CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

**San Francisco Bay Regional Water Quality Control Board**

Date: April 10, 2019
File No.48S0046 (BAC)

Champion Laboratories, Inc.
Attn.: Mr. Todd Maiden, Esq
Reed Smith, LLP
101 Second Street, Suite 1800
San Francisco, CA 94105-3659
Email: TMaiden@reedsmith.com

Maxion Wheels, a division of Ioche-Maxion
Attn.: Mr. Michael Coffman and Mr. Bryon Neal
3610 West Main Street
Sedalia, MO 65301
Email: Michael.Coffman@maxionwheels.com
Email Bryon.Neal@maxionwheels.com

Cranbrook Group, Inc.
Attn.: Mr. Bruce H. Cohoon
4701 Sisk Road, Suite 101
Modesto, CA 95356
Email: BCohoon@cranbrookgroup.com

Equity Office Properties Trust
Attn: Mr. Charlie Hobey
2655 Campus Drive
San Mateo, CA 94403
Email: Charlie_Hobey@equityoffice.com

**SUBJECT: Transmittal of Tentative Order – Site Cleanup Requirements for Benicia Industrial Park, 4186 Park Road, Benicia, Solano County**

Dear Messrs. Maiden, Coffman, Neal, Cohoon, and Hobey:

Attached is a Tentative Order (Site Cleanup Requirements) for the subject site. The Tentative Order sets cleanup standards and requires preparation and implementation of a cleanup plan for the subject Site. The attached materials will also be posted on the following Regional Water Board webpage: http://www.waterboards.ca.gov/sanfranciscobay/public_notices/#sitescleanup

Any written comments by you or interested persons must be submitted to the Regional Water Board offices by **May 17, 2019**. Comments submitted after this date will not be considered by the Regional Water Board. This order will be administratively issued by the Executive Officer, unless it is contested. If it is contested it will be considered by the Regional Water Board during its regular meeting on June 12, 2019. The meeting will start at 9:00 am and will be held in the first-floor auditorium of the Elihu Harris Building, 1515 Clay Street, Oakland, California.

Pursuant to section 2050(c) of Title 23 of the California Code of Regulations, any party that challenges the Regional Water Board's action on this matter through a petition to the State Water Board under Water Code section 13320 will be limited to raising only those substantive issues or objections that were raised before the Regional Water Board at the public hearing or in timely submitted written correspondence delivered to the Regional Water Board (see above).

If you have any questions, please contact Bill A. Cook III of my staff at (510) 622-2446 [e-mail Bill.Cook@waterboards.ca.gov].

Sincerely,

John D Wolfenden FOR

Digitally signed by John Wolfenden
Date: 2019.04.10 14:35:15 -07'00'

Michael Montgomery
Executive Officer

**Attachment:** Tentative order

**Copy sent via email with attachment:**
ERM
Attn.: Mr. John Lucio and Ms. Debbie Lind
Email: John.Lucio@erm.com
Email: Debbie.Lind@erm.com

Solano County: Local Oversight Program
Attn.: Ms. Misty Kaltreider and
Mr. Matthew Geisert
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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**SAN FRANCISCO BAY REGION**

**TENTATIVE ORDER**

**ADOPTION OF SITE CLEANUP REQUIREMENTS for:**

**CHAMPION LABORATORIES, INC.**
**MAXION WHEELS, A DIVISION OF IOCHE-MAXION**
**CRANBROOK GROUP, INC.**
**EQUITY OFFICE PROPERTIES TRUST**

For the property located at:

**4186 Park Road**
**Benicia, Solano County**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter "Regional Water Board"), finds that:

1. **Site Location**: The Site at 4186 Park Road (Figure 1) is in Benicia, Solano County, east of the Carquinez Strait. The Site is located on a portion of the former U. S. Army Benicia Arsenal. The Site is approximately 250 feet northwest of interstate freeway 680, approximately 1,400 feet from tidal marshland and the Southern Pacific railroad tracks. A ditch in these tidal marshlands flows to Goodyear Slough. The Site is approximately 4,200 feet from Suisun Bay.

2. **Site History**: The Site was converted to private commercial and industrial use after the Arsenal was closed in approximately 1964. A long warehouse identified as Building W-12 during the Army's occupancy is the location of the discharge of chlorinated volatile organic compounds (CVOCs) and petroleum constituents. The Arsenal was sold and sub-divided through four transactions between 1975 and 1979. Building W-12 was originally referred to as part of Parcel 1, then parcel 4-B-1. The Site is now comprised of the Assessor's Parcel Numbers (APN) 080-070-050, -70, -080, -090. The parcels are adjacent to each other. The parcels are bounded to the north by Iowa Street, to the east by Stone Road, to the west by a railroad spur, and to the south by Park Road.

