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O-I: GLASS IS LIFE

Name
Title
One Michael Owens Way, Plaza 1
Perrysburg OH 43551-2999
Telephone
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January 16, 2014

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

RE: RO0000289 REVISED CORRECTIVE ACTION 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 Revised Corrective Action 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
Environmental Administrator

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

January 17, 2014

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

Subject: **REVISED CORRECTIVE ACTION PLAN – TARGETED EXCAVATIONS AND GROUNDWATER TREATMENT TRENCH, OWENS-BROCKWAY GLASS CONTAINER FACILITY, 3600 ALAMEDA AVENUE, OAKLAND, CALIFORNIA.**

Dear Mr. Wickham:

CKG environmental, Inc. (CKG) is pleased to present this Revised Corrective Action Plan (CAP) to implement additional corrective actions at the Owens-Brockway Glass Container Facility in Oakland (Plate 1). CKG prepared and submitted the "Corrective Action Plan, Targeted Excavations With In-Situ Chemical Oxidation", dated November 30, 2010. This plan was approved by the Alameda County Environmental Health Department (ACEHD) on January 13, 2011, and CKG implemented corrective actions during June through September 2011. The results of this field work are reported in CKG's "Report of Targeted Soil Excavations, Petroleum Hydrocarbon Releases, Owens-Brockway Glass Container Facility" to be submitted under separate cover.

Based on the results from 2011, the corrective action is being modified. CKG is planning to complete two targeted excavations in two source areas and address offsite groundwater migration as part of the continuing corrective action. This Revised CAP is being prepared in response to the ACEHD letter dated November 18, 2013, and includes: a discussion of previous remediation efforts, a review of site specific lessons learned; an updated remediation strategy; a review of remediation alternatives; and a scope of work for the preferred alternative.

DISCUSSION OF PREVIOUS REMEDIATION EFFORTS

CKG has reviewed the remediation efforts completed since 1986 when fuel releases from existing and former underground fuel storage tanks were discovered. Plate 2 provides a synopsis of former and existing hazardous materials storage areas and locations of corrective actions completed to date. The following table summarizes the actions taken, results, and conclusions from each one.

Action	Result and Observations	Conclusions
1986/87 Underground fuel storage tanks were removed from the Central and Western UST areas. The tanks located at the Central UST Area were replaced	Subsurface releases of diesel and gasoline were observed in the Central UST Area. Subsurface releases of fuel oil were observed at the Western UST Area.	To the extent possible impacted soil was excavated and disposed of offsite during tank removal operations. Subsurface investigations were conducted to assess the extent of subsurface impacts. Initial data demonstrated that the impacts were limited in the Central UST Area and more widespread in the Western UST Area.
1986, 1999 Free product recovery wells were installed within the tank excavations at the Western UST Area to recover fuel oil.	Product skimmers were installed in 1986 and then tried again in 1999. The product recovery effort was abandoned both times because the viscosity of the fuel oil was too high to allow it to flow into the product recovery wells. The product recovery equipment was removed and absorbent socks were placed in the wells instead.	Free product recovery using common methods is ineffective because the fuel oil is too thick. Subsurface permeability is also very low at the site increasing the difficulty in extracting free product.
June through August 2011 CKG completed excavations in the Central UST Area (Excavation D) and in the Western UST Area (Excavation B).	Soil excavation was effective at removing petroleum hydrocarbon impacted soil however the challenges of working safely at an operating plant were made keenly apparent. Also many previously unknown subsurface features were encountered that made it more difficult to complete the excavations as planned. In addition a previously unknown fuel storage structure was discovered.	At the Western UST Area the presence of aged fuel oil in the subsurface has blocked off groundwater porosity in some areas. As a result groundwater did not flow into the excavation at all, even when potholed as deep as 20 feet below grade. This observation made it clear that any plans to use direct injection in-situ chemical oxidation treatment would be ineffective. Therefore this element of the CAP was eliminated. It also became clear that an effort to completely remediate subsurface impacts at the site, while the plant is still operating, would not be possible and potentially dangerous to site workers.

SITE SPECIFIC LESSONS LEARNED

The above remediation actions combined with the understanding of subsurface conditions allows the following statements:

- The sources of diesel and gasoline in the Central UST Area have been removed and groundwater concentrations of gasoline are below concentrations of concern. Although diesel impacts in groundwater remain in the Central UST Area they have not approached the property boundary and will not be considered in this Revised CAP.

- Fuel oil impacts in the Western UST Area in both soil and groundwater extend offsite to the southwest. Specific source areas within the Western UST Area include USTs removed in 1986, a lube oil UST located immediately adjacent to the plant on the south side, and a 22 foot by 56 foot brick lined bunker that was discovered in 2011. The bunker is still partially filled with what appears to be aged fuel oil.

- Petroleum hydrocarbon impacts to soil and groundwater are observed off site downgradient to monitoring well MW-19. No separate phase petroleum hydrocarbon product has been observed in this well. This offsite area includes Alameda Avenue, and the City of Oakland Fruitvale Bridge Park. Access to this area is difficult because it is a busy public right-of-way street and the park is immediately adjacent to the estuary.

