O'BRIEN & GERE
ENGINEERS, INC.

May 16, 2003

Mr. Tom Suozzo, P.E.
New York State Department of Environmental Conservation
1679 New York Route 11
Kirkwood, NY 13795

Re: CAE Electronics – Former Hillcrest Facility, Binghamton, New York

File: 6250/21939 #2

Dear Tom:

This letter provides a plan for the *in situ* soil stabilization activities to be performed at the CAE Electronics Former Hillcrest Facility (the Site). In situ soil stabilization will be performed in accordance with this plan, based on results of a pilot study performed in March 2003.

As part of the pilot study, on February 18 and 19, 2003, CAE installed 5 soil borings at locations corresponding to soil borings that were installed inside the building in October 1999 and where post-excavation verification samples indicated concentrations of total cadmium and total chromium above the site-specific cleanup levels. Soil samples were collected from each soil boring between 10 and 18 feet below grade. Samples were submitted to O'Brien & Gere Laboratories, Inc. and analyzed for total cadmium and total chromium. The samples with the highest concentrations of total cadmium and total chromium were then analyzed for TCLP cadmium and TCLP chromium. Analytical results are summarized in Table 1 of this letter. Soil samples with the highest TCLP cadmium concentrations (S-1 (14 – 16) and S-5 (16 – 18)) were submitted to Forrester Environmental Services, Inc. for pilot testing on March 14, 2003.

Based on the 1990 Remedial Investigation Report, and as confirmed during pilot testing, chromium at the site is trivalent chromium rather than hexavalent chromium. Trivalent chromium is less soluble than hexavalent chromium and will allow use of a food grade reagent for the *in situ* soil stabilization.

Analytical results of the pilot study showed that the remaining contaminated soils at the Site can be stabilized using two different solutions of the FESI-BOND™ WET technology. TCLP results for the soil samples submitted to Forrester Environmental Services, Inc. following treatment are summarized in Table 2. Based on these results, the pilot study demonstrates that post-treatment cadmium and chromium TCLP levels meet the RCRA Hazardous Waste Criteria, and that the soil stabilization requirements specified in the ROD have been met in treated samples.

Following NYSDEC approval of this plan, the full-scale *in situ* soil stabilization program will be implemented. The appropriate stabilization reagents, as determined during the pilot study, will be injected at a depth of approximately 12 feet below grade. As discussed with NYSDEC on March 6, 2003, areas requiring stabilization are shown on the attached drawing. Based on the subsurface soil conditions at the site (*i.e.*, loose soil and gravel), it is anticipated that the stabilization injection points will be spaced linearly, approximately 3 feet apart along the building foundation in areas shown. If injection points are spaced 3 feet apart, 70 injection points will be installed. The contractor retained to implement the *in situ* soil stabilization activities will follow the attached Community Air Monitoring Plan (CAMP) while working at the Site.

O'Brien & Gere Engineers, Inc., an O'Brien & Gere company
5000 Brittonfield Parkway / P.O. Box 4873, Syracuse, New York 13221-4873
(315) 437-6100 / FAX (315) 463-7554 • http:// www.obg.com
. . . and offices in major U.S. cities

During implementation of soil stabilization activities, a minimum of four test borings will be installed at various locations within the areas to be stabilized to demonstrate that the injection points are spaced appropriately. These test borings will be installed at the midpoint between two injection points. A split spoon sample will be collected from each test boring for visual observation of soil saturation. If the soil sample is saturated, then it can be concluded that the injection points are spaced appropriately. If the soil between the injection points is not saturated, then the spacing between the injection points in the vicinity of that test boring will be adjusted.

