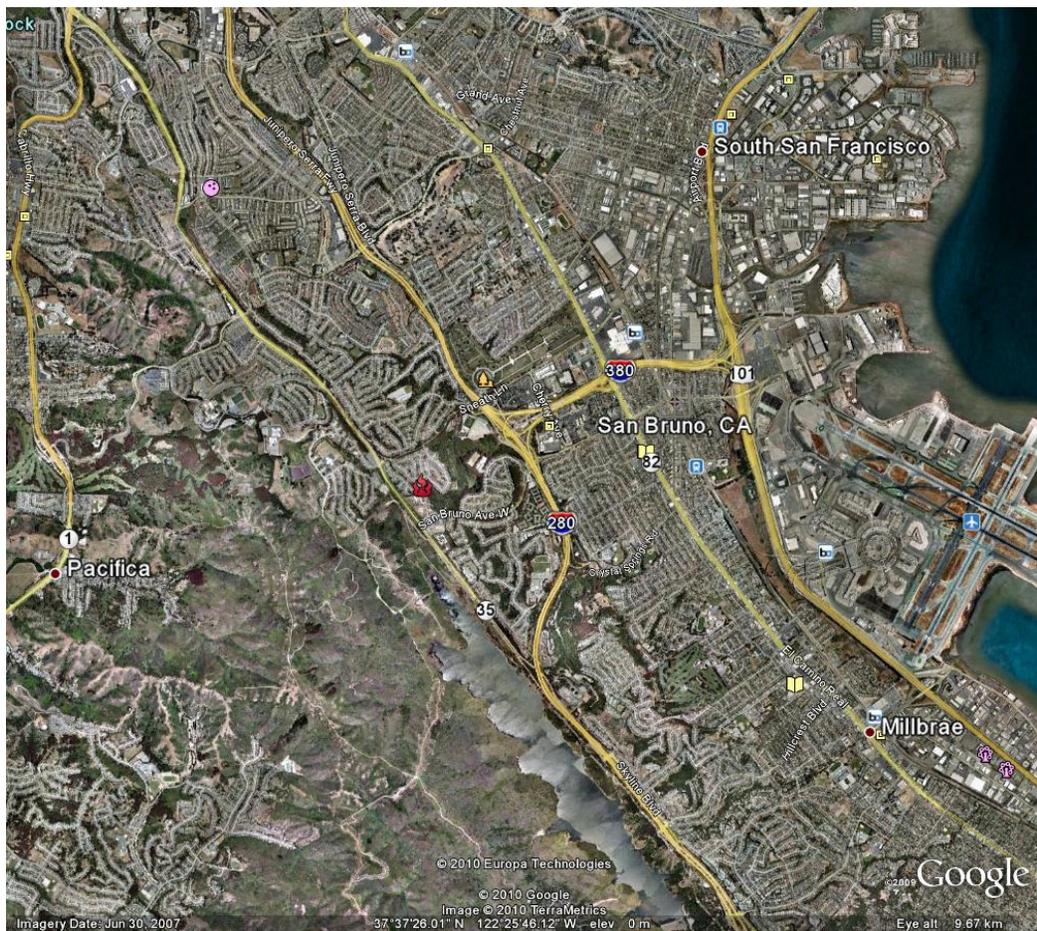


Figure 2. Pre-Incident Condition (Source: CalRecycle 2010)



Figure 3. Impacted Homes at the Glenview Fire Incident. (Source: CalRecycle 2010)



Thirty-five homes and other structures were destroyed during the Glenview Fire. One playground was also destroyed.

2. Background

On September 10, 2010, the Governor of the State of California, Arnold Schwarzenegger, issued executive order S-14-10, which declared a state of emergency in San Mateo County as a result of an explosion and/or fire. This order states that all State agencies with responsibility, regulatory authority or expertise related to recovery efforts in connection with the Glenview fire shall cooperate fully and act expeditiously in coordination with the California Resources and Environmental Protection Agencies (Cal/EPA), to facilitate the mitigation of the effects of the fire and the environmental restoration of the City of San Bruno.

Additionally the order stated that State agencies shall work with local officials to design and implement a comprehensive structural debris removal plan that will treat the removal of structural debris as a single organized project.

CalRecycle has stated that ash and debris from residential structures consumed by fire may contain concentrated amounts of heavy metals such as arsenic, barium, beryllium, copper, chromium, cadmium, lead, and zinc. According to CalRecycle, the occurrence of these metals in burned residential debris has been demonstrated in the "Assessment of Burned Debris Report for the Cedar and Paradise Fires, San Diego County, California," dated December 2003 (San Diego County 2003) and the "Determination of Soil Cleanup Goals Angora Fire Site South Lake Tahoe, California," prepared by LFR Inc. and dated September 26, 2007 (LFR 2007). To help assess the effectiveness of removal efforts, CalRecycle has directed the collection of three confirmation soil samples per property for metals analyses following complete removal of burned debris and ash based on visual observation.

