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December 2, 2015

Mr. Jerry Wickham
Alameda County Health Care Services Agency
Environmental Health Department
1131 Harbor Bay Parkway Ste. 250
Alameda, CA 94502-6577

Subject: **RO0000289**
EXCAVATION AND INVESTIGATION WORK PLAN
OWENS-BROCKWAY GLASS CONTAINER FACILITY.
3600 ALAMEDA AVENUE, OAKLAND, CALIFORNIA.

Dear Mr. Wickham:

Owens-Brockway Glass Container Corporation is pleased to submit the attached Excavation and Investigations Work Plan for the above site.

I declare under penalty of perjury that the information and recommendations contained in the attached report are true and correct to the best of my knowledge.

If you need further information feel free to call me at (567) 336-8682.

Sincerely,

Mark Tussing.
Regional EHS Manager

CKG Environmental, Inc.

P.O. Box 246 St. Helena CA 94574
Phone (707) 967-8080 Fax: (707) 967-8080
ckennedy@geologist.com

December 2, 2015

Mr. Jerry Wickam
County of Alameda Health Care Services Agency
Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **WORK PLAN FOR ADDITIONAL TARGETED EXCAVATION AND SUBSURFACE INVESTIGATION, FORMER FUEL STORAGE AND HISTORICAL ASPHALT REFININERY OPERATIONAL AREAS, OWENS-BROCKWAY GLASS CONTAINER FACILITY, 3600 ALAMEDA AVENUE, OAKLAND, CALIFORNIA.**

Dear Mr. Wickham:

CKG environmental, Inc. (CKG) is pleased to present this Work Plan for Additional Targeted Excavation and Subsurface Investigation, Former Fuel Storage and Historical Asphalt Refinery Operational Areas, at the Owens-Brockway Glass Container Facility in Oakland (Plate 1). CKG prepared and submitted the "REVISED Corrective Action Plan, Targeted Excavations and Groundwater Treatment Trench", dated January 17, 2014. This plan was approved with conditions by the Alameda County Environmental Health Department (ACEHD) on March 10, 2014, and CKG implemented the targeted excavation in June 2014. The results of this field work are reported in CKG's "Report of Targeted Soil Excavations, Petroleum Hydrocarbon Releases 2011 and 2014, Owens-Brockway Glass Container Facility", dated November 9, 2014. CKG also submitted the Groundwater Treatment Biobarrier Design, dated August 13, 2014 and approved with conditions by ACDEH in their letter dated September 4, 2014. Installation of the biobarrier has been put on hold at the request of Owens-Brockway in their letter dated February 13, 2015, to evaluate other options and prepare for additional source material removal.

As part of the ongoing remediation strategy, CKG is planning to complete targeted excavations in source areas and implement the approved groundwater biobarrier. Recently CKG obtained historic Sanborn Maps from prior to 1925. A 1912 Sanborn map documents the presence of a historical asphalt refinery at what is now the southwest corner of the glass plant. This finding will be discussed in more detail below. The former presence of the asphalt refinery does not change the overall remediation strategy, but it does modify the site conceptual model by adding additional sources of petroleum hydrocarbons. This Work Plan includes: a summary of new findings; a scope of work for additional source removal through targeted excavation; and a plan for additional subsurface investigation.

1 HISTORIC SANBORN MAP REVIEW

CKG prepared a "Phase I Environmental Site Assessment", dated May 15, 2015 at the request of Owens-Brockway. As part of that Phase I work CKG obtained historic Sanborn Maps for the site. These included maps from 1903 and 1912. The earliest Sanborn Map that had been observed prior to May, 2015 was from 1925 which showed the site to be undeveloped. The newly acquired 1912 map showed a number of structures associated with a historical asphalt refinery (Plate 2). Based on a cursory internet search conducted by CKG, from approximately 1912 until 1918, a portion of the property was occupied by a historical asphalt refinery operated by Pacific States Refineries. This information is a significant finding. The refinery operations included a number of petroleum product storage vessels including many sitting directly on the ground. Facilities also included asphalt coolers and stills, bleachers, coal oil and distillate tanks, and brick oil reservoirs. A cooperage was located on the western side of the property and a rail platform was located adjacent to the rail spur. A well was located near the rail platform. Plate 2 shows the 1912 Sanborn Map overlain onto a recent aerial photograph.