- Excavation B (near the former Western UST Area), completed in 2011 removed most of the impacted soil at the southwest side of the property associated with one group of USTs and a former maintenance building (Plate 3). This was the area where soil porosity was observed to be blocked by aged fuel oil. Based on the observation of blocked soil porosity CKG did not complete the ISCO injection element of the 2010 CAP.

- As part of CKG's effort to understand and locate subsurface structures and utilities, CKG discovered that the Sausal Creek culvert (Plate 2 and 3) has been present at the west side of the property since 1925. The culvert is a concrete structure that extends below the water table by at least a few feet. CKG believes that it is fair to presume this structure has acted as a hydrologic barrier to groundwater migration for the entire history of the plant. On this basis CKG will not address subsurface impacts west of the culvert.

UPDATED REMEDIATION STRATEGY

In 2011 the glass container manufacturing plant was operating only one of three glass melting furnaces while CKG was conducting the soil excavation activities. CKG was able to complete Excavation B and to partially remove impacted soil from the area below the cullet bunker (the "collateral" excavation area identified on Plate 2).

The collateral excavation was the result of having to replace the cullet bunkers. In order to properly rebuild the cullet bunker it was necessary to remove numerous building footings and other structures associated with the former maintenance building, and to remove some impacted soil in the areas where the cullet bunker footings would be placed. The cullet bunker was then rebuilt and is in full operation at this time. Even under limited operations it was difficult to maintain a safe work environment for the Owens-Brockway personnel, and effectively complete the remediation work in that area. Currently, the plant is operating three furnaces on a 24 hour 7 day a week basis. Subsurface investigations show that there are fuel oil impacted soils and groundwater underneath areas that are not safely or logistically available to excavate while the plant is operating.

Another factor to CAP implementation was unexpected subsurface utilities and structures (Plate 2). The plant is 80 years old and several unknown buried obstacles were encountered

The CAP implementation was also modified due to low permeability soils which were encountered during the excavations. These soils would prevent the movement of injected chemicals into the subsurface. The previously planned in-situ chemical oxidation (ISCO) would not be effective and it was determined to not implement

Based on the difficulties encountered during implantation of the original CAP, the revised remedial goals are to excavate in areas where it is logistically feasible and develop a groundwater remedy to prevent impacted groundwater from migrating beyond the property boundaries.

Plate 6 in the original CAP identified four excavation areas (A through D) and six ISCO injection areas (1 through 6). Excavation areas B and D were addressed during the 2011 excavations. The Brick Bunker (near Excavation A and redefined as Excavation E) and the Lube Oil Tank area

(Excavation C), as shown on Plate 4, are known source areas that appear to be accessible and are being addressed in this Revised CAP.

The impacted groundwater will be addressed with a remediation technology other than ISCO. Low permeability soils, difficult access, and free product concentration levels will be considered in selecting an appropriate technology. Three alternatives will be considered in this revised CAP, in lieu of the ISCO technology, dual phase extraction (DPE), electrical resistance heating (ERH), and a groundwater treatment trench.

These new activities will constitute an interim remediation that can be implemented at the operating plant. If plant operations change in the future, other remedial actions, such as additional excavations, can be considered at that time.

REMEDIAL ALTERNATIVES REVIEW AND ANALYSIS

To develop an appropriate and effective plan in response to the November 18, 2013 letter, CKG has reviewed a number of remediation technologies. The following is a brief feasibility review of the advantages and disadvantages of these technologies and a rationale to support the selected approach. For the purpose of evaluating the most appropriate options ball-park cost estimates are provided. These numbers are likely to be refined once the selected option is properly costed.

CKG considered targeted excavations in accessible areas, aggressive in-situ groundwater remediation technologies using DPE and ERH, and a more passive groundwater containment technology using a groundwater treatment trench.

1) Targeted Excavation(s) to Address Source Areas

Soil is excavated and removed at source areas, along with whatever storage structure may remain, and the excavated material is properly disposed of at an off-site location. The excavation typically is extended two or three feet below the water table. If water flows freely into the excavation, the captured water will be pumped to the plant basement where it is treated with the plant's process water and discharged to the sanitary sewer under an industrial discharge permit.

An oxidizing compound will be placed in the lower few feet of the excavation to promote natural attenuation of residual petroleum hydrocarbons remaining at the top of the water table. The excavation is then backfilled, compacted, and finished to grade.

The areal extent of the targeted excavation, as shown on Plate 4, is approximately 20 feet by 40 feet, or 800 square feet (ft^2) for the lube oil tank in Excavation C. At 12 feet deep, the estimated volume of soil to be removed is approximately 355 cubic yards (cy). Additionally, excavation and removal of Area C soils requires consideration of the close proximity to the plant's Furnace and Batch buildings.

For Excavation E, the areal extent is estimated to be 35 feet by 70 feet for the brick bunker. At 15 feet deep, the estimated volume of soil to be removed is approximately 1,200 cy.

The estimated total cost for excavation and removal of impacted soils (both excavations) is $450,000. This value is based on the anticipated excavation dimensions, although quantities could increase significantly if additional impacted soils are encountered and removed. Unknown buried obstacles could also affect the final excavation costs.