Since the pilot study demonstrates that the RCRA Hazardous Waste Criteria for cadmium and chromium can be achieved using the FESI-BOND™ WET technology, and it can be demonstrated that the stabilization reagents have been evenly distributed throughout the zone of contaminated soil (*i.e.*, overlapping treatment zones have been achieved), no post-stabilization sampling will be performed.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC

James R. Heckathorne, P.E.
Vice President

I:\DIV71\Projects\6250\21939\2_CORRES\stabilization wp_rev1.doc

cc: J. Burke – NYSDEC, Region 7
G. Laccetti – NYSDOH, Troy
R. Murphy, Esq. – Pope, Tait & Murphy, LLP
M. Stoddard - REM
J. Shanahan, P.E. – O'Brien & Gere Engineers, Inc.
J. Rank – O'Brien & Gere Engineers, Inc.

Table 1

CAE Electronics
Former Hillcrest Facility
Binghamton, New York

February 18 and 19, 2002 Soil Borings
Analytical Data Summary

Sample	Total Cadmium	Total Chromium	TCLP Cadmium	TCLP Chromium
S-1 (10 - 12)	2.5	26	NA	NA
S-1 (14 - 16)	140	150	1.4	< 0.50
S-1 (16 - 18)	81	130	NA	NA
S-2 (10 - 12)	6.7	39	NA	NA
S-2 (14 - 16)	190	59	1.2	< 0.50
S-2 (16 - 18)	170	460	0.99	< 0.50
S-3 (10 - 12)	1.3	22	NA	NA
S-3 (12 - 14)	<1.1	19	NA	NA
S-3 (14 - 16)	6.2	36	NA	NA
S-3 (16 - 18)	3.9	18	NA	NA
S-4 (10 - 12)	17	30	NA	NA
S-4 (12 - 14)	<1.1	11	NA	NA
S-4 (14 - 16)	11	56	NA	NA
S-4 (16 - 18)	1.7	17	NA	NA
S-5 (10 - 12)	19	350	NA	NA
S-5 (12 - 14)	35	49	NA	NA
S-5 (14 - 16)	100	270	NA	NA
S-5 (16 - 18)	240	270	1.3	< 0.50

Notes:
Total cadmium and total chromium are reported in mg/kg.
TCLP cadmium and TCLP chromium are reported in mg/L.
NA - Not analyzed.

Site-specific cleanup level for cadmium = 80 mg/kg
Site-specific cleanup level for chromium = 80,000 mg/kg

Table 2

CAE Electronics
Former Hillcrest Facility
Binghamton, New York

***In situ* Soil Stabilization**
Pilot Study Test Results

	Pre-Treatment				Post-Treatment			
Sample	Total Cd	Total Cr	TCLP Cd	TCLP Cr	Sol #1 TCLP Cd	Sol #1 TCLP Cr	Sol #2 TCLP Cd	Sol #2 TCLP Cr
S-1 (14 - 16)	140	150	1.4	< 0.50	0.01	0.005	0.006	<0.002
S-5 (16 - 18)	240	270	1.3	< 0.50	0.013	<0.002	0.005	0.003

Notes:
Total cadmium and total chromium are reported in mg/kg.
TCLP cadmium and TCLP chromium are reported in mg/L.
Cd - Cadmium
Cr - Chromium

RCRA Hazardous Waste Criteria for cadmium = 1.0 mg/L
RCRA Hazardous Waste Criteria for chromium = 5.0 mg/L

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a **continuous** basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring partculate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