2 REMEDIATION OBJECTIVE

The overall objective of site remediation is to allow safe commercial or residential redevelopment. Based on previous site investigations petroleum hydrocarbons occur throughout the southwestern portion of the site. Contamination has been detected in soil samples at depths up to 45 feet. This area represents a mass of petroleum hydrocarbon impacted media that is prohibitively expensive to remove. The petroleum hydrocarbons are comprised of very aged, heavy products such as crude oil, asphalts and fuel oil. These materials have been observed to be very low in volatile or soluble constituents.

Generally petroleum hydrocarbon impacts are encountered at a depth of approximately nine feet below grade and extend deeper as stated above. In some locations soil impacts at shallower depths are observed. The shallower soils are the target of the soil remediation efforts. The objective is to remove impacted soil to create an approximately 9-10 foot thick buffer between the ground surface and residual impacted soil and groundwater.

Groundwater is impacted with dissolved and separate phase petroleum hydrocarbons; however the concentrations of soluble petroleum hydrocarbons is low. This is probably a result of the age and specific gravity of the original petroleum hydrocarbons released. Concentrations of soluble petroleum hydrocarbons have been demonstrated to be readily reduced by enhancing biodegradation by adding air to the water.

3 REMEDIATION STRATEGY

As illustrated on Plate 3, the highest concentrations of TPH occur in the vicinity of the cullet bunkers, north-northeast of the basement ramp, and the former USTs. Surrounding areas, mainly the north half of the purple outline on Plate 3, have not been investigated due to the area being occupied by active manufacturing and warehousing.

The areas that require additional data are outlined in yellow. It is presumed that if there were former releases in the basement of the present manufacturing building, that material was excavated in the 1930s when the glass plant was constructed. The yellow outlined area at the south end of the property

has been selected due to plant personnel having observed stained soils during maintenance/construction activities.

Additional soil sampling will be required in the yellow outlined areas on Plate 3. CKG will utilize an in-situ soil sampling technique (Geoprobe™) to collect continuous soil samples in the uninvestigated areas. Soil will be logged for visible petroleum hydrocarbon impacts. Selected samples will be submitted for quantitative analysis, mainly to confirm the type of petroleum hydrocarbons present, but the chief goal of the soil investigation is to define the limits of impacted soil.

The removal of impacted soil will be dependent upon the results of the further investigation. Areas of known contamination are likely to be excavated concurrently with the additional site investigation outlined above. The timing on future excavations will be dependent on the site decommissioning process. CKG will work with Alameda County to provide updates and progress reports throughout the process. Future excavation work will be presented to Alameda County as addenda to this work plan.

4 SCOPE OF WORK

Upon approval of this work plan, CKG will coordinate with the property owners and subcontractors, to implement the proposed work. Plates 3 and 4 illustrate approximate locations and configurations of the proposed work.

4.1 Targeted Excavation

4.1.1 Subsurface Utility Survey

CKG will subcontract with a qualified subsurface utility locator to complete a comprehensive subsurface utility survey. The objective of the survey is to locate and clearly map out all utilities within the investigation and excavation area.

4.1.2 Excavation Work

CKG will use an excavator to remove the soil within the approximate perimeter of proposed Excavation Area A. Excavated soils will be directly loaded into haul trucks for transport to a Class II or III landfill facility. Based on previous site experience, it is expected that the soils will be transported to Altamont Landfill in Livermore, California. Although not desired, soils may be temporarily stockpiled on plastic sheeting and covered for 24 to 48 hours if the haul trucks cannot be coordinated properly. Soil excavation and transport will be performed by subcontractors that are appropriately licensed to work at hazardous waste sites and to haul hydrocarbon impacted soil.

Excavation Area A will extend to an approximate depth of 10 feet below grade. Impacted soil greater than 10 feet below grade will not be excavated. Groundwater is not expected at this depth. The need for sloped sidewalls or shoring will be determined by the project engineer and excavation contractor and will be based on construction safety.

