Geo Plexus, Inc.

Health & Safety Training • Geo/Environmental Personnel • Engineering Geology Consultants • Environmental Management Consultants

June 15, 1998

Walsh Pacific Construction
EBMUD Adeline Maintenance Facility
2130-A Adeline Street
Oakland, CA 94607
Attn.: Mr. Eugene Hays

Subject: Addendum No. 3 to Materials Management Plan for EBMUD Adeline Maintenance Facility, Oakland, CA

Reference: (a) Materials Management Plan for EBMUD Adeline Maintenance Facility, Oakland, CA, prepared by Geo Plexus, Inc., dated January 18, 1996

Dear Mr. Hays:

As authorized, Geo Plexus, Incorporated is pleased to provide the attached Addendum No. 3 to the Materials Management Plan (MMP), reference (a), for the planned construction activities for the Phase 3 site at the EBMUD Adeline Maintenance Center (AMC).

Reference (a) presented the general site history and environmental issues for the project, an evaluation of human and environmental risks associated with the known soil contaminates, remedial action criteria for the planned construction phases, and phase-specific guidelines to be implemented to complete the earthwork associated with the construction.

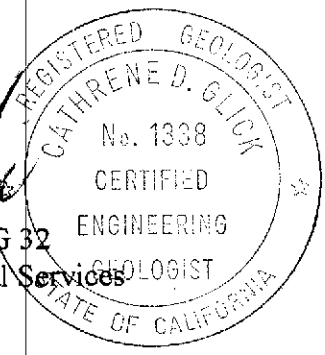
The attached document summarizes the previous investigation activities to further define and evaluate the known environmental site conditions and to update the current construction excavation and soil disposal plans for the AMC Phase 3 construction site. The document also includes an evaluation of volatile organic compounds, polynuclear aromatic compounds, heavy metals, and polychlorinated biphenyls known to be present or anticipated to be encountered in the Phase 3 construction area which were not addressed in the MMP or Addendums No. 1 and No. 2.

Should you require additional information or need clarification of any information presented in this document, please contact our office.

Respectfully submitted,
Geo Plexus, Incorporated

Kimberly F. Leeds,
President

Cathrene Diane Glick, CEG 1338, HG 32
Director, Geologic and Environmental Services



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ADDENDUM No. 3 TO MATERIALS MANAGEMENT PLAN for EAST BAY MUNICIPAL UTILITY DISTRICT ADELINE MAINTENANCE CENTER 1200 21st STREET OAKLAND, CALIFORNIA

prepared for:

Walsh Pacific Construction
EBMUD Adeline Maintenance Facility
2130-A Adeline Street
Oakland, California

and

Special Projects Division
Engineering Department
East Bay Municipal Utility District
375 Eleventh Street
Oakland, California

June 15, 1998

1900 Wyatt Drive, Suite 1 • Santa Clara, California 95054 • Phone 408/987-0210 • FAX 408/988-0815

ACRONYMS

AMC	Adeline Maintenance Center
ASTM	American Society for Testing and Materials
BTEX	Volatile Aromatic Compounds (Benzene, Toluene, Ethyl benzene and Xylene)
DHS	State of California Department of Health Services
DTSC	State of California Department of Toxic Substance Control
EBMUD	East Bay Municipal Utility District
EPA	U.S. Environmental Protection Agency
FID	Flame Ionizing Detector
HVOC	Halogenated Volatile Organic Compounds
LUST	Leaking Underground Storage Tank
MMP	Materials Management Plan
OVA	Organic Vapor Analyzer
OVM	Organic Vapor Meter
PID	Photoionization Detector
RBCA	Risk-Based Corrective Action
RBSL	Risk-Based Screening Levels
RCRA	Resource Conservation and Reclamation Act
RWQCB	State of California Regional Water Quality Control Board
STLC	Soluble Threshold Limit Concentration
TPH gas	Total Petroleum Hydrocarbons as gasoline
TPH diesel	Total Petroleum Hydrocarbons as diesel
TTLC	Total Threshold Limit Concentrations
UST	Underground Storage Tank
WPC	Walsh Pacific Construction
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compounds