Additionally, CalRecycle has indicated that building materials may contain asbestos. To evaluate that potential, Network Environmental Systems, Inc. (NES) was retained to conduct an asbestos survey.

3. Objective

The objective of the removal activities was to remove potentially toxic soil and ash from each home parcel. The objective was met by excavating the ash, debris, and metals-affected soil. The cleanup activities were confirmed by conducting soil sampling and comparing the soil sampling results to the cleanup goals determined for the Site.

4. Scope of Work Performed

ARCADIS performed work at the Site in accordance with the “Interim Operational Debris Management Plan for the Glenview Fire Incident,” prepared by CalRecycle and dated October 2010 (“the Management Plan”; CalRecycle 2010).

To prepare the Site for cleanup, ARCADIS performed a site reconnaissance, which included the following pre-removal activities:

- measured and recorded the dimensions of the burned structure footprint and ash footprint at the Site
- noted any burned debris requiring removal (e.g., vehicles, trailers, etc.)
- flagged and noted household hazardous waste or other potential hazards (e.g., propane tanks, paint cans, ammunition, etc.)
- photographed the Site prior to ash and debris removal.

Additionally, Network Environmental Systems, Inc. (NES) conducted an asbestos survey of the debris field as part of pre-removal activities. A summary of their activities are reported in Section 5.1.

Post-removal activities included the following:

- collected confirmation soil samples for laboratory analyses of Code of California Regulations, Title 22 metals
- evaluated the analytical results by comparing the soil sampling results to cleanup goals to determine whether additional excavation was necessary
- coordinated with CalRecycle, if appropriate, to conduct additional removal activities and collect additional confirmation soil samples, as needed
- photographed the Site to document post-removal conditions.

5. Results

5.1 Pre-Removal Activities

Pre-removal photographs were taken of the Site and are included in Appendix A. Approximate dimensions of the structure and ash/debris footprint and notes of visual

observations are provided in Appendix B. Prior to entering the Site, ARCADIS performed a radiological survey, as directed by CalRecycle, using a hand-held Ludlum radiation meter to ensure that the Site was safe for contractors to enter and remove debris. (Note: This protocol is standard for CalRecycle debris removal projects.) Measurements for the 35 home sites indicated no elevated radioactivity.

NES was retained by Pacific States Environmental Contractors, Inc. (PSEC), to perform a survey for potential regulated asbestos-containing materials (RACM) at selected properties destroyed by the Glenview Fire. The home at 1680 Claremont Drive was selected for a visual RACM survey. A visual RACM survey was performed to identify and document accessible sources of RACM within the former structure footprint. A copy of the visual survey report and results are provided in Appendix C.

5.2 Post-Removal Activities

CalRecycle has stated that ash and debris from residential structures consumed by fire may contain concentrated amounts of heavy metals such as arsenic, barium, beryllium, copper, chromium, cadmium, lead, and zinc. According to CalRecycle, the occurrence of these metals in burned residential debris has been demonstrated in the "Assessment of Burned Debris Report for the Cedar and Paradise Fires, San Diego County, California," dated December 2003 and the "South Lake Tahoe Angora Fire – Updated Emergency Response and Cleanup Summary Report," prepared by LFR Inc. and dated November 2, 2007.

5.2.1 Confirmation Soil Sampling

ARCADIS conducted confirmation soil sampling for metals analyses from the Site following complete removal of burned debris and ash (based on visual observations) to help assess the effectiveness of removal efforts.

Three confirmation soil samples (1680 Claremont-A, 1680 Claremont-B, and 1680 Claremont-C) were collected from the Site on October 6, 2010 for laboratory analyses of Title 22 metals by EPA Method 6020 and mercury by EPA Method 7471A. These samples were collected and analyzed in accordance with procedures described in the Management Plan. The samples were analyzed by Alpha Analytical (Alpha), a California-certified analytical laboratory located in Sparks, Nevada. Laboratory data sheets presenting the results for each soil sample are provided in Appendix D.

5.2.2 Data Validation

ARCADIS performed a U.S. Environmental Protection Agency Level III data validation evaluation of the analytical data reported by Alpha for the confirmation soil samples in accordance with the Management Plan. The quality control sample results were within compliance criteria and revealed no issues that caused the data to be qualified. The laboratory blanks, holding times, laboratory control sample/laboratory control sample duplicate, and blank spike/blank spike duplicate recoveries for the field samples were within their respective compliance criteria with the exception that several matrix spike recoveries were outside their acceptance ranges but data was deemed acceptable as the method control sample recoveries were acceptable. Based on the quality assurance/quality control review, the project data are valid and available for use in site characterization.