CKG recognizes that impacted material will likely be encountered beyond the perimeter of the Excavation Area A. Impacted material beyond the proposed Excavation Area A may be removed at a later time. CKG will not collect confirmation samples from the excavation floor. CKG will use field

discretion to determine the need to collect soil samples from the excavation sidewalls. If excavation sidewalls do not have observable (visual or odor) signs of petroleum hydrocarbon impacts, confirmation samples will be collected at a frequency of approximately one per 20 lineal feet of sidewall. Confirmation soil sample will be analyzed as described in Section 4.3.1 below.

4.2 Groundwater Treatment

CKG does not expect to encounter groundwater in the excavation. A groundwater treatment program as described in the Groundwater Treatment Biobarrier Design, dated August 13, 2014 and approved with conditions by ACDEH in their letter dated September 4, 2014 will be implemented.

4.3 Geoprobe™ Investigation

CKG will contract with a licensed drilling contractor to use a Geoprobe™ rig to install soil borings and collect selected soil samples. The probe is approximately 1½ inch in diameter. CKG estimates that 8-10 holes can be completed in one day. The probe holes will be abandoned with cement grout when completed. CKG will install 35 to 40 borings within the yellow outlined areas shown on Plate 4. CKG has located 32 sample locations however, up to 8 more may be placed depending on field observations. Field sampling will be completed in accordance with CKG's standard field protocol as presented in Appendix A.

4.3.1 Chemical Analyses

CKG will collect and submit 10-15 soil samples from the 35-40 borings to determine petroleum hydrocarbon concentrations. Each sample will be submitted for analysis of Total Petroleum Hydrocarbons quantified as motor oil (TPHmo), diesel (TPHd), and gasoline (TPHg) by EPA Method 8015 with a silica gel cleanup. CKG also will submit selected samples to Accutest Laboratory of Marlborough Maine, for hydrocarbon fingerprinting.

5 SITE RESTORATION

CKG will backfill and compact the excavation to grade using imported clean soil/fill material. The clean fill may be obtained from a local quarry and be in general conformance with a Caltrans Class 2 road base material. The quarry will provide documentation regarding the quality of the soil (including chemical analyses documenting that the soil is not impacted with petroleum hydrocarbons or other contaminants of concern and geotechnical properties of the soil including a compaction curve). Alternatively clean fill may be obtained from a nearby construction site that has surplus soil being generated. If fill is obtained from a construction site, the contractor will provide documentation regarding the quality of the soil (including chemical analyses documenting that the soil is not impacted with petroleum hydrocarbons or other contaminants of concern). CKG will obtain the appropriate compaction curve for the soil if it is not available from the contractor. Backfill will be placed in 6 to 12 inch lifts and compacted to approximately 95% relative density. Compaction will be tested and documented by a licensed geotechnical engineer.

6 PREPARE PROGRESS REPORT OF CORRECTIVE ACTIONS

After the excavation and subsurface investigation are completed, CKG will write a summary report of the excavation and investigation activities to be submitted to the ACEHD. This report will document the implemented activities and the total volume and disposition of excavated soil.

Additional areas of excavation that may be proposed based on the subsurface investigation will be documented as addenda to this plan with subsequent reports prepared for each phase. The effectiveness of the combined remediation effort will be evaluated through ongoing groundwater monitoring.

CKG is pleased to prepare this Work Plan for Additional Targeted Excavations and Subsurface Investigation. If you need further information or would like more details regarding this work please feel free to call me at (707) 967-8080.