ADDENDUM No. 3 TO
MATERIALS MANAGEMENT PLAN
for
EAST BAY MUNICIPAL UTILITY DISTRICT
ADELINE MAINTENANCE CENTER
1200 21st STREET
OAKLAND, CALIFORNIA

INTRODUCTION

East Bay Municipal Utility District (EBMUD) is constructing a new Adeline Maintenance Center (AMC) at the site of the existing AMC. The AMC site comprises four city blocks, as shown in Figure 1. Walsh Pacific Construction (WPC) has been retained by EBMUD as the design/build contractor for the AMC project which includes demolition of several existing structures, the construction of 5 new buildings, and remodeling of 2 buildings. The construction project was scheduled to be completed in 3-phases over a 2-year period ending approximately April, 1998. Phase-1 of construction has been completed and Phase-2 is currently in final stages of completion. Phase-3 of the construction is underway at this time.

Alameda County Health Department is the lead regulatory agency providing oversight of environmental investigations and remedial activities conducted at the site.

Previous environmental investigations of the AMC site have identified localized areas of soil contamination, primarily from the past operation of underground storage tanks. The following reports have been issued to Alameda County Department of Environmental Health to date:

Geo Plexus, Inc., 1995, "Preliminary Site Assessment Report for Adeline Maintenance Facility", prepared for East Bay Municipal Utility District.

Geo Plexus, Inc., January 18, 1996, "Materials Management Plan for Adeline Maintenance Facility", prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., January 22, 1996, "Addendum No. 1 Material Management Plan for Adeline Maintenance Facility", prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., February 2, 1996, "Response to Alameda County Review Comments on the Material Management Plan for Adeline Maintenance Facility", prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., February 2, 1996, "Submittal of Analytical Test Data from Phase 1 Additional Test Pits, EBMUD Adeline Maintenance Center", prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., May 29, 1996, "AMC Phase 1- Construction Materials Management Final Report for East Bay Municipal Utility District Adeline Maintenance Center, Oakland, CA" prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., September 12, 1996, "Addendum No. 2 Material Management Plan for EBMUD Adeline Maintenance Facility", prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., January 22, 1997, "Subsurface Investigation Report and Response to Alameda County Review Comments on Addendum No. 2 to the Material Management Plan for EBMUD Adeline Maintenance Facility", prepared for Walsh Pacific Construction and East Bay Municipal Utility District.

Geo Plexus, Inc., June 30, 1998, AMC Phase II Construction Materials Management Final Report for the East Bay Municipal Utility District Adeline Maintenance Center Oakland, CA" prepared for Walsh Pacific Construction and East Bay Municipal Utility District. (Report issuance pending completion of soil disposal)

A Materials Management Plan (MMP) for the EBMUD AMC was prepared by Geo Plexus, Inc., (dated January 18, 1996) which presented the general history of the project site, presented an evaluation of human and environmental risks associated with the known soil contaminates, presented remedial action criteria for the planned construction phases, and presented phase-specific guidelines to be implemented to complete the earthwork associated with the construction. Addendum No. 1 was prepared to incorporate responses to comments on the MMP and to address additional characterization and proposed remedial action for the Phase-1 construction site. Addendum No. 2 to the Materials Management Plan was issued to address the planned additional investigation for the Phase 2 construction site and to address the remedial excavation activities for the AMC Phase 2 site.

The purpose of this Addendum No. 3 to the MMP is to summarize the known extent of soil contamination above the threshold criteria in areas included in the Phase 3 construction.

Figure 2 illustrates the schedled Phase 3 construction area, the location of the existing structures, and the location of the planned excavation activity. However, the planned construction of the Stores Building as indicated on Figure 2 has been deleted from the schedule and the existing warehouse building (see Figure 3) is being remodeled for this use. The existing paint shop (see Figure 3) will be demolished as previously planned.

PREVIOUS REMEDIAL ACTION

No previous remedial action has occurred within the Phase 3 construction area.