5.2.3 Data Evaluation

Soil cleanup goals for metals in soil were developed for comparison with the analytical results for confirmation soil samples collected from each property to further assess whether removal efforts were complete. Development of cleanup goals is described in detail in the report entitled “Determination of Soil Cleanup Goals, Glenview Fire Incident, San Bruno, California,” prepared by ARCADIS and dated October 2010 (ARCADIS 2010). Generally, the cleanup goals for Title 22 metals in soil are based on the California Human Health Screening Levels (CHHSLs; Cal-EPA 2010) and calculated background metal concentrations.

CHHSLs are concentrations of chemicals in soil that Cal-EPA considers to be below thresholds of concern for risks to human health. Background metal concentrations in soil were quantitatively calculated using a statistical approach. Table 1 provides the cleanup goals established for metals in soil which consist of either CHHSLs or background metal concentrations.

—Table 1 provided on next page—

Table 1: Cleanup Goals for Metals in Soil, Glenview Fire Incident

Analyte	Cleanup Goals for Soil at the Angora Fire Site (mg/kg)
Antimony	30
Arsenic	14
Barium	5,200
Beryllium	16
Cadmium	1.7
Chromium	100,000
Cobalt	660
Copper	3,000
Lead	80
Mercury	18
Molybdenum	380
Nickel	1,600
Selenium	380
Silver	380
Thallium	5
Vanadium	530
Zinc	23,000

Note:

mg/kg = milligrams per kilogram

A comparison of the analytical results to the established cleanup goals showed that results were well below the cleanup goals. Based on these results, and in consultation with CalRecycle and San Mateo County, the removal effort was considered complete. ARCADIS photographed the Site after cleanup and the post-removal photographs are included in Appendix A.

6. Conclusion

Cleanup efforts were effective in removing ash and debris from the Site, based on visual observations and comparison of confirmation soil sample analytical results to cleanup goals for metals in soil.

7. Additional Information

Requests for additional information or questions from stakeholders regarding this report should be directed to CalRecycle:

- Mr. Todd Thalhamer, P.E.
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1001 "I" Street
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- Mr. Wes Mindermann, P.E.
Senior Waste Management Engineer
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916.341.6314
wes.minderman@calrecycle.ca.gov

8. References

ARCADIS. 2010. Determination of Cleanup Goals for Metals in Soil. Glenview Fire Incident, San Bruno, California. October.

California Environmental Protection Agency (Cal-EPA). 2010. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. September.

California Department of Resources Recycling and Recovery (CalRecycle). 2010. Interim Operational Debris Management Plan for the Glenview Fire Incident, San Bruno, California. October.

LFR Inc. (LFR). 2007. Determination of Soil Cleanup Goals, Angora Fire, Site South Lake Tahoe, California. September 26.

San Diego County. 2003. Assessment of Burned Debris Report for the Cedar and Paradise Fires, San Diego County, California. December.