   The Site was transferred to the Surplus Property Authority of the City of Benicia (a public corporation) during 1965 then to Benicia Industries in 1975. Exxon filed a quit claim giving the parcel 080-070-090 to the Surplus Property Authority in 1975 but retained an easement. The property was transferred to Shareholder Properties, then to Benicia Properties in 1979. The Site was transferred to Spieker Properties in 1996. The Site was transferred to SPK Industrial Portfolio in June 2001, shortly after TCE contamination was identified on the property. SPK Industrial Portfolio merged into Equity Office Properties by July 2001. The Site was transferred to the current owner, Cranbrook Realty Investment Fund, in 2017.

Between 1970 and 1983 the Site was occupied by E-T Industries (E-T). E-T manufactured aftermarket automobile wheels. E-T's operations included a large vapor degreaser, which utilized trichloroethene (TCE) as the degreaser solvent. Records indicate that E-T had a TCE recycling system, a drum storage area, a boiler, a storage tank, and an oil-water separator. Governmental records, page 187, indicate that E-T implemented poor waste handling practices including open containers of TCE on the premises and releases of oily wastewater to the Benicia Waste Water Treatment Plant.

Filter Dynamics, Inc. (FDI) purchased E-T in 1975 and continued operations. In 1980 Kelsey Hayes acquired certain assets from FDI, including the Benicia E-T/FDI operations. Kelsey-Hayes operated the manufacturing operations until 1983. FDI continued to exist as a cooperation separate from the Benicia operations. FDI was acquired and merged with Champion Laboratories. Kelsey-Hayes subsequently was renamed Hayes-Lemmerz International, Inc. Hayes-Lemmerz International subsequently became Maxion Wheels which is now a division of IOCHE-Maxion. Governmental records, page 347, indicate that on December 22, 1987 a decision by the United States District Court of Southern Georgia found that Champion Laboratories had a duty to defend and indemnify Kelsey-Hayes.

3. **Named Dischargers**: Champion Laboratories is named as a discharger because it is a corporate successor to E-T and because of substantial evidence that E-T discharged pollutants to soil and groundwater at the Site.

   Maxion Wheels, a division of IOCHE-Maxion, is named as a discharger because it is a corporate successor to E-T and because of substantial evidence that E-T discharged pollutants to soil and groundwater at the Site.

   The Cranbrook Group, Inc. is named as a discharger because it is the current owner of the property on which there is an ongoing discharge of pollutants, it has knowledge of the potential discharge, and has the legal ability to control the discharge.

   Equity Office Properties (EOP) is named as a discharger because it owned the property after the time of the activity that resulted in the discharge, had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to prevent the discharge.

   The dischargers named above are collectively referred to as the Discharger Group. Previous property owners are not named because there is insufficient evidence that they qualify as dischargers and most are either defunct or lacking contact information.

4. **Regulatory Status**: This Site is not currently subject to a Regional Water Board site cleanup order. The Regional Water Board has issued several Section 13267 directives for past site investigation and cleanup work.

5. **Site Hydrogeology and Hydrology:** Site geology is primarily controlled by an unnamed fault running directly below the warehouse purported source area. The fault was interpreted to exist when exploratory borings encountered fractured bedrock, southwest

of the warehouse and more than 100 feet of unconsolidated fine to coarse grained sediments to the northeast of the building. The fault has been interpreted to be oriented toward the northwest and dipping steeply to the northeast.

The unconsolidated sediments were interpreted to be stream channel deposits. The stream would have flowed toward the southeast toward Suisun Bay. The stream channel was apparently filled and leveled during development of the U. S. Army Benicia Arsenal but still acts as a preferential pathway for groundwater and contaminant migration toward the southeast in the unconsolidated sediments. Hydrology in the fractured bedrock area is different. In the bedrock area contaminant distribution in groundwater is toward the southwest (Figure 2). Previous investigations indicated that there is an upward gradient in the unconsolidated sediments and a downward gradient in the bedrock area. Bay mud overlies the stream deposits 2,000 feet to the southwest in the general direction of the offsite groundwater plume. The stream deposits extend below and into the marsh portion of the Caltrans Mitigation Area (CMA). Previous investigations have shown that there is a downward gradient in the CMA.