PREVIOUS INVESTIGATIVE ACTION

A preliminary site assessment was performed by Geo Plexus, Inc. in 1995 which included advancing 3 exploration borings (B3-2, B3-3, and B3-4) within the Phase 3 project site (see Figure 4).

Soil Boring B2-7 was advanced immediately adjacent to the existing underground waste oil tank which is scheduled for removal at the time of building demolition. High concentrations of TPH-diesel, oil and grease compounds, and Volatile Halogenated Compounds were detected in samples obtained at depths of 6- to 7-feet; however, these compounds were not detected in the 9.5- to 10-foot sample. This suggests that the petroleum compounds are bound to the soils and will be directly abated by excavation subsequent to removal of the tank.

In October, 1996, Geo Plexus, Inc personnel observed the advancement of 15 additional soil borings across the Phase II and Phase III construction areas to obtain soil samples to further evaluate the petroleum impacted. Figure 5 indicates the locations of the additional borings (identified as WB-1 through WB-15). The investigation report also provided responses to Agency comments on Addendum No. 2 to the MMP.

Based on the known site conditions, the areas where soil is likely to contain contaminants of concern above threshold criteria for the Phase 3 AMC construction include:

- diesel and oil and grease compounds beneath the existing waste oil tank; and
- VOC's, PNA's, PCB's and heavy metal compounds beneath the existing waste oil tank.

THRESHOLD CRITERIA

The MMP and the Response to Alameda County Review Comments on the MMP outlined the general soil contaminants and established the threshold criteria for specific petroleum related contaminants of concern at the AMC site. The principal sources of the contaminants of concern include:

- petroleum hydrocarbon fuel compounds (gasoline and diesel)
- used petroleum hydrocarbon compounds (waste oil and grease)
- organic solvents

Table 1 of the MMP, and Addendums No. 1 and No. 2, presented threshold criteria for petroleum related compounds anticipated to be encountered at the AMC.

To asses the potential health risk of VOC's and PNA's for the AMC Phase 2 and Phase 3 construction sites, a risk based corrective action analysis was performed in accordance with the procedures presented in ASTM E 1739-95. This analysis (presented in Addendum No. 2) was performed using a commercially available, automated process known as "Tier 2 RBCA Tool Kit" published by Groundwater Services, Inc. This evaluation maintained the "commercial" health risk of 1×10^{-4} as established in the MMP and included the VOC and PNA constituents known to be present (based on previous testing) or anticipated to be encountered (based on the presence of waste oils) and is conservative for the development of petroleum related soil clean up levels at the AMC site.

Table 1 presents the updated threshold criteria for soil at the AMC for petroleum hydrocarbon contaminants, VOC's, and PNA's based on the protection of ground water resources from compounds leaching from the soil as established in the MMP.

TABLE 1

PETROLEUM AND VOC THRESHOLD VALUES FOR SOIL

Constituent	Threshold Values for Within Building Footprint	RBSL Threshold Values for Outside Building Footprint
TPH gas	100 ppm	unlimited
TPH diesel	1,000 ppm	unlimited
Oil & Grease	1,000 ppm	unlimited
Benzene	0.3 ppm	1.67 ppm*
Toluene	0.3 ppm	360 ppm
Ethylbenzene	1 ppm	130 ppm
Xylenes	1 ppm	Res
Napthalene	1 ppm	64 ppm
Benzo(a)pyrene	1 ppm	Res
1,4 Dichlorobenzene	310 ppm	310 ppm
1,1 Dichloroethane	92 ppm	92 ppm
1,2 Dichloroethane	2.5 pm	2.5 pm
Fluoranthene	Res	Res
Phenanthrene	Res	Res
Pyrene	Res	Res
Tetrachloroethane	8,800 ppm	8,800 ppm
1,1,1-Trichloroethane	330 ppm	330 ppm
1,1,2-Trichloroethane	0.42 ppm	0.42 ppm
Trichloroethene	2.4 ppm	2.4 ppm

RBSL - Risk Based Screening Level from RBCA Tier 1 Evaluation.
* Value of 5.82 ppm reduced by 29 percent in accordance with RWQCB guidelines.
Res - selected risk level is not exceeded for pure compound present at any concentration.