2) Dual Phase Extraction

Dual-phase extraction (DPE), also known as multi-phase extraction, or vacuum-enhanced extraction, is an in-situ technology that uses pumps and vacuum to remove various combinations of contaminated groundwater, separate-phase petroleum product, and hydrocarbon vapor from the subsurface. Extracted liquids and vapor are treated and discharged. Treated liquids would be discharged through the plant's existing wastewater treatment system, while the treated vapors would be discharged to the atmosphere under a permit from the Bay Area Air Quality Management District (BAAQMD).

Additional remediation wells would be installed throughout the impacted areas in a grid pattern at approximately 10-foot spacing. A DPE equipment compound would be required to house the remediation equipment. To connect the remediation wells to the DPE compound, significant trenching would be required to install conveyance piping to each well across the plant's access roads.

Following installation, operational costs associated with the DPE system would include monthly electricity costs, periodic carbon change-outs, analytical costs for compliance with air permits, and assumed bi-monthly site visits to perform operations and maintenance. It is anticipated that the system would need to operate for approximately two to five years to reduce contaminants to a level appropriate for consideration of site closure. Given the uncertainty of the source area and the potential for continuing mobilization of site constituents from uncharacterized areas, it is possible that the DPE system could operate for more than five years.

Upon removal of the DPE system, the remediation wells would need to be abandoned, the remediation facilities such as conveyance piping and remediation compound would need to be removed, and the Site restored to its original condition.

The estimated cost for installation, operation, and decommissioning of a DPE system at the Site is $2,500,000. This includes a $ 90,000 allowance for continued monitoring for five years to verify declining concentration trends following source removal.

3) Electrical Resistance Heating (ERH)

ERH is an intensive in situ environmental remediation method that uses the flow of electrical current to heat soil and groundwater and volatilize contaminants and other site-related constituents. Electric current is passed through a targeted soil volume between subsurface electrode elements. The resistance to electrical flow that exists in the soil causes the formation of heat, resulting in an increase in temperature until the boiling point of water is reached. Steam and volatilized constituents rise into the vadose zone and a soil vapor extraction (SVE) system is required to remove the constituents from the subsurface. Vapor and groundwater treatment systems are needed prior to final air and water discharges.

ERH requires many subsurface electrodes that are installed similar to groundwater monitoring wells in a grid or hexagon alignment across the treatment area. A significant electrical power supply is needed and electrical power supply cables would be installed to each electrode. SVE wells are needed between the electrodes to remove the soil vapors and released constituents. An aboveground piping system is usually used from the SVE wells to a centrally located vapor and groundwater treatment compound.

ERH is able to remove difficult to recalcitrant constituents from tightly held soils in a relatively short time period. The low permeability soils present at the site are typically conducive to ERH, but they are not conducive to SVE. As such, the number of SVE wells and associated piping will be significant. The costs are very high due to: many electrodes and SVE wells, a significant power supply, significant encumbrances across the property for electrical cables and SVE piping, construction and operations of air and groundwater treatment systems, and discharge permitting requirements.

The estimated cost for installation, operation, and decommissioning of a ERH system at the Site is $ 3,200,000. This includes a $90,000 allowance for continued monitoring for five years to verify declining concentration trends following source removal.

4) Groundwater Treatment Trench with Passive Ozone Treatment.

A trench approach, or permeable reactive barrier (PRB), consists of a permeable curtain containing appropriate materials constructed to intercept the path of a contaminant plume. At the Site, a trench to a depth of 16 to 20 feet along the south property boundary would be constructed downgradient of areas with significant constituent concentrations in groundwater. An ozone injection system would be installed using a perforated pipe or tubing along the bottom of the trench. The trench would be backfilled with a crushed rock, pea gravel, or other highly permeable material. The ongoing injection of ozone would bubble up through the porous materials and react with and degrade the site constituents. In addition, ozone provides oxygen to promote longer-term biodegradation of petroleum hydrocarbons in groundwater.

Groundwater extraction may also be incorporated into the trench design. Well points may be installed at intervals, such as 100-foot spacing, within the trench to extract groundwater for treatment and disposal through the plant's wastewater system. Groundwater extraction will provide additional gradient control and may draw water back from the downgradient side of the trench.

It is anticipated that the trench will be approximately three feet wide to provide sufficient residence time for adequate treatment. The low permeability soils are expected to limit flow velocities through the trench cross section without the aid of any other barriers, such as a liner on the downgradient side of the trench.

The trench system is considered a passive treatment technology relying on the natural groundwater gradient to transport constituents into the trench for treatment. As such, the cleanup will last for decades; however, the trench will limit downgradient impacts.

The estimated cost for installation of a trench system at the Site is $1,000,000. This includes a $400,000 allowance for continued monitoring for fifty years to verify declining concentration trends in groundwater. .

The following table summarizes the feasibility analysis for each alternative:

Option	Implementability	Effectiveness	Approximate Cost	Rank
Targeted Excavations	Readily implementable at the two target areas, although limited access and ongoing business operations are a concern.	Fully effective at removing petroleum hydrocarbon mass in excavated area.	$300,000. No ongoing O&M costs.	Very good for source areas
Dual Phase Extraction	Potentially difficult in low permeability conditions. Closer well spacing increases above ground facilities and costs.	If extraction possible it can be very effective in reducing the mass of contaminants in the subsurface	$2,500,000. Anticipate 2 to 5 years of operation	Not desirable due to surface area encumbrances on business operations, relatively high costs, and prolonged active O&M requirements.
ERH	High impact with high density of equipment in treatment area. Equipment maintenance and safety would be difficult	Very effective but may need to be operated for a number of years to meet remediation goals.	$3,200,000 Anticipate 1 to 2 years of operation	Not desirable due to surface area encumbrances on business operations and high costs
Groundwater Trench	Readily implemented, although excavation activities may encounter unknown subsurface obstacles. Can be maintained for long periods at relatively low costs with little impact to business operations	Effective at reducing contaminant load in groundwater migrating off site	$1,000,000. Includes a $400,000 allowance for 50 years of ongoing monitoring.	Good as an interim solution to protect downgradient receptors while the plant is still operating.