6. **Remedial Investigations**: Remedial investigations were conducted at onsite and offsite locations. The April 1999 Kleinfelder report indicated that there was an onsite TCE groundwater plume. Subsequent investigations reported that the TCE plume extends into the CMA and to within 1,700 feet of the San Francisco Bay. Investigations completed between 2001 and 2002 indicated that groundwater southwest of the Site is contaminated with groundwater with TCE, gasoline, diesel, toluene, ethylbenzene, xylenes, cis-1,2 dichloroethene, 1,1 dichloroethane, and 1,1,2 trichloroethane. The source of petroleum hydrocarbons is found onsite. Methyl tertiary butyl ether was also detected in 2003 in groundwater. Since 2003, soil, soil vapor, groundwater and indoor air samples have not been analyzed for petroleum constituents.

   Later investigations indicated that soil vapor is contaminated onsite and offsite near commercial buildings. Soil vapor sampling was conducted onsite and offsite during 2018 indicated that the soil vapor plume has continued to migrate and evolve. Soil vapor concentrations have rebounded onsite. Soil vapor concentrations of vinyl chlorine at SVP-4 were above the environmental screening level. The groundwater and soil vapor monitoring well network has inadequate sampling locations to verify that the plume is not migrating below additional commercial buildings or to surface water currently or in the future. Estimates of the plume vertical and lateral extent are based on multiple one-time sampling events.

7. **Risk Assessment:** The human health and ecological health assessments dated February 2010 and July 2011 separately addressed both onsite and offsite conditions. Theses assessments indicated that risk and hazard indices were within the acceptable range for commercial buildings.

   These documents were approved prior to three recent regulatory developments. First, the U.S. EPA Integrated Risk Information System (IRIS) published new toxicity criteria for TCE in 2011 which included a new short-term exposure non-cancer toxicity endpoint. Second, U.S. EPA issued the 2015 Technical Guide for Assessing and Mitigating the

Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. The more stringent "safe exposure" levels and default attenuation factor indicate that the previous risk assessments may significantly under estimate the actual human health risk and hazard. Third, State Water Board resolution 2017-0012 now requires evaluation of sea-level rise at sites where contamination may reach the Bay and its tributaries. Sea-level rise may cause an upward gradient in shallow groundwater and entrain CVOCs contamination into marsh habitat. These risk assessments will need to be revised to reflect these regulatory changes.

8. **Interim Remedial Measures**: Beginning in 2004, interim remedial measures were implemented onsite. These measures removed more than 4,700 pounds of CVOCs. These measures included air sparge and soil vapor extraction, high vacuum vapor extraction, and in-situ chemical oxidation. To mitigate for potential vapor intrusion, cracks in the onsite warehouse foundation were sealed and a sub-slab depressurization system was installed.

   In 2019, the Discharger Group voluntarily offered to complete additional injections of sodium permanganate onsite outside of the warehouse to prevent migration of contamination to offsite properties. It also plans to restart the passive sub-slab depressurization system. These additional interim remedial measures have not yet been implemented.

   These interim remedial measures do not fully abate the risk to human health and the potential discharge to the San Francisco Bay within a reasonable time frame. During the extended time estimated for natural degradation to occur, human health onsite and at offsite properties is at risk. The 2011 Human Health and Ecological Risk Assessment indicated that offsite commercial properties may have risk potentially higher than at the onsite property. Additionally, anticipated sea-level rise would make discharge to surface water more likely.

   Offsite and onsite concentrations of CVOCs in groundwater and soil vapor exceed Environmental Screening Levels (ESLs) by up to 1,000 times and require additional remediation within a reasonable time frame. Projected sea-level rise combined with rising groundwater elevation are anticipated within the next 30 years. These conditions will increase the risk of impacts to the offsite commercial properties, CMA marsh habitat, and surface water.

9. **Feasibility Study/Remedial Action Plan:** In 2014 and 2015, respectively, the Discharger Group submitted an onsite and an offsite *Feasibility Study/Remedial Action Plan* (FS/RAP) which were conditionally approved by the Regional Water Board. The Onsite FS/RAP proposed the use of soil vapor extraction followed by in-situ chemical oxidation in the unconsolidated soils and proposed discontinuing remediation to perform a rebound test. Monitored natural attenuation was the selected remedial method in the onsite fractured bedrock area. The Onsite FS/RAP proposed that the sub-slab depressurization system would not be operated unless soil vapor concentrations of TCE exceeded 42,646 micrograms per cubic meter ($\mu g/m^3$). The January 2019 TCE ESL for soil vapor intrusion at a commercial site is 100 $\mu g/m^3$. The Onsite FS/RAP also proposed

that no additional injections of sodium permanganate would be completed unless groundwater concentrations of TCE exceeded 10,285 µg/l. The January 2019 TCE ESL for groundwater CVOCs vaporization to indoor air at a commercial site is 7.5 µg/l.