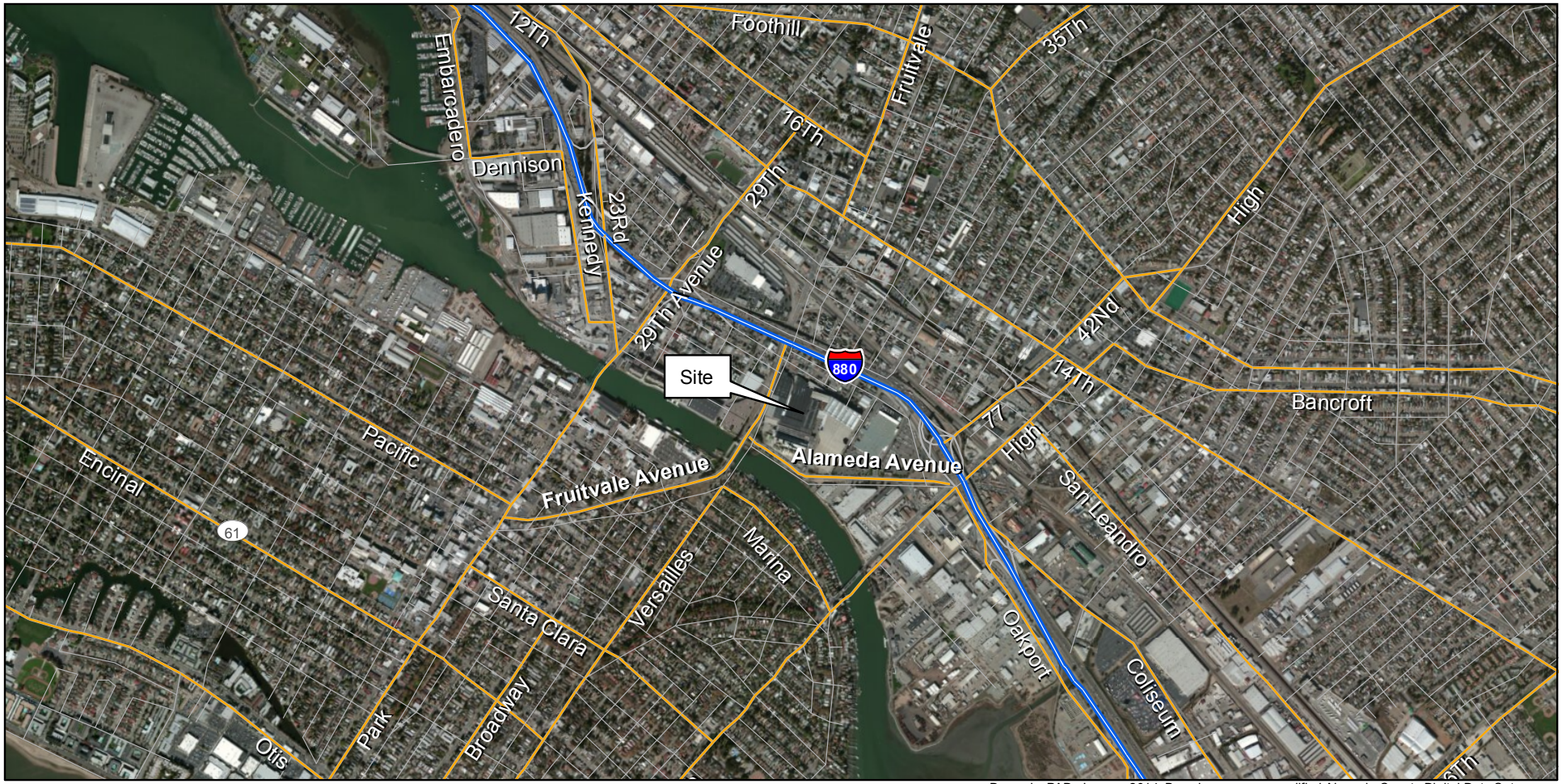
Sincerely,

CKG Environmental, Inc.

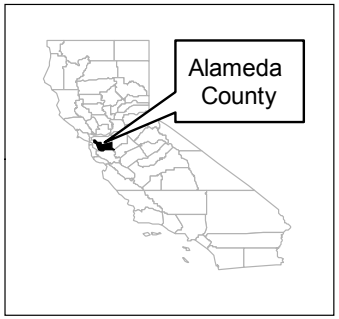
Christina J. Kennedy R.G.

Attachments – Plate 1 Site location Map
Plate 2 1912 Sanborn Map Overlay
Plate 3 Proposed Targeted Excavation A
Plate 4 Proposed Geoprobe Boring Locations

cc Mr. Mark Tussing – Owens-Brockway Glass Container, Inc.



Drawn by PAD. January 2014. Base layers are unmodified Alameda County Digital Data Sets.