Based on the feasibility review CKG concludes that the most effective option is a combination of targeted excavations to address the two source areas, and the groundwater treatment trench to address concerns regarding off site migration of impacted groundwater.

SCOPE OF WORK

Upon approval of this work plan, CKG will coordinate with the property owners and subcontractors, and secure the necessary building and encroachment permits from the City of Oakland to implement the proposed Revised CAP. Plate 4 illustrates the locations and configurations of the proposed work.

Targeted Excavations

Excavation work

CKG will use an excavator to remove the soil within the approximate perimeter of the proposed excavation areas C and E. 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 hauled to Vasco Road 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.

Excavations in Area C will extend to an anticipated total depth of 10 to 12 feet below grade, depending on the depth of the lube oil tank. If groundwater is encountered, a temporary sump area will be established within the excavation and the water will be pumped to the plant's wastewater treatment facility.

Excavation Area C is immediately adjacent to, and between, the Batch Building and the Furnace/Forming Building. Therefore, protection of the building foundations and shoring the excavation will be critical items to consider in the final design and implementation of this remedy. The excavated depth may continue beneath the bottom of the tank if the nearby building foundations are secured and the excavation sidewalls can be maintained. In no case will the Area C excavation extend beyond 18 feet deep.

Excavation Area E will extend to a depth of 9-11 feet below grade, depending on the depth of the brick bunker. If groundwater is encountered, a temporary sump area will be established within the excavation and the water will be pumped to the plant's wastewater treatment facility. Excavation E is located in an open area that experiences significant vehicle traffic from plant operations. The extent of excavation will be limited to removing the brick bunker safely. Sloped sidewalls or shoring will be determined by the excavation contractor and will be based on constructability and economic factors. Excavation beyond the depth of the bunker is not anticipated unless it is economically advantageous to remove additional soil materials.

CKG recognizes that impacted material will be encountered beyond the perimeter of both excavations. Because of site operations and other logistical constraints, the objective is to remove the tank and bunker while some impacted material will remain in place. For this reason, CKG will likely not collect confirmation samples from the excavation sidewalls or floor.

Groundwater Removal

CKG anticipates pumping impacted groundwater at each excavation. The total volume of groundwater pumped will be determined by the rate of recharge and the logistics surrounding leaving the excavations open for a period of time. The excavations will not be left open for the sole purpose of extracting groundwater, rather extracting impacted groundwater will be considered a benefit of the excavation remedy.

Groundwater will be managed by placing it in the plant's existing oil/water separator and then discharged to the sanitary sewer under the plant's industrial discharge permit. This system can handle a large volume of petroleum impacted water as long as it is not applied as a slug. If the water is particularly turbid it may be necessary to prefilter the water before it is discharged to the oil/water separator system.

Addition of Chemical Oxidant

The depth to groundwater at the facility varies from 8 to 14 feet below grade, with only a foot or two of seasonal variation over time. Assuming the excavations are extended two to three feet below the groundwater table, CKG will add an oxygen releasing reagent, Oxygen Release Compound (ORC Advanced®) manufactured by Regenesis, to the bottom of the excavation. ORC Advanced is a food grade calcium oxy-hydroxide that produces a controlled release of molecular oxygen to the subsurface for a period of up to 12 months. The ORC provides for enhanced bioremediation by releasing oxygen to the groundwater thus aiding microbial growth and enhancing conditions for microbial activity in order to accelerate natural attenuation processes. If the same conditions exist in this area as in the former excavation B area the chemical oxidant will not be added.

Site Restoration

After ORC slurry is placed CKG will backfill and compact the excavation to grade using imported clean soil/fill material. The clean fill will 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). Backfill will be placed in 6 to 12 inch lifts and compacted to approximately 95% relative density. The placed and compacted backfill will be properly tested and documented by a licensed geotechnical engineer. The backfilled excavation will be finished with paving.

Groundwater Treatment Trench with Passive Ozone Treatment

Implementation of the groundwater treatment trench begins with the design phase. Field implementation will follow the design, permitting, and contracting activities.

Design Phase

A detailed topographic survey along the trench alignment (approximately 50 foot width for the survey area) and a detailed review of existing boring logs will be used to define the excavation requirements, and the exact property boundaries. In addition, the locations of buried utilities will be transferred to the topographic survey drawings using existing available information. Field locates may also be conducted to verify and supplement the existing information.

A treatability test will also be conducted to provide design criteria that will determine the necessary trench width and treatment capabilities. Ozone will react with petroleum hydrocarbons, although the time required and potential complications are uncertain. The necessary treatment time will be used to define the trench width. With ozone, the most common complications are oxidation and precipitation of dissolved iron and manganese, oxidation of naturally-occurring bromide to bromate, and oxidation of soil chromium to hexavalent chromium Cr(VI).