Based on the established threshold criteria, EBMUD and Alameda County agreed that soil within the proposed footprints of the planned structures would be excavated to concentrations below the Tri-Regional Guidelines and soil outside the proposed footprints of the planned structures would be excavated to concentrations below the ASTM-RBCA Tier-1 RBSL's. As there are no Tri-Regional Guidelines for VOC's and PNA's, and the calculated RBSL's for soil leaching to ground water are more conservative than calculated RBSL's for soil volatilization indoors, the [redacted]s for soil leaching to ground water for these compounds will be applied to all areas of the AMC Phase 3 construction site.

Threshold Criteria for heavy metal compounds will be as stipulated in the California Code of Regulations Title 22 as Total Threshold Limit Concentrations (TTLC) and Soluble Limit Concentrations (STLC) as described in the MMP. TTLC and STLC values for the anticipated metal compounds are outlined in Table 2.

TABLE 2

HEAVY METAL THRESHOLD VALUES FOR SOIL

Metals of Concern	Threshold Values TTLC	Threshold Values STLC
Cadmium	100 ppm	1 ppm
Chromium	2,500 ppm	5 ppm
Copper	2,500 ppm	25 ppm
Lead	1,000 ppm	5 ppm
Mercury	20 ppm	0.2 ppm
Nickel	2,000 ppm	20 ppm
Zinc	5,000 ppm	250 ppm

EBMUD maintenance records indicate that Polychlorinated Biphenyls (PCB's) were present in waste transformer oils which were placed into the existing underground waste oil tank located at the Phase 3 construction site.

Threshold Criteria for PCB's will be as stipulated in the California Code of Regulations Title 22 as TTLC of 50 ppm and STLC of 5 ppm.

PROPOSED SUPPLEMENTAL INVESTIGATION

Limited investigation activities would be performed, if required, to determine/verify the limits of known/suspected soil contamination and to reduce the uncertainty of remediation requirements for the Phase 3 construction area. The investigation would be accomplished by advancing test pits within the known/identified area of soil contamination immediately prior to start of excavation. The test pits will be logged under the supervision of a State of California Certified Engineering Geologist and the work will be coordinated with Alameda County Department of Environmental Health personnel.

The soils encountered in the test pits will be monitored in the field for evidence of hydrocarbon content and organic vapors through the use of a portable photo-ionization detector (PID) and combustible gas meter. Soil samples will be obtained at various depths ranging from 2- to 12-feet below the ground surface to determine the stratigraphic variations in soil/contaminant conditions. Samples will be collected in pre-cleaned stainless steel liners advanced directly into the soil contained in the backhoe bucket.

The soil samples will be immediately sealed in the liners using aluminum foil or teflon tape and plastic caps and properly labeled including: the date, time, sample location, and project number. The samples will be immediately placed in a cooler maintained at 3-5°C for transport to the laboratory under chain-of-custody documentation.

ANALYTICAL TESTING

The soil samples will be submitted to and tested by McCampbell Analytical, a State of California, Department of Health Services certified testing laboratory. Analytical testing will be scheduled and performed in accordance with the State of California, Regional Water Quality Control Board, and Alameda County Department of Environmental Health guidelines. The soil samples from the borings will be tested for the previously identified contaminants to establish the boundaries of the contamination. The testing could include some or all of the following:

- Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015;
- Total Petroleum Hydrocarbons as diesel by Method GCFID 3550/8015;
- Volatile Aromatics (BTEX) and MTBE by EPA Method 8020;
- Oil and Grease Compounds by EPA Method 5520;
- Volatile Halogenated Compounds by EPA Method 8010;
- Polynuclear Aromatic Compounds by EPA Method 8100;
- Heavy Metals by EPA Method 6000/7000 Series; or
- Polychlorinated Biphenyls by EPA Method 8080.