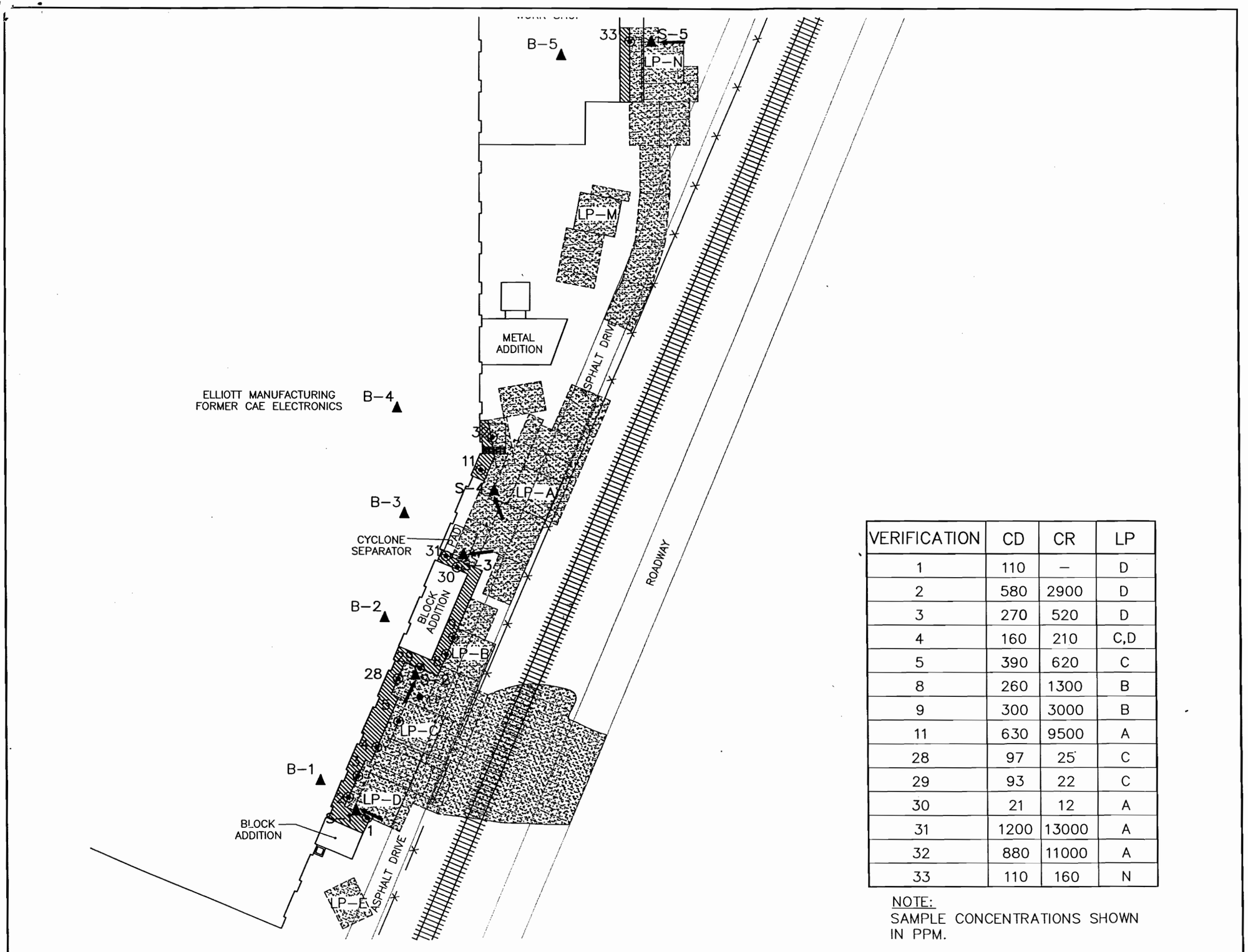
- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

H:\Southern\gCAMPr1.doc



VERIFICATION	CD	CR	LP
1	110	–	D
2	580	2900	D
3	270	520	D
4	160	210	C,D
5	390	620	C
8	260	1300	B
9	300	3000	B
11	630	9500	A
28	97	25	C
29	93	22	C
30	21	12	A
31	1200	13000	A
32	880	11000	A
33	110	160	N

NOTE:
SAMPLE CONCENTRATIONS SHOWN IN PPM.

LEGEND

- RAILROAD TRACKS
- FENCE
- AREA OF EXCAVATION
- STABILIZATION AREA
- 32 VERIFICATION SAMPLE LOCATION
- B-5 INTERIOR SOIL BORING
- S-5 EXTERIOR SOIL BORING

CAE ELECTRONICS, INC.
FORMER HILLCREST FACILITY
BINGHAMTON, NEW YORK

PROPOSED IN SITU SOIL STABILIZATION AREAS

40 0 40

SCALE IN FEET

MARCH 2003

FILE NO. 6250.21939.028

O'BRIEN & GERE
ENGINEERS INC.