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Appendix A

Pre- and Post-Removal Photographs









Appendix B

Site Survey Information

SITE ASSESSMENT DATA

SITE ADDRESS: 11680 CLAREMONT DRIVE DATE: 9-27-2010

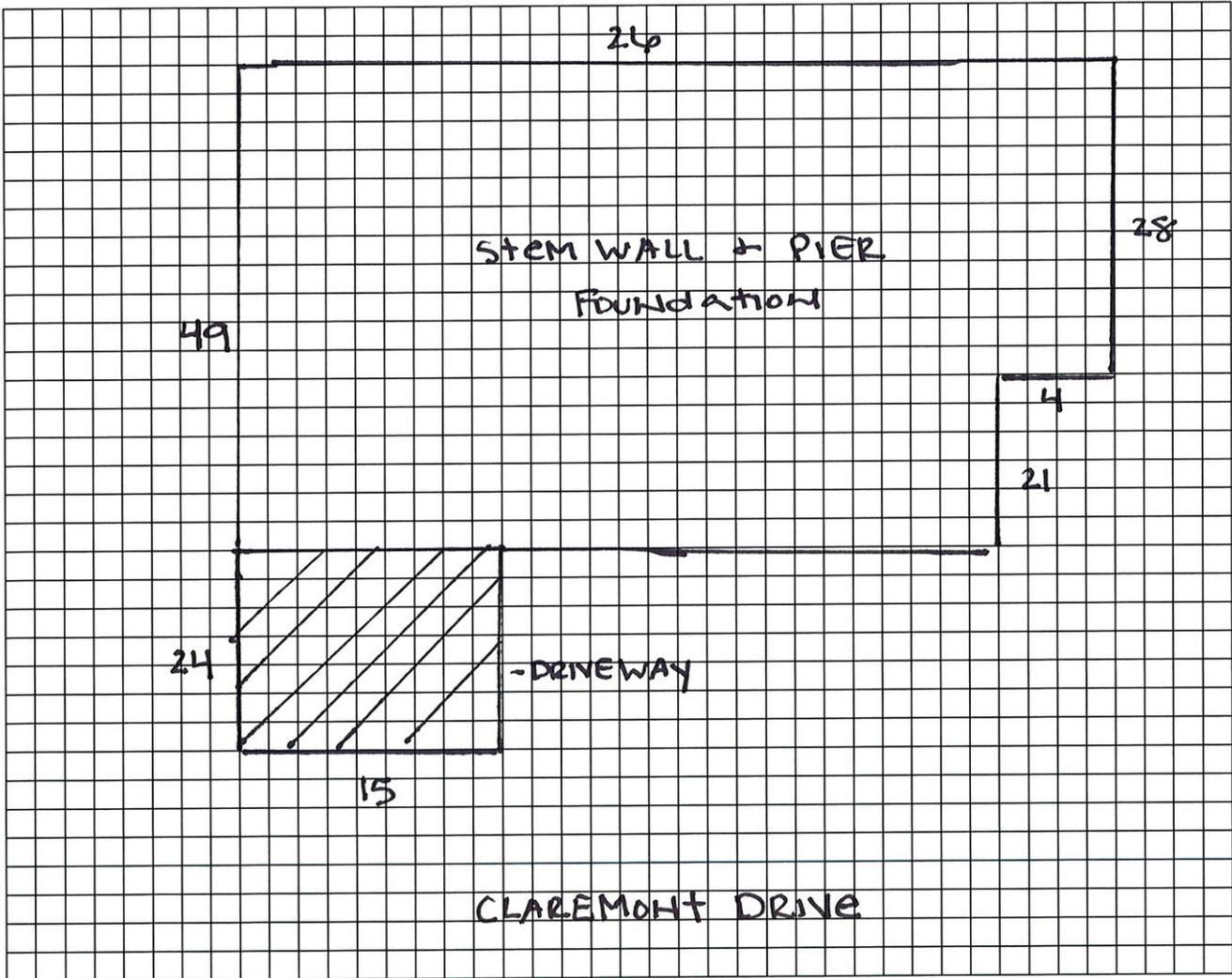
RADIATION DATA: Range = 0-1 C/m Instrument Serial No = ~~808~~ 229331

PHOTO DOCUMENTATION (No. of Photos = 5)

SITE SKETCHES (all dimensions in feet)