The actual testing program will be selected based on the location of the samples relative to previous investigations, field observations, and PID measurements recorded at the time of sampling.

SUMMARY OF FINDINGS REPORT

The field observation records and analytical test data will be reviewed to establish the limits of the soil contamination and to further establish the limits of planned excavation within and exterior to the planned structure using the evaluation criteria set forth in the MMP and this Addendum.

A letter report will be issued containing the field observations, chain-of-custody documentation, analytical test data and other pertinent observations recorded.

A Phase 3, Remedial Implementation Plan base map will be prepared identifying the limits of planned excavation. The disposal/treatment facility will be identified at that time.

TANK EXCAVATION AND REMOVAL

The removal of the existing underground waste oil tank (see Figure 3) would be performed by a State of California Class A Contractor with the Hazardous Materials Certification. An Alameda County Department of Environmental Health Tank Removal/Closure Permit application would be prepared and submitted prior to removal of the tank. The tank removal activities would be coordinated with the Alameda County Department of Environmental Health and City of Oakland personnel.

The existing pavement and soil material overlying the tank will be removed and excavated with a backhoe to expose the tank and to verify the size and construction of the tank. The excavation will then proceed around the tank to expose the sides and associated piping. Fluids contained in the tank will be extracted by pumping and retained on-site in 55-gallon containers for disposal or be directly evacuated by vacuum truck and transported directly for disposal/recycling by a licensed facility. The piping connected to the tank will be removed and temporarily plugged to prohibit discharge.

The tank would be inerted by placing a minimum of 50-pounds of dry-ice into the tank and allowed to vent to the atmosphere until the oxygen content is determined to be below 16% and the Lower Explosive Limit (LEL) is determined to be below 10% of the LEL as measured by a Gastech Tank Tester device. The Gastech device would be calibrated the day of the tank removal by the contractor personnel.

The tank would be removed and transported from the property under hazardous waste manifest documentation by a licensed hazardous material transporter for destruction at their treatment, storage, and disposal facility.

Soil samples would be obtained from the native soil material beneath the tank as required by the Alameda County Department of Environmental Health personnel and would be performed by Geo Plexus, Incorporated personnel by and/or under the direct oversight of a Certified Engineering Geologist. The soil samples to be collected for analytical testing would be obtained from the backhoe bucket by advancing a pre-cleaned 2 inch I.D. brass or stainless steel liner into the undisturbed soil contained in the backhoe bucket. The soil samples would be immediately sealed in the liners using aluminum foil or teflon tape and plastic caps and properly labeled including: the date, time, sample location, and project number. The samples would be placed in a cooler maintained at 4°C immediately for transport to the laboratory under chain-of-custody documentation.

The soil samples will be submitted to and tested by McCampbell Analytical, a State of California, Department of Health Services certified testing laboratory. Analytical testing will be scheduled and performed in accordance with the State of California, Regional Water Quality Control Board, and Alameda County Department of Environmental Health guidelines. The soil samples from the borings will be tested for the previously identified contaminants to establish the boundaries of the contamination. The testing could include some or all of the following:

- Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015;
- Total Petroleum Hydrocarbons as diesel by Method GCFID 3550/8015;
- Volatile Aromatics (BTEX) and MTBE by EPA Method 8020;
- Oil and Grease Compounds by EPA Method 5520;
- Volatile Halogenated Compounds by EPA Method 8010;
- Polynuclear Aromatic Compounds by EPA Method 8100;
- Heavy Metals by EPA Method 6000/7000 Series; or
- Polychlorinated Biphenyls by EPA Method 8080.

EXCAVATION PROTOCOLS

Excavation of the soil containing contaminants above threshold criteria as set forth in the MMP and this Addendum will be performed by a licensed A contractor with Hazardous Materials Certification under direct oversight from Geo Plexus, Inc. personnel.

The construction activities will proceed with excavation and direct off-hauling of the contaminated soils to the limits established by the remedial action criteria.