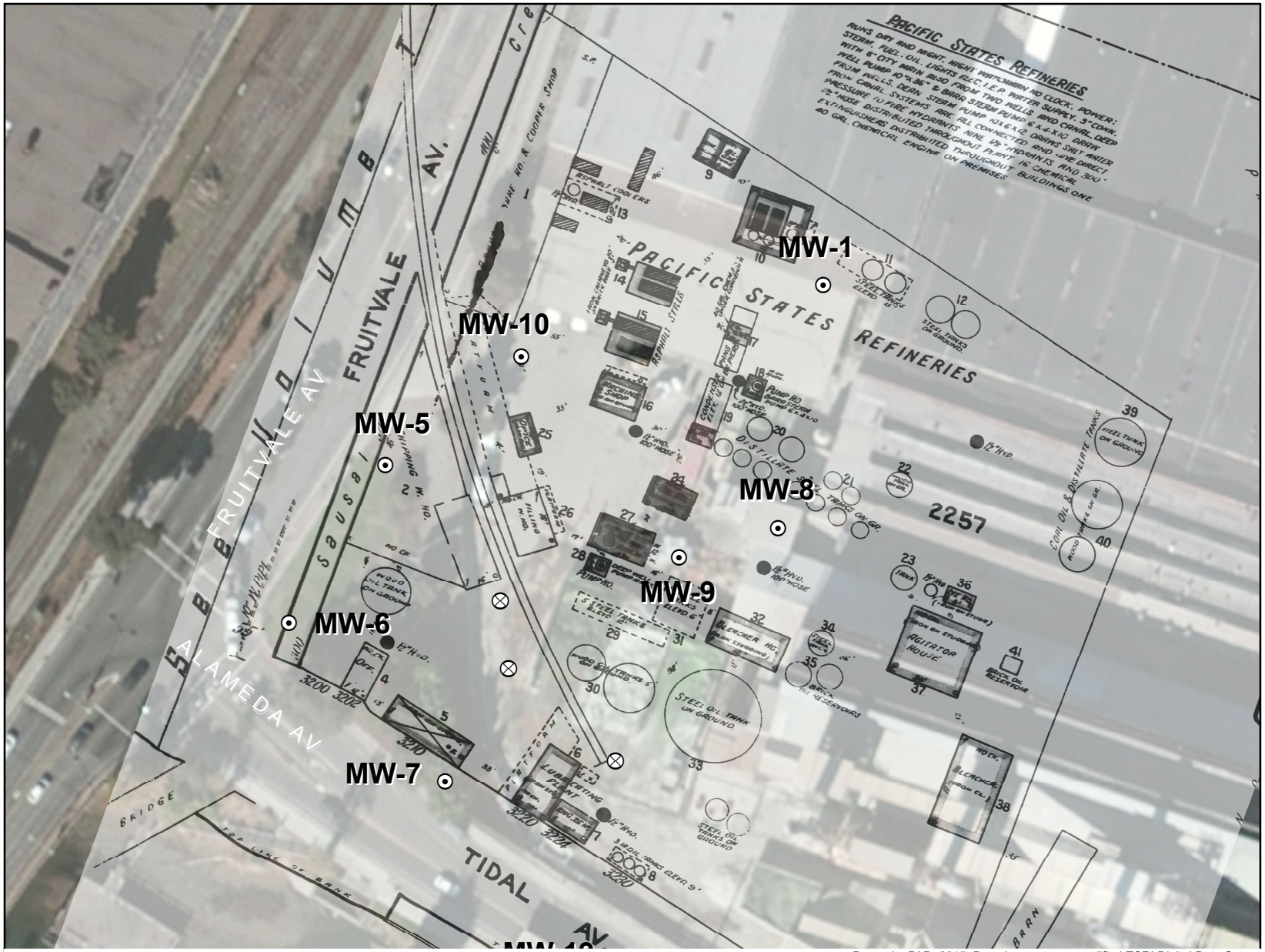
0 1,000 2,000

Scale in Feet

CKG Environmental, Inc.