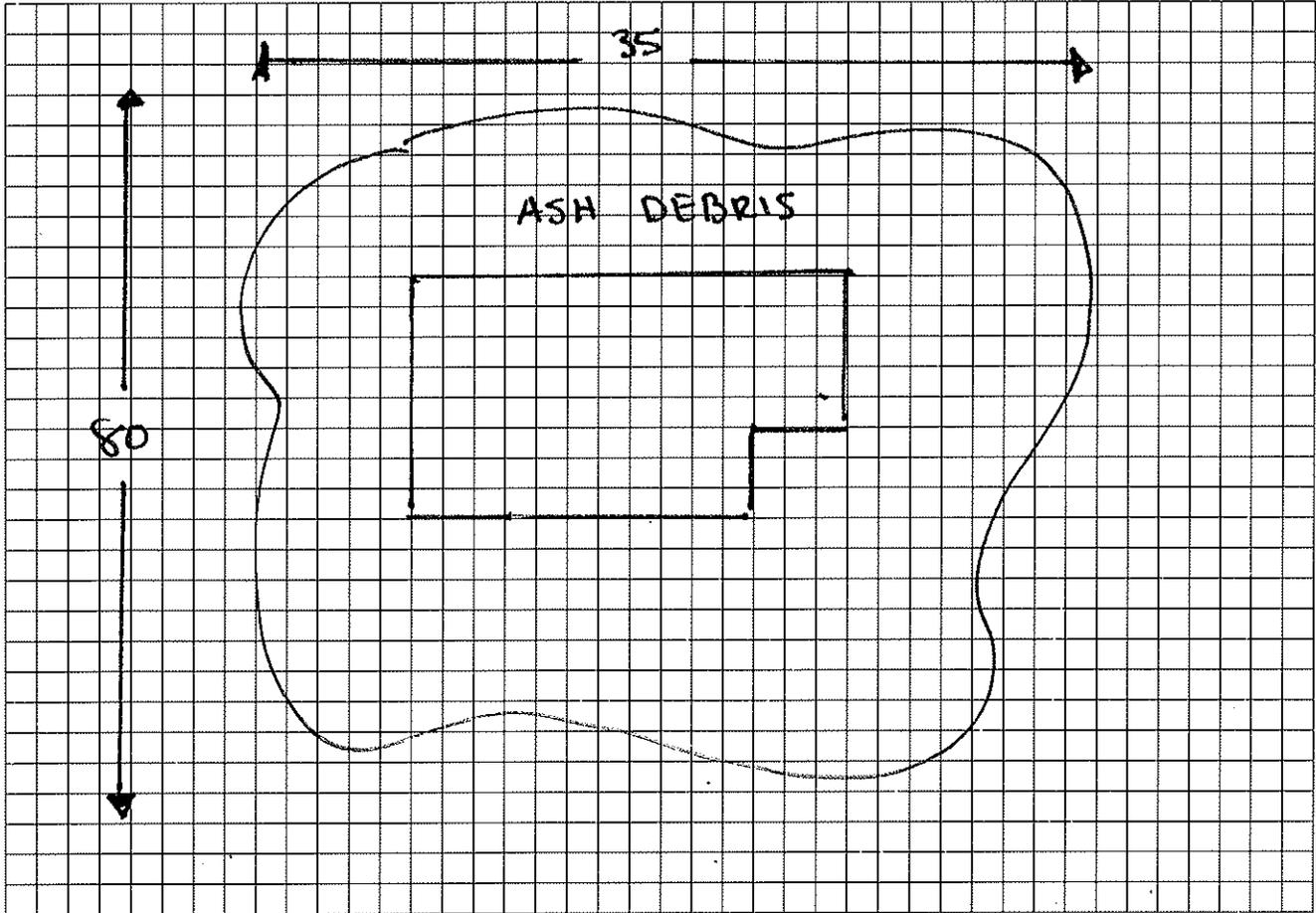
RETAINING WALL  CONCRETE SLAB  BRICK 

Structural Footprint with Dimensions



NOT TO SCALE

Ash/Debris Footprint with Dimensions



NOT TO SCALE

NOTES/OBSERVATIONS

Indicate number of items present where applicable:

Vehicle	<u>1</u>	Storage Shed	<u> </u>	Concrete Slab	Yes <input type="radio"/> No <input checked="" type="radio"/>
Motorcycle	 	Pool/Spa	Yes <input type="radio"/> No <input checked="" type="radio"/>	Stem Walls	<input checked="" type="radio"/> Yes <input type="radio"/> No
ATV	<u> </u>	Gazebo	Yes <input type="radio"/> No <input checked="" type="radio"/>	Driveway	<input checked="" type="radio"/> Yes <input type="radio"/> No
Boat	<u> </u>	Chimney	<input checked="" type="radio"/> Yes <input type="radio"/> No	Asphalt	<u> </u>
Trailer	<u> </u>	Retaining Wall	Yes <input type="radio"/> No <input checked="" type="radio"/>	Concrete	<input checked="" type="checkbox"/>
Motorhome	<u> </u>	Fencing	Yes <input type="radio"/> No <input checked="" type="radio"/>	Brick	<u> </u>
				Gravel	<u> </u>

Dust Data: Range = 0 to 0.092

Field Staff Information:

DORI ARBOUR
 PRINT NAME


 SIGNATURE

9-27-2010
 DATE

ARCADIS

Appendix C

NES Report



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(916) 353-2360 • Fax (916) 353-2375 • (800) NES-ADVISE
© www.nesglobal.net

**GLENVIEW INCIDENT STRUCTURAL DEBRIS REMOVAL PROJECT
ASBESTOS VISUAL SURVEY
1680 CLAREMONT DRIVE
SAN BRUNO, CALIFORNIA**

November 15, 2010

Prepared for

**San Mateo County
Environmental Health Services Division
San Mateo County Health Department
2000 Alameda De Las Pulgas, Suite 100
San Mateo, California 944403**

**CalRecycle
Department of Resources Recycling and Recovery
1001 I Street, MS-10th Floor
Sacramento, California 95814**

Prepared by
NES, Inc.
1411 Sibley Street
Folsom, California 95630
(916) 353-2360

NES PROJECT NUMBER 456.IH1065.04.D1

1. EXECUTIVE SUMMARY

NES, Inc. (*NES*) was contracted by Pacific States Environmental Contractors, Inc. (PSEC) through the San Mateo County Health Department, Environmental Health Services Division and CalRecycle, California Department of Natural Resources to perform visual asbestos surveys at properties destroyed by the Glenview Fire incident. The approximately 1,230 square foot home at 1680 Claremont Drive was constructed in 1955 and was completely destroyed by the Glenview fire. On September 29, 2010, a visual asbestos survey was performed by Justin Nordin, Site Surveillance Technician (DOSH Certification No. 09-4553) with *NES*, at which time a visual inspection of the remaining building materials was performed to identify potential Regulated Asbestos-Containing Materials (RACM). The asbestos survey was performed under the guidance of David B. Durst, Certified Asbestos Consultant (DOSH Certification No. 03-3470).