Field screening of the excavated soils will be performed on-site through the use of an Organic Vapor Analyzer (OVA) or Organic Vapor Meter (OVM) as the excavation proceeds. In addition to the vapor monitoring, soil samples will be collected and analyzed in the field for presence of petroleum hydrocarbons with field test kits (as outlined in the MMP).

Soils exhibiting evidence of petroleum contamination (e.g., visible staining, visible sheen and/or product, noticeable odors, etc.) or concentrations of petroleum products above established threshold criteria will continue to be excavated and off-hauled.

Field observations will be recorded during the excavation to document the soil excavation and disposal activities and to determine the appropriate time and locations for collection of verification samples.

The excavation will proceed laterally and vertically beneath the planned structure until the soil conditions are below the threshold criteria set forth in the MMP and this Addendum.

The excavation will proceed laterally and vertically outside of the planned building footprint until the soil concentrations are within the threshold criteria for areas outside building footprints set forth in the MMP or until functional excavation limits are encountered (i.e., encroachment of structures to remain, public property, etc.).

CONFIRMATION SAMPLING

Final verification samples of the native soil materials at the base of the excavation and from the excavation sidewalls will be obtained upon completion of the remedial excavation activities to document the site conditions prior to backfilling and construction as described in the MMP.

Approximately 1 sample per 200 square feet will be obtained in areas where contamination above threshold criteria is removed. However, this rate may be revised based on an evaluation using EPA SW-846 guidelines following determination of the extent of contamination and definition of the limits of excavation.

The verification soil samples will be obtained from the excavation sidewalls and excavation bottom by advancing a pre-cleaned 2 inch I.D. brass or stainless steel liner into the undisturbed soil. Should the excavated area to be sampled not be directly accessible for personnel for safety reasons, the samples will be obtained remotely through the use of a backhoe or excavator.

The soil samples will be immediately sealed, labeled, contained, and transported in accordance with the protocols previously described for the test pit samples. The soil samples will be submitted to and tested by McCampbell Analytical.

The testing would include some or all of the following, depending on the contaminants of concern detected during the supplemental investigation activities:

- Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015;
- Total Petroleum Hydrocarbons as diesel by Method GCFID 3550/8015;
- Volatile Aromatics (BTEX) and MTBE by EPA Method 8020;
- Oil and Grease Compounds by EPA Method 5520;
- Volatile Halogenated Compounds by EPA Method 8010;
- Polynuclear Aromatic Compounds by EPA Method 8100; or
- Polychlorinated Biphenyls by EPA Method 8080.

EXCAVATION DOCUMENTATION

Geo Plexus personnel will provide continuous observation of the excavation activities to assure compliance with the MMP. On site documentation of the field conditions and remedial activities will be recorded on a daily basis and include air/vapor monitoring data, field test kit analysis data, sampling data, and chain-of-custody documentation for any samples collected and other pertinent observations recorded. A base map will be updated daily identifying the locations of the excavation limits and noting the sample locations.