Site Location Map
Owens-Brockway Glass Container Facility
3600 Alameda Avenue, Oakland, California

PLATE
1



EXPLANATION

- ⊙ Monitoring Well
- ⊗ Destroyed Well

N

S

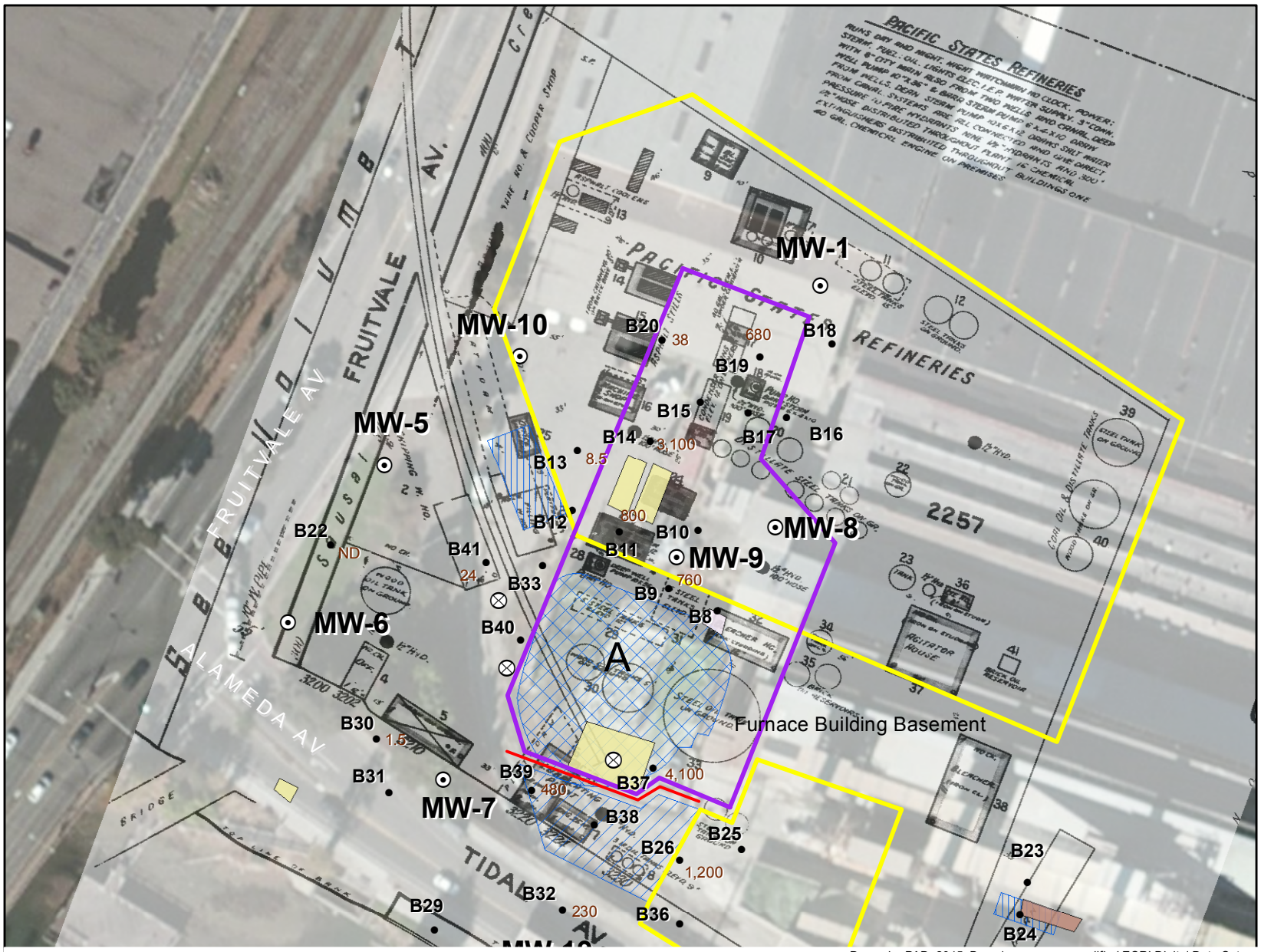
0 50 100 Feet

Drawn by PAD. 2015. Base layers are unmodified ESRI Digital Data Sets.

1912 Sanborn Map Overlay
Owens-Brockway Glass Container Facility
3600 Alameda Avenue, Oakland California

PLATE 2

CKG Environmental, Inc.