Air injection may be an alternative to ozone if the treatment complications are significant. Similarly, groundwater extraction from the trench with discharge to the plant's wastewater system may be an alternative if the treatment time requirements are greater than a reasonable trench width can provide.

CKG will prepare design drawings and construction specifications based on the topographic survey, utility locates, and treatability test results. The drawings will include the trench alignment, cross sections, air or ozone distribution piping, monitoring well locations and details, the air or ozone generator installation, electrical connections, structural designs, and final surface completion details. The drawings will be suitable to obtain building and drilling permits, collect construction bids, execute a construction contract, and conduct the work.

Field Implementation

Field surveys will be provided to define the trench alignment and cut stakes will be provided to define the necessary depths in accordance with the design drawings. An excavator will be used to excavate a trench approximately 3 feet wide by 18 feet deep and 560 feet along the alignment shown on Plate 4. A one-inch diameter pipe or tubing will be installed near the bottom of the trench to supply ozone or air to the trench. The bottom 10 feet of the trench will be backfilled with a crushed rock or pea gravel to create the treatment zone. The top eight feet of the trench will be backfilled with clean native materials, if available, or imported structural backfill such as a Caltrans Class 2 road base. The materials will be placed in 6-inch to 12-inch lifts and compacted to 95% relative density. The trench surface and work area will be restored to match existing conditions.

The air or ozone generator will be installed within a fenced area on a concrete pad located at a suitable location to coexist with ongoing business operations. Buried piping will be used to distribute the air or ozone to the trench and to supply electrical power to the shed.

Following the trench installation and backfill, groundwater monitoring well points will be installed in the trench. 16-foot deep by 4-inch diameter wells will be used such that they may be converted to groundwater extraction wells if needed. It is anticipated that five well points will be installed at approximately 100-foot intervals within the trench.

The in-trench monitoring wells will be used to monitor groundwater dissolved oxygen concentrations to verify that the air or ozone is being distributed in sufficient quantities. Constituent concentrations will also be monitored to evaluate remediation performance.

PREPARE REPORT OF CORRECTIVE ACTIONS

After the excavations and trench are finished, CKG will write a brief report of excavation and trench implementation to be submitted to the ACEHD. This report will document the implementation activities, the total volume of soil removed and where disposed, the total volume of groundwater extracted and treated during implementation, and a plan for continued operation of the groundwater treatment trench. The effectiveness of the combined remediation effort will be evaluated through ongoing groundwater monitoring.

CKG is pleased to prepare this Revised CAP. If you need further information or would like more details regarding this work please feel free to call me at (707) 967-8080.

Sincerely,

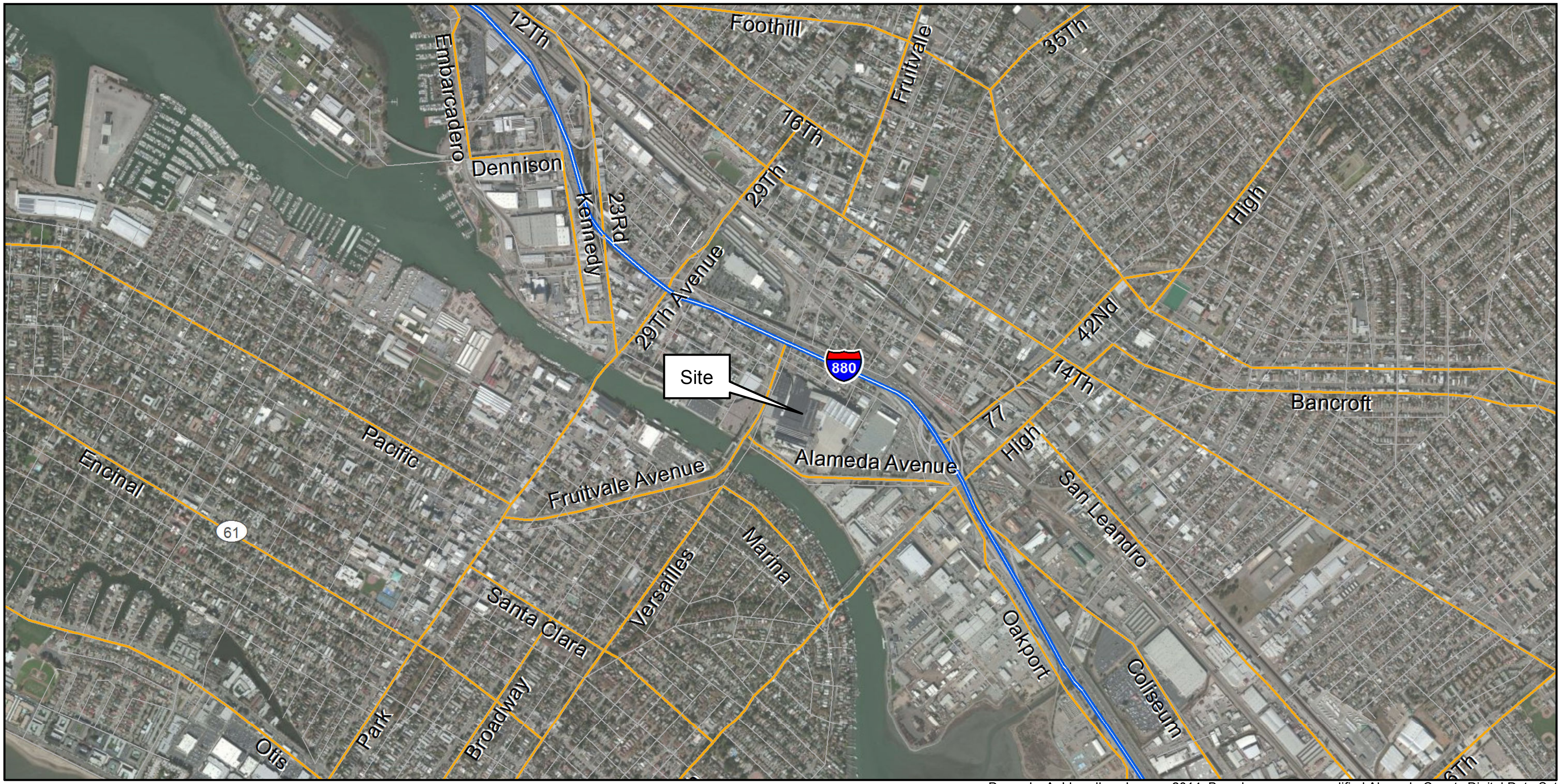
CKG Environmental, Inc.