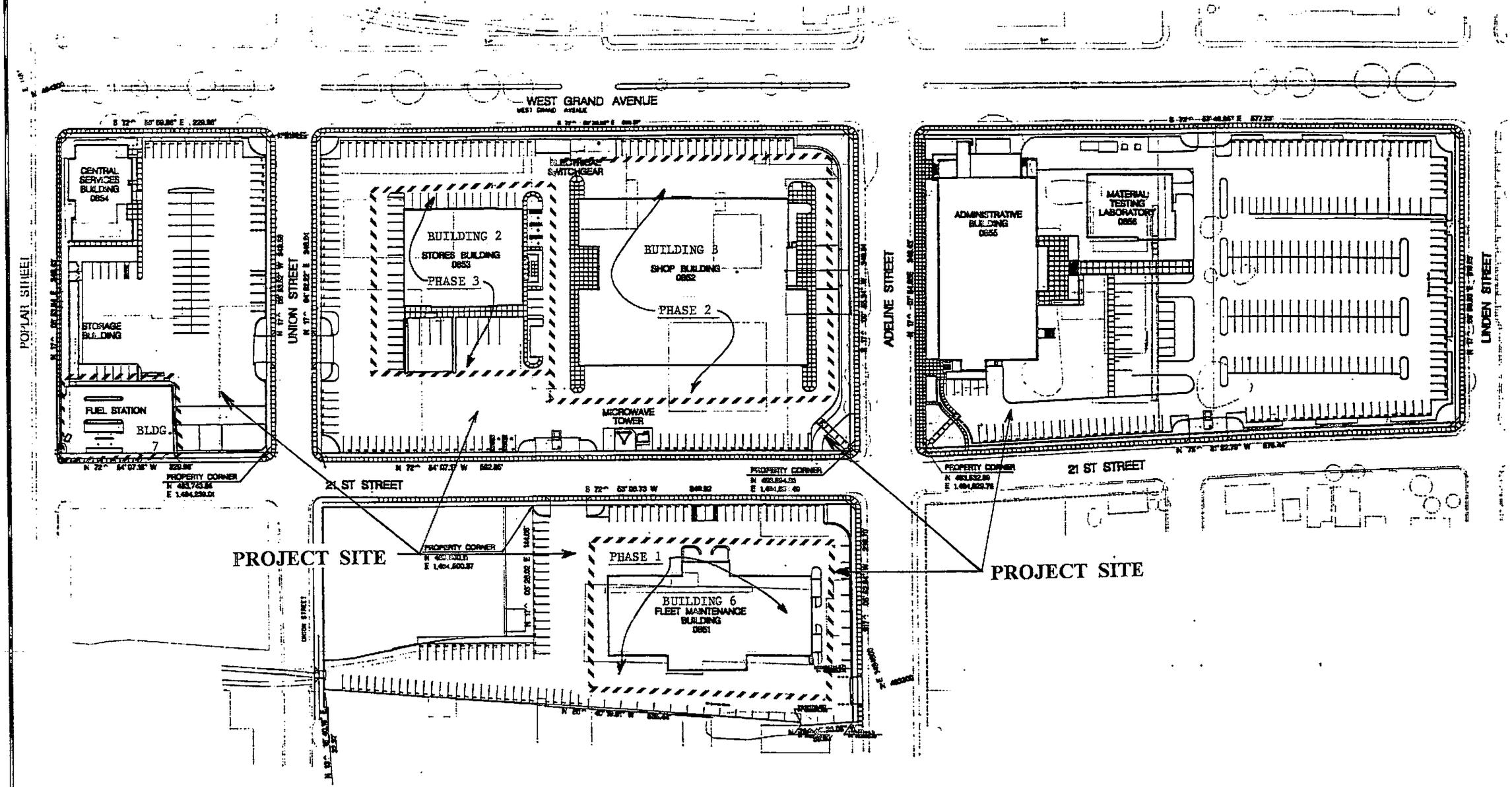
DEWATERING

It is anticipated that perched ground water (as observed in the previous excavations) will be encountered in localized areas during the planned construction excavation. It is currently planned to evacuate the perched water in the vicinity of the remedial excavation with diaphragm pumps and to treat the water with activated carbon canisters prior to discharge of the water under appropriate permit conditions. Specific details of the dewater/treatment plans will be contained in the specific permit applications as described in the MMP.