EXPLANATION

- Geoprobe Locations
- Monitoring Well
- Destroyed Well

Former Fuel USTs

Product

- Diesel
- Fuel Oil
- Gasoline
- Lube Oil
- Waste Oil (Not Confirmed)
- 2011 Excavation
- 2011 Collateral Excavation
- 2014 Excavation

- Proposed outline of excavation
- Investigation area. Probable petroleum hydrocarbon impact sources but no data presently.
- Existing 12-inch high pressure gas line

N

S

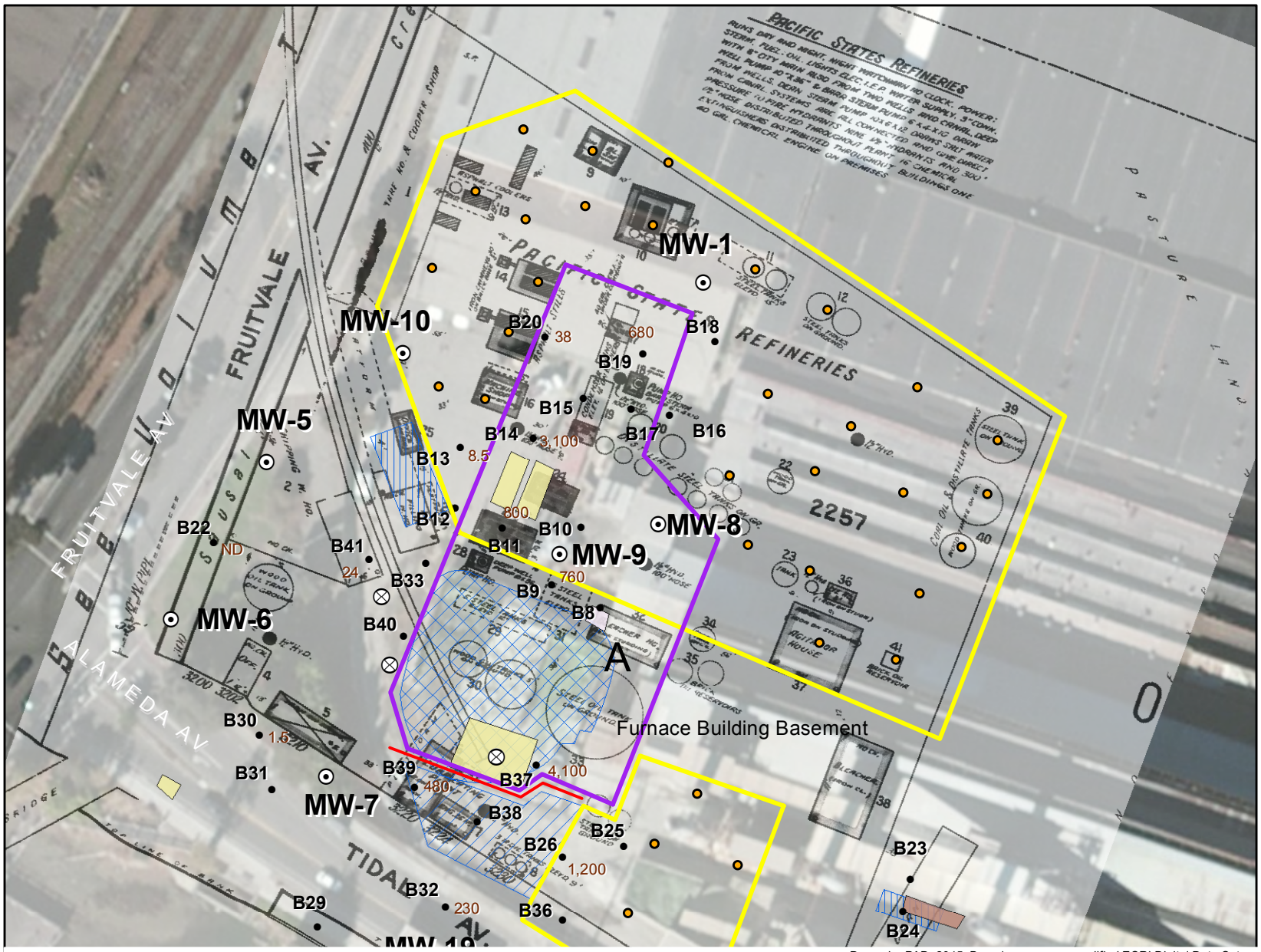
0 50 100 Feet

Drawn by PAD. 2015. Base layers are unmodified ESRI Digital Data Sets.