REGISTERED GEOLOGIST
CHRISTINA J. KENNEDY
No. 5077
Expires 5/14
STATE OF CALIFORNIA

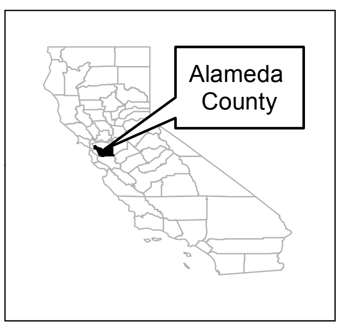
Christina J. Kennedy R.G.
Principal

Attachments – Plate 1 Site location Map
Plate 2 Site Features
Plate 3 2011 Completed Work and Observations
Plate 4 Proposed 2014 Corrective Actions

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



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



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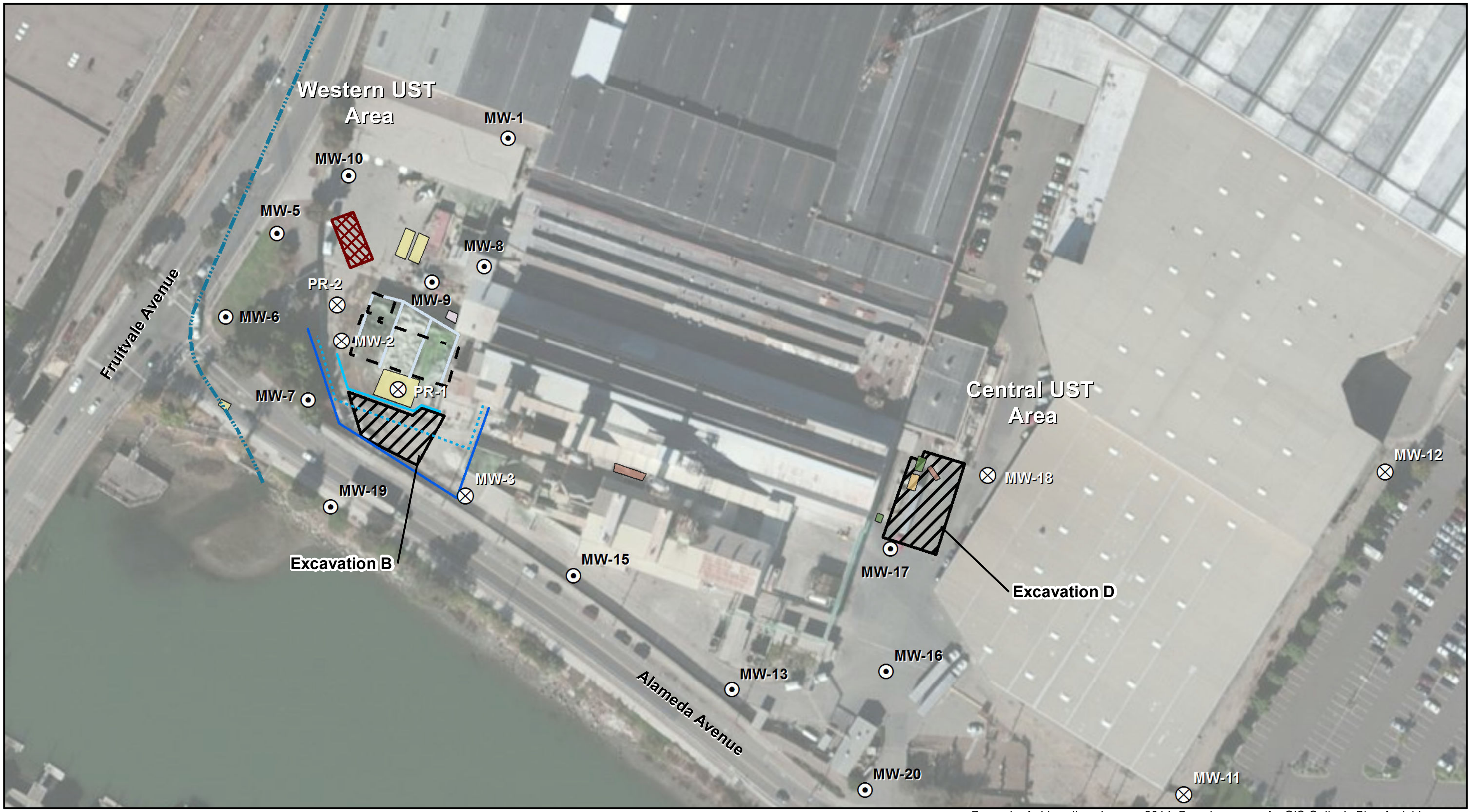
Scale in Feet