SCHEDULE OF ACTIVITIES

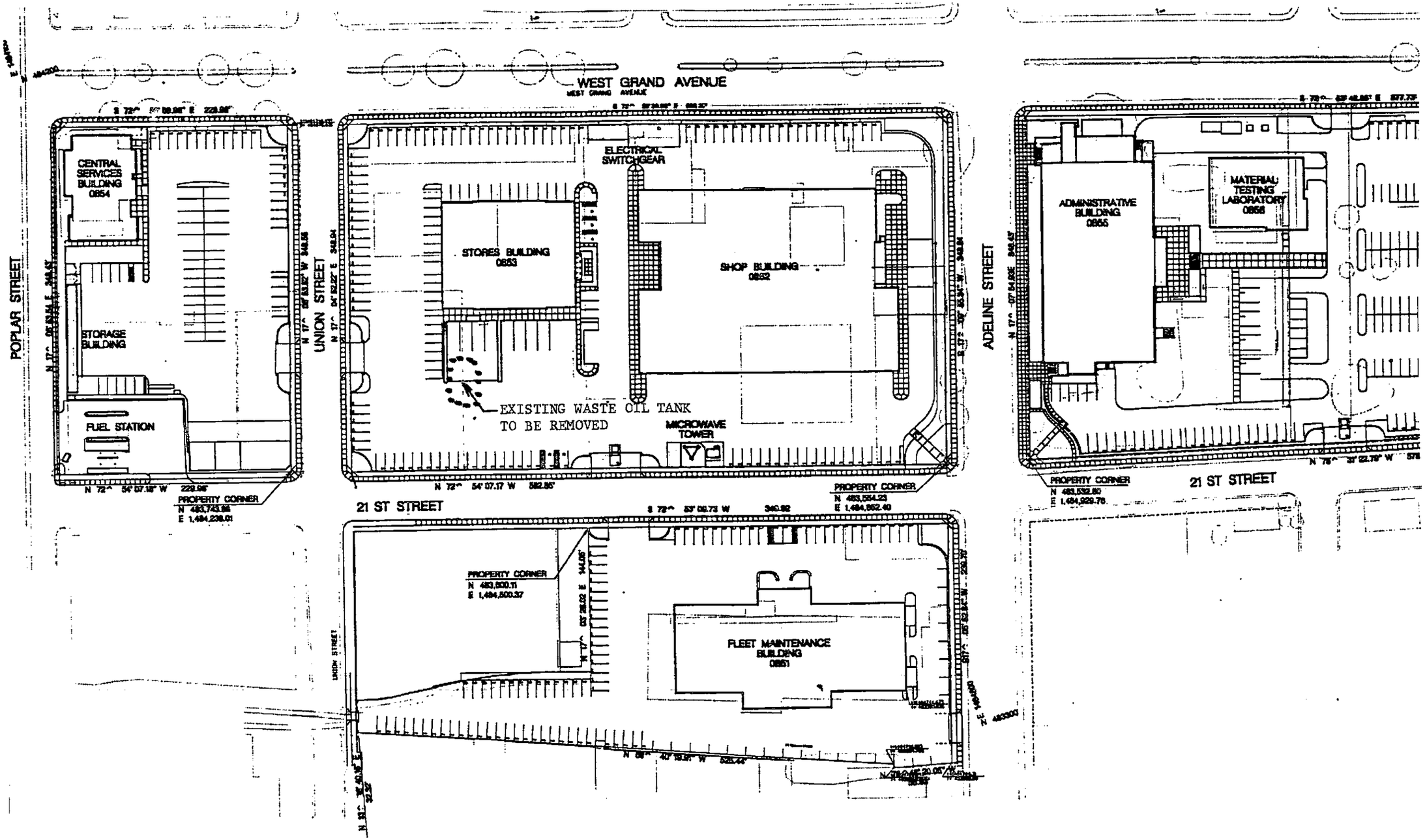
The following represents the schedule for the investigation and construction activities for the AMC Phase 3 project area:

Approval of Addendum No. 3 by Alameda County	July 25, 1998
Phase-3 Test Pits	not scheduled
Phase-3 Construction	
Site Demolition	In Progress
Excavation Activities	In Progress
Excavation Backfilling	In Progress
Waste Oil Tank Removal	August 3, 1998



CONSTRUCTION PLAN
FIGURE 1

GeoPlexus, Inc.



PHASE 3 IMPLEMENTATION PLAN
FIGURE 2

GeoPlexus, Inc.

WEST GRAND AVENUE

EXISTING PAINT SHOP
TO BE DEMOLISHED

EXISTING WASTE OIL TANK
TO BE REMOVED

EXISTING BUILDING
TO BE REMODLED

STORES BUILDING
FF=7.09

NEW LOADING DOCK

SHOPS BUILDING
FF=5.50

"REVISED" PHASE 3 IMPLEMENTATION PLAN
FIGURE 3

GeoPlexus, Inc.