2. METHODS

A. TASKS

The following tasks were included in the evaluation:

- ◆ A site visit was performed by Justin Nordin, DOSH certified Site Surveillance Technician, to perform a visual asbestos survey of remaining building materials. Work was performed under the direction of David B. Durst, DOSH Certified Asbestos Consultant.
- ◆ *NES* performed the visual asbestos survey to identify and document accessible sources of Regulated Asbestos-Containing Materials, friable and non-friable, within the former structure footprint.
- ◆ A report of findings was prepared.

B. ASBESTOS SURVEY DESCRIPTION

The following asbestos survey was performed:

- ◆ The visual inspection was conducted using the methods presented in the Federal AHERA (Asbestos Hazard Emergency Response Act) regulations (40 CFR, Part 763) as a guideline. While AHERA is only directly applicable to public schools, the principles presented under the Final Rule are generally accepted as state-of-the-art for asbestos surveys. Suspected RACM were also physically assessed for friability, condition, and disturbance factors.

- ◆ *NES* inspected identifiable and accessible materials present within the footprint of the structure.

3. DATA AND RESULTS

The following items located within the footprint of the building were identified as potential regulated asbestos-containing materials:

- Concrete foundation footings
- Outer wall concrete and stucco
- Sheetrock
- 12” by 12” white ceramic tile grout
- Fireplace mortar
- Chimney mortar

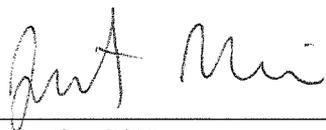
Since all materials were considered significantly damaged, and friable, they should be disposed of as asbestos containing waste.

4. LIMITATIONS

The information, interpretations, conclusion, and recommendations contained in this technical report are presented solely as a guide to the existing conditions as evaluated at 1680 Claremont Drive in San Bruno, California. *NES, Inc.* developed the conclusions and professional opinions presented herein in accordance with generally accepted industrial hygiene principles and practices. As with all industrial hygiene evaluations and reports, the opinions expressed herein are subject to revisions in light of new information, and no warranties are expressed or implied.

This report has not been prepared for use by parties other than the City of San Bruno, County of San Mateo, CalRecycle, and Pacific States Environmental Contractors, Inc. It may not contain sufficient information for the purposes of other parties or other uses. If any significant changes are made in the property described in this report, the conclusions and recommendations contained herein may be invalid, unless the changes are reviewed by *NES* and the conclusions and recommendations are modified or approved in writing.

This report has been prepared by:



Justin Nordin, SST

Industrial Hygiene Associate

DOSH Certified Site Surveillance Technician, Certification No. 09-4553

This report has been reviewed by:



David B. Durst, MS, CIH, CSP, CPEA, CAC

Senior Vice President

Director of Industrial Hygiene Consulting Services

DOSH Certified Asbestos Consultant, Certification No. 03-3470

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Appendix D

Laboratory Data Sheets



Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Arcadis-US
1410 Rocky Ridge Drive
Roseville, CA 95661

Attn: James Eisert
Phone: (916) 786-0320
Fax: (916) 786-0366
Date Received : 10/08/10

Job: RV009832.0000/00003/San Bruno Fire Response Project

Metals by ICPMS
EPA Method SW6020 / SW6020A

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed	
Client ID: 1680 Claremont-A					
Lab ID : ARC10100824-01A	Beryllium (Be)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
Date Sampled 10/06/10 15:40	Vanadium (V)	30	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Chromium (Cr)	69	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Cobalt (Co)	4.5	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Nickel (Ni)	28	2.0 mg/Kg	10/08/10 08:16	10/08/10
	Copper (Cu)	3.4	2.0 mg/Kg	10/08/10 08:16	10/08/10
	Zinc (Zn)	ND	20 mg/Kg	10/08/10 08:16	10/08/10
	Arsenic (As)	2.9	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Selenium (Se)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Molybdenum (Mo)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Silver (Ag)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Cadmium (Cd)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Antimony (Sb)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Barium (Ba)	82	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Mercury (Hg)	ND	0.20 mg/Kg	10/08/10 08:16	10/08/10
	Thallium (Tl)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Lead (Pb)	5.1	1.0 mg/Kg	10/08/10 08:16	10/08/10
Client ID: 1680 Claremont-B					
Lab ID : ARC10100824-02A	Beryllium (Be)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
Date Sampled 10/06/10 15:45	Vanadium (V)	28	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Chromium (Cr)	54	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Cobalt (Co)	4.3	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Nickel (Ni)	41	2.0 mg/Kg	10/08/10 08:16	10/08/10
	Copper (Cu)	11	2.0 mg/Kg	10/08/10 08:16	10/08/10
	Zinc (Zn)	21	20 mg/Kg	10/08/10 08:16	10/08/10
	Arsenic (As)	3.0	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Selenium (Se)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Molybdenum (Mo)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Silver (Ag)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Cadmium (Cd)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Antimony (Sb)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Barium (Ba)	68	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Mercury (Hg)	ND	0.20 mg/Kg	10/08/10 08:16	10/08/10
	Thallium (Tl)	ND	1.0 mg/Kg	10/08/10 08:16	10/08/10
	Lead (Pb)	3.7	1.0 mg/Kg	10/08/10 08:16	10/08/10



Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Client ID: **1680 Claremont-C**

Lab ID : ARC10100824-03A	Beryllium (Be)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
Date Sampled 10/06/10 15:50	Vanadium (V)	40	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Chromium (Cr)	82	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Cobalt (Co)	3.9	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Nickel (Ni)	46	2.0 mg/Kg	10/08/10 08:16	10/09/10
	Copper (Cu)	7.4	2.0 mg/Kg	10/08/10 08:16	10/09/10
	Zinc (Zn)	28	20 mg/Kg	10/08/10 08:16	10/09/10
	Arsenic (As)	4.0	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Selenium (Se)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Molybdenum (Mo)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Silver (Ag)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Cadmium (Cd)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Antimony (Sb)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Barium (Ba)	71	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Mercury (Hg)	ND	0.20 mg/Kg	10/08/10 08:16	10/09/10
	Thallium (Tl)	ND	1.0 mg/Kg	10/08/10 08:16	10/09/10
	Lead (Pb)	3.4	1.0 mg/Kg	10/08/10 08:16	10/09/10

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl *Randy Gardner* *Walter Hinchman*

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

10/13/10

Report Date



Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date:
11-Oct-10

QC Summary Report

Work Order:
10100824

Method Blank

Type **MBLK** Test Code: **EPA Method SW6020 / SW6020A**

File ID: **100810.B\100_M.D**

Batch ID: **25220**

Analysis Date: **10/08/2010 21:30**

Sample ID: **MB-25220**

Units : **mg/Kg** Run ID: **ICP/MS_101008E**

Prep Date: **10/08/2010 08:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Beryllium (Be)	ND	1								
Vanadium (V)	ND	1								
Chromium (Cr)	ND	1								
Cobalt (Co)	ND	1								
Nickel (Ni)	ND	2								
Copper (Cu)	ND	2								
Zinc (Zn)	ND	20								
Arsenic (As)	ND	1								
Selenium (Se)	ND	1								
Molybdenum (Mo)	ND	1								
Silver (Ag)	ND	1								
Cadmium (Cd)	ND	1								
Antimony (Sb)	ND	1								
Barium (Ba)	ND	1								
Mercury (Hg)	ND	0.2								
Thallium (Tl)	ND	1								
Lead (Pb)	ND	1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method SW6020 / SW6020A**

File ID: **100810.B\101_M.D**

Batch ID: **25220**

Analysis Date: **10/08/2010 21:36**

Sample ID: **LCS-25220**

Units : **mg/Kg** Run ID: **ICP/MS_101008E**

Prep Date: **10/08/2010 08:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Beryllium (Be)	26.9	1	25		107	80	120			
Vanadium (V)	25.2	1	25		101	80	120			
Chromium (Cr)	26.3	1	25		105	80	120			
Cobalt (Co)	25.1	1	25		100	80	120			
Nickel (Ni)	25.9	2	25		104	80	120			
Copper (Cu)	27.1	2	25		108	80	120			
Zinc (Zn)	24.1	20	25		96	80	120			
Arsenic (As)	24.3	1	25		97	80	120			
Selenium (Se)	24	1	25		96	80	120			
Molybdenum (Mo)	24.4	1	25		98	80	120			
Silver (Ag)	22.7	1	25		91	80	120			
Cadmium (Cd)	25	1	25		100	80	120			
Antimony (Sb)	24.2	1	25		97	80	120			
Barium (Ba)	291	1	250		116	80	120			
Mercury (Hg)	0.492	0.2	0.5		98	80	120			
Thallium (Tl)	21.7	1	25		87	80	120			
Lead (Pb)	24.5	1	25		98	80	120			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method SW6020 / SW6020A**