CKG Environmental, Inc.

Proposed Phased Excavation Plan
Owens-Brockway Glass Container Facility
3600 Alameda Avenue, Oakland California

PLATE 3



EXPLANATION

- Proposed Geoprobe Location
- Geoprobe Location
- Monitoring Well
- Destroyed Well

Former Fuel USTs

Product

- Diesel
- Fuel Oil
- Gasoline
- Lube Oil
- Waste Oil (Not Confirmed)
- 2011 Excavation
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- Proposed outline of excavation
- Investigation area. Probable petroleum hydrocarbon impact sources but no data presently.
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N

S

0 50 100

Feet

Drawn by PAD. 2015. Base layers are unmodified ESRI Digital Data Sets.

CKG Environmental, Inc.

Proposed Geoprobe Boring Locations
Owens-Brockway Glass Container Facility
3600 Alameda Avenue, Oakland California

PLATE 4

APPENDIX A
CKG ENVIRONMENTAL FIELD PROTOCOL

A-1 FIELD PREPARATION

Before performing work in the field, environmental staff review the scope of work, prepare a health and safety plan, coordinate the work to be done with their supervisor, assemble the necessary sample containers, and check, calibrate and clean equipment to be used in the field. When underground utilities may exist at a site where subsurface soil samples are being collected, USA Underground is contacted with the boring locations and the scheduled date of drilling, or a utility locating firm is employed to check the boring locations. Proper traffic control measures are carried out during roadwork.

A-2 SUBSURFACE SAMPLING

A-2.1 Geoprobe™ Sampling

Subsurface soil samples will be collected from soil borings. Soil borings will be advanced using a truck or track-mounted Geoprobe™ sampler. The Geoprobe™ sampler uses a direct push technology to advance a 1-½ inch sampler into the ground. The 4 foot long sampler is lined with clear acetate tubing to allow for continuous logging. A geologist registered with the State of California will log samples.

A-2.2 Equipment Decontamination

To reduce the potential for cross-contamination, samplers and associated equipment will be cleaned with a trisodium phosphate wash and rinsed with distilled water prior to collecting each soil sample.

A-2.3 Soil Sample Collection

The geologist will collect samples for quantitative analysis by cutting a six-inch long length of tubing at selected depths. The ends of the tube will be covered with Teflon and sealed with tight-fitting plastic caps.

After the samples are collected they will be individually labeled. The label will include CKG Environmental's name, job number, the date and time the sample was collected, the employee's name and a unique sample identifier.

A-2.4 Groundwater Sample Collection

The driller will install a Hydropunch™ sampler at the bottom of each boring so that a groundwater sample can be collected. The Hydropunch™ sampler consists of a 1-½ inch diameter PVC screen with a stainless steel tip on the end. The sampler is pushed approximately two feet beyond the bottom

of the hole and water is allowed to fill it. Groundwater will be recovered using a small bailer and placed in laboratory prepared jars.

A-2.5 Sample Handling

After labeling, the sample is immediately stored in an iced cooler for transport to the analytical laboratory. A laboratory chain-of-custody form is attached to the cooler. The chain-of-custody form includes CKG Environmental's name, address and telephone number, the name of the individual who performed the sampling, the sample numbers, the date and time the samples were collected, the number of containers each sample occupies, and the analyses for which the samples are being submitted, if any. Each person who handles the samples, including all CKG employees and the receiving employee of the analytical laboratory when the samples are delivered, signs the chain-of-custody form.

A-2.7 Soil Boring Closure and Soil Cutting Disposal

Soil borings are closed immediately after the collection and logging of soil samples. Closure is accomplished by grouting the boring with a cement/bentonite slurry or as otherwise required.
Drill cuttings will be properly disposed by Owens-Brockway as part of their ongoing waste stream.