CKG Environmental, Inc.

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

PLATE
1



Drawn by A. Llewellyn. January 2014. Base layers are ArcGIS Online's Bing Aerial Imagery.

EXPLANATION

- Monitoring Well
- Destroyed Well
- Sausal Creek Culvert
- New Water Supply Line
- Gas Line
- Abandoned Gas Line
- Brick Bunker
- Cullet Bunker Wall
- Former Maintenance Building
- 2011 Excavation

Former Underground Fuel Storage Tanks

- Diesel
- Fuel Oil
- Gasoline
- Lube Oil
- Waste Oil (Not Confirmed)

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Scale in Feet

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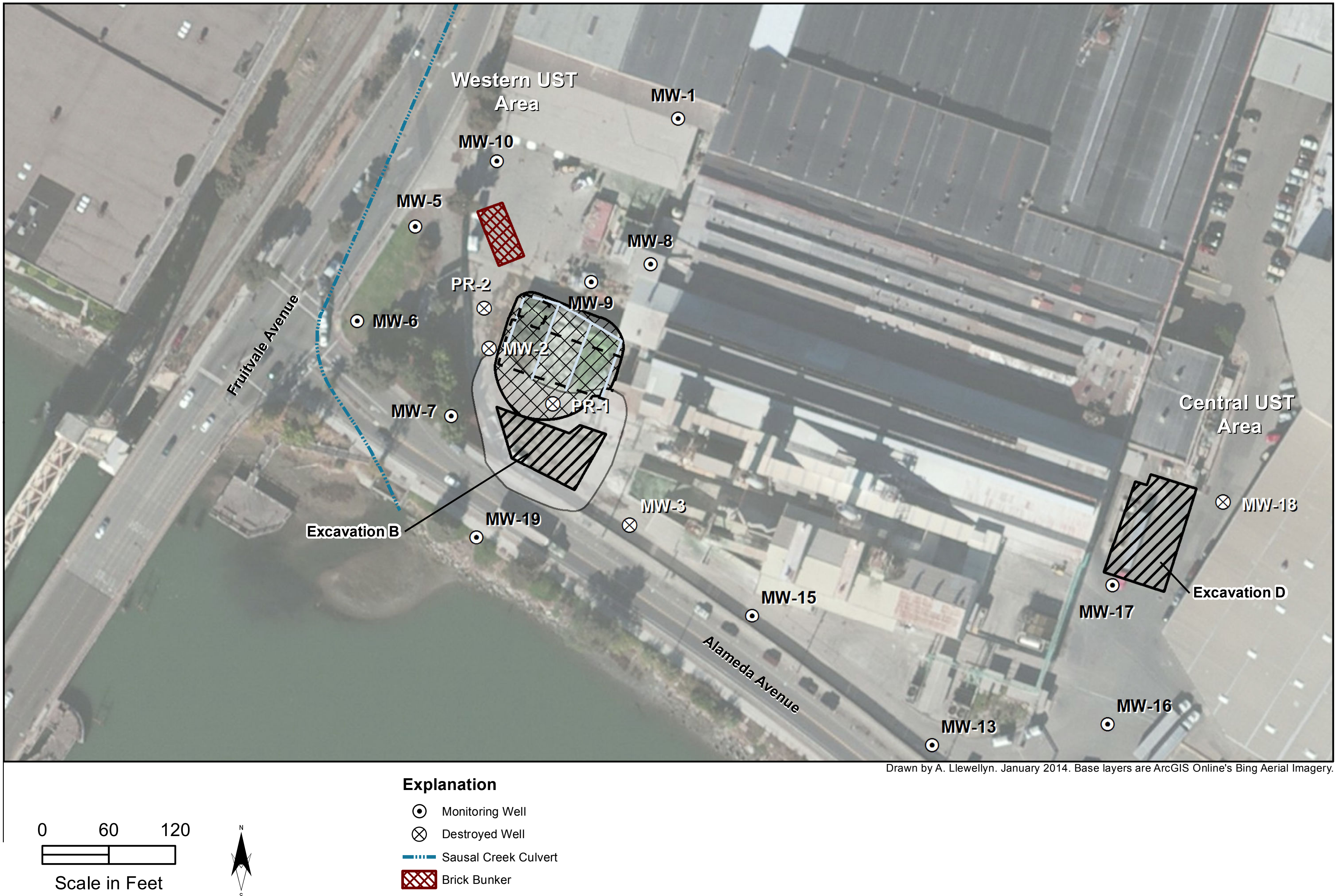
CKG Environmental, Inc.