File ID: **100810.B\106_M.D**

Batch ID: **25220**

Analysis Date: **10/08/2010 22:04**

Sample ID: **10100732-02AMS**

Units : **mg/Kg** Run ID: **ICP/MS_101008E**

Prep Date: **10/08/2010 08:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Beryllium (Be)	25.7	1	25	0	103	75	125			
Vanadium (V)	61.7	1	25	36.21	102	75	125			
Chromium (Cr)	78.1	1	25	68.83	37	75	125			M2
Cobalt (Co)	30.9	1	25	7.38	94	75	125			
Nickel (Ni)	73.6	2	25	49.07	98	75	125			
Copper (Cu)	37.5	2	25	12.92	98	75	125			
Zinc (Zn)	61	20	25	35.41	102	75	125			
Arsenic (As)	25.3	1	25	3.717	86	75	125			
Selenium (Se)	22	1	25	0	88	75	125			
Molybdenum (Mo)	22.1	1	25	0	89	75	125			
Silver (Ag)	21.9	1	25	0	88	75	125			
Cadmium (Cd)	24	1	25	0	96	75	125			
Antimony (Sb)	19.1	1	25	0	76	75	125			
Barium (Ba)	354	1	250	72.18	113	75	125			
Mercury (Hg)	0.516	0.2	0.5	0	103	75	125			
Thallium (Tl)	22.3	1	25	0	89	75	125			
Lead (Pb)	32.7	1	25	7.971	99	75	125			



Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date:
11-Oct-10

QC Summary Report

Work Order:
10100824

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method SW6020 / SW6020A**

File ID: **100810.B\107_M.D**

Batch ID: **25220**

Analysis Date: **10/08/2010 22:10**

Sample ID: **10100732-02AMSD**

Units : **mg/Kg** Run ID: **ICP/MS_101008E**

Prep Date: **10/08/2010 08:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Beryllium (Be)	26.3	1	25	0	105	75	125	25.68	2.2(20)	
Vanadium (V)	69.1	1	25	36.21	131	75	125	61.68	11.3(20)	M1
Chromium (Cr)	117	1	25	68.83	194	75	125	78.06	40.3(20)	M1 R58
Cobalt (Co)	35.2	1	25	7.38	111	75	125	30.88	13.0(20)	
Nickel (Ni)	112	2	25	49.07	252	75	125	73.57	41.5(20)	M1 R58
Copper (Cu)	42.8	2	25	12.92	119	75	125	37.51	13.1(20)	
Zinc (Zn)	70.1	20	25	35.41	139	75	125	60.96	14.0(20)	M1
Arsenic (As)	26.5	1	25	3.717	91	75	125	25.27	4.9(20)	
Selenium (Se)	22.7	1	25	0	91	75	125	22.03	2.9(20)	
Molybdenum (Mo)	22.4	1	25	0	90	75	125	22.13	1.2(20)	
Silver (Ag)	22.1	1	25	0	88	75	125	21.92	0.6(20)	
Cadmium (Cd)	24.1	1	25	0	96	75	125	23.99	0.5(20)	
Antimony (Sb)	20.1	1	25	0	80	75	125	19.1	4.9(20)	
Barium (Ba)	342	1	250	72.18	108	75	125	354.2	3.4(20)	
Mercury (Hg)	0.524	0.2	0.5	0	105	75	125	0.5161	1.5(20)	
Thallium (Tl)	23.1	1	25	0	92	75	125	22.27	3.7(20)	
Lead (Pb)	34.5	1	25	7.971	106	75	125	32.66	5.4(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

M2 = Matrix spike recovery was low, the method control sample recovery was acceptable.

R58 = MS/MSD RPD exceeded the laboratory control limit.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA RUSH! Page: 1 of 1

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : ARCI10100824

Report Due By : 5:00 PM On : 13-Oct-10

Client: Arcadis-US
 1410 Rocky Ridge Drive
 Suite 330
 Roseville, CA 95661

Report Attention	Phone Number	Email Address
James Eisert	(916) 786-0320 x	james.eisert@arcadis-us.com
Stephanie Gentry	x	stephanie.gentry@arcadis-us.com

EDD Required : Yes

Sampled by : E Chan

PO : 009831_Alpha-w.a:#1
 Client's COC # : none

Job : RV009832.0000/00003/San Bruno Fire Response Project

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix Date	No. of Bottles		TAT	METALS_0	Requested Tests	Sample Remarks
			Alpha	Sub				
ARC10100824-01A	1680 Claremont-A	SO 10/06/10 15:40	1	0	3	CAM_I7_ITT_LC		
ARC10100824-02A	1680 Claremont-B	SO 10/06/10 15:45	1	0	3	CAM_I7_ITT_LC		
ARC10100824-03A	1680 Claremont-C	SO 10/06/10 15:50	1	0	3	CAM_I7_ITT_LC		

Comments: 72 HR TAT. Security seals intact. Frozen ice. :

Logged in by: <i>K Murray</i>	Signature	Print Name: <i>K Murray</i>	Company: Alpha Analytical, Inc.	Date/Time: 10/8/10 1045
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NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report. Matrix Type : Aq(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