The Offsite FS/RAP proposed monitored natural attenuation with the provision for reconsideration if groundwater concentrations of CVOCs increased. The offsite FS/RAP also included a fate and transport model indicating that groundwater concentrations of TCE greater than 10,000 µg/l could persist for more than 100 years. According to the model, the plume distal edge would reach to within 1,100 feet of the present bay margin. The 2018 *Second Semi-Annual Groundwater Monitoring Report* indicated the groundwater concentration of TCE near the distal edge of the plume is 5,900 µg/l.

These remedial measures no longer provide long-term protection of human health and the environment. The FS/RAP will need to be revised.

10. **Adjacent Sites**: There are ten other sites located down-gradient and cross-gradient and within approximately 2,000 feet. The Benicia Industrial Park (separate case with the same name) site located at 4251 Iowa Street was impacted by petroleum hydrocarbons. The Century Insulation site, located at 203 Teal Court, is a closed underground storage tank case. The W. R. Meadows site, located at 160 Teal Drive, was impacted by petroleum hydrocarbons. The W. R. Meadows site, at 865 Teal Drive, was impacted with CVOCs, including TCE, and volatile organic compounds (VOCs). The 921, 923, and 945 Teal Drive site was impacted with VOCs. The Port-o-San site, located at 945 Teal Drive, was impacted with petroleum hydrocarbons. The Wilson Industries site, located at 620 Indiana Street, was impacted with hydraulic oil and remains open and requiring additional investigation.

The purpose of the CMA was to offset wetlands destroyed during construction of the second Benicia bridge. Caltrans, the CMA's property owner later discovered that their property was contaminated with CVOCs. A Regional Water Board order was issued in 1973 for the removal of 12,000 cubic yards of leather scraps near the bay margin west of the CMA's property. These ten cases have not been identified as sources of contaminants to the Site's onsite and offsite contamination.

11. **Basis for Cleanup Levels**

a. **General:** State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge. It requires maintenance of background levels of water quality unless a lesser water quality is consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in exceedance of applicable water quality objectives. This order and its requirements are consistent with Resolution No. 68-16.

State Water Board Resolution No. 92-49, *"Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304"* applies to this discharge. It directs the Regional Water Boards to set cleanup levels

equal to background water quality or the best water quality which is reasonable, if background water quality cannot be restored. The cleanup levels established in this order are consistent with the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water, and will not result in exceedance of applicable water quality objectives. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

b. **Beneficial Uses:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was adopted by the Regional Water Board and approved by the State Water Resources Control Board, Office of Administrative Law and the U.S. EPA, where required.

Regional Water Board Resolution No. 89-39, *"Sources of Drinking Water"* defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels. Groundwater underlying and adjacent to the Site qualifies as a potential source of drinking water. The bedrock area is reported to be a low yield area. The CMA is likely to have elevated salinity and electrical conductivity due to the proximity to Suisun Bay.

The Basin Plan designates the following potential beneficial uses of groundwater in the Suisun-Fairfield Valley Basin underlying and adjacent to the Site include:

o Municipal and Domestic Supply (MUN)
o Industrial Process Supply (PRO)
o Industrial Service Supply (IND)
o Agricultural Supply (AGR)

The existing and potential beneficial uses of surface water in the Goodyear Slough watershed include:

o Commercial and Sport Fishing (COMM)
o Estuarine Habitat (EST)
o Fish Migration (MIGR)
o Preservation of Rare and Endangered Species (RARE)
o Wildlife habitat (WILD)
o Water Contact Recreation (REC1)
o Noncontact Water Recreation (REC2)

The existing and potential beneficial uses of water in the Suisun Marsh include:

o Estuarine Habitat (EST)
o Fish Migration (MIGR)
o Preservation of Rare and Endangered Species (RARE)

o Wildlife habitat (WILD)
o Fish Spawning (SPWN)
o Water Contact Recreation (REC1)
o Noncontact Water Recreation (REC2)

c. **Basis for Groundwater Cleanup Levels**: The groundwater cleanup levels for the Site are based on applicable water quality objectives and are the more stringent of the U.S. EPA and California primary maximum contaminant levels (MCLs). Cleanup MCLs will protect beneficial uses of groundwater and will result in acceptable residual risk to humans.

d. **Basis for Soil Cleanup Levels**: The soil cleanup levels for the Site are intended to prevent leaching of contaminants to groundwater, avoid the risk of direct contact, and will result in acceptable residual risk to humans.

e. **Basis for Soil Vapor Cleanup Levels**: The soil vapor cleanup levels for the Site are intended to prevent vapor intrusion into commercial buildings and will result in acceptable risk to humans.

f. **Basis for Indoor Air Cleanup Levels:** The indoor air cleanup levels for the Site are intended to prevent unhealthy levels of CVOCs as a result of vapor intrusion to commercial buildings.