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

PLATE 2



Drawn by A. Llewellyn. January 2014. Base layers are ArcGIS Online's Bing Aerial Imagery.

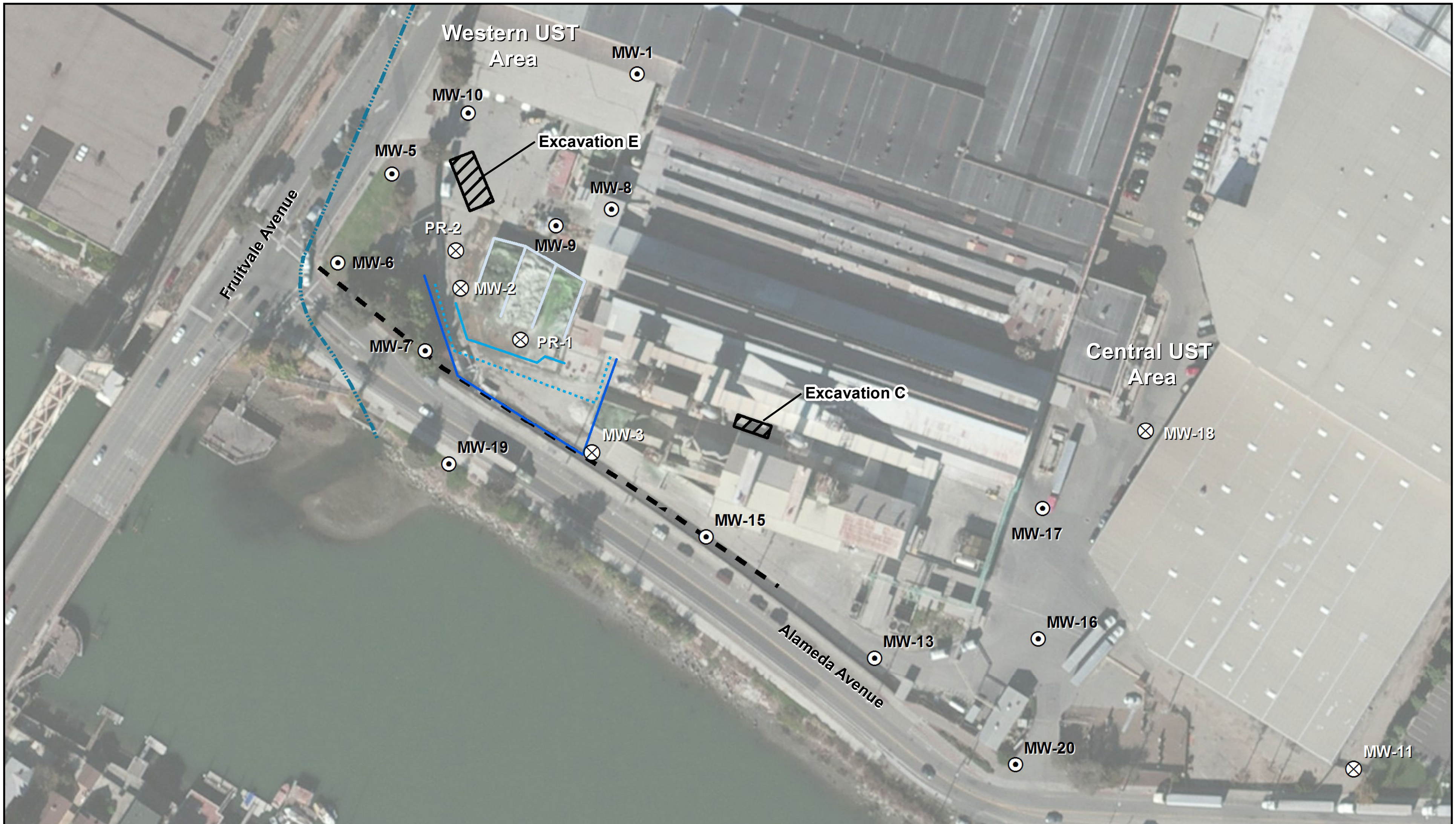
Explanation

- Monitoring Well
- Destroyed Well
- Sausal Creek Culvert
- Brick Bunker
- Cullet Bunker Wall
- Former Maintenance Building
- 2011 Excavation
- 2011 Collateral Excavation
- Area of Observed Impermeable Condition

CKG Environmental, Inc.

2011 Completed Work and Observations
Owens-Brockway Glass Container Facility
3600 Alameda Avenue, Oakland California

PLATE
3



Drawn by A. Llewellyn. January 2014. Base layers are ArcGIS Online's Bing Aerial Imagery.

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Scale in Feet

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Explanation

- Monitoring Well
- Destroyed Well
- Sausal Creek Culvert
- New Water Supply Line
- Gas Line
- Abandoned Gas Line
- Cullet Bunker Wall
- Proposed Groundwater Treatment Trench
- Proposed Excavation

CKG Environmental, Inc.

Proposed 2014 Corrective Actions
Owens-Brockway Glass Container Facility
3600 Alameda Avenue, Oakland California

PLATE 4