12. **Future Changes to Cleanup Levels**: If new technical information indicates that the established cleanup levels are significantly over-protective or under-protective, the Regional Water Board will consider revising those cleanup levels.

13. **Risk Management**: The Regional Water Board considers the following human health risks to be acceptable at remediation sites: a cumulative hazard index of 1.0 or less for non-carcinogens and a cumulative excess cancer risk of $10^{-6}$ to $10^{-4}$ or less for carcinogens. The previous risk assessments for this Site indicated that contamination-related risks near these acceptable levels. Finding 7 describes the changes that have occurred indicating that the human health and environmental risks are now higher than previously assessed. Active remediation will reduce these risks over time. However, risk management measures are needed at this Site during active remediation to assure protection of human health. Risk management measures include engineering controls (such as engineered caps or wellhead treatment) and institutional controls (such as deed restrictions that prohibit certain land uses). The following risk management measure is needed at this Site: a post-remediation deed restriction that notifies future owners of sub-surface contamination and prohibits sensitive uses of the Site such as residences and daycare centers.

14. **Reuse or Disposal of Extracted Groundwater**: Regional Water Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible. Groundwater pump and treat could be evaluated as a remedial option at this Site.

15. **Basis for 13304 Order**: Water Code section 13304 authorizes the Regional Water Board to issue orders requiring a discharger to cleanup and abate waste where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

16. **Cost Recovery**: Pursuant to California Water Code Section 13304, the discharger is hereby notified that the Regional Water Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.

17. **California Safe Drinking Water Policy:** It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to be remediated such that maximum contaminant levels (designed to protect human health and ensure that water is safe for domestic use) are met in existing and future supply wells.

18. **California Environmental Quality Act (CEQA):** This action is an order to enforce the laws and regulations administered by the Regional Water Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to California Code of Regulations, Title 13, section 15321 of the Resources Agency Guidelines.

19. **Notification**: The Regional Water Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with an opportunity to submit their written comments.

20. **Public Hearing**: The Regional Water Board, at a public meeting, heard and considered all comments pertaining to this discharge.

**IT IS HEREBY ORDERED**: pursuant to sections 13304 and 13267 of the California Water Code, that the Dischargers (or their agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

## A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner that will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.

2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup that will cause significant adverse migration of wastes or hazardous substances are prohibited.

## B. CLEANUP LEVELS

1. **Groundwater Cleanup Levels outside of the Caltrans Mitigation Area**: The following groundwater cleanup levels shall be met in all groundwater monitoring wells identified in the attached Self-Monitoring Program (not including CMA groundwater monitoring wells):

| **Constituent** | **Concentration** (µg/l) | **Basis*** |
|---|---|---|
| Benzene | 1 | MCL |
| Ethylbenzene | 700 | MCL |
| Naphthalene | 0.17 | Tap Water Cancer Risk |
| Methyl tertiary Butyl Ether | 5 | MCL |
| Petroleum – Diesel | 100 | MCL/odor |
| Petroleum – Gasoline | 100 | MCL/odor |
| Tetrachloroethene | 0.64 | MCL |
| Toluene | 150 | MCL |
| Trichloroethene | 1.2 | MCL |
| Cis-1,2-Dichloroethene | 6 | MCL |
| Trans-1,2-Dichloroethene | 10 | MCL |
| Vinyl Chloride | 0.0086 | MCL |
| Total Xylenes | 1,750 | MCL |

* MCL: Lower of the U.S. EPA or Cal/EPA primary or secondary MCL.
MCL/odor: Cal/EPA's secondary MCL for odor is 3.0 units, or 3 times the odor threshold for any constituent. The Regional Water Board's environmental screening level defines the odor threshold for TPH-g at 100 µg/l. See also Bay Basin Table 3-5 (water quality objectives for municipal supply).
Tap Water Cancer Risk: The lower of the cancer and non-cancer tapwater direct exposure level was used.

2. **Groundwater and Surface Water Cleanup Levels in the Caltrans Mitigation Area**: The following groundwater cleanup levels shall be met in all CMA groundwater monitoring wells identified in the attached Self-Monitoring Program:

| **Constituent** | **Concentration** (µg/l) | **Basis*** |
|---|---|---|
| Benzene | 46 | US EPA FW ECT |
| Ethylbenzene | 43 | US EPA SW Acute LOEL |
| Methyl tertiary Butyl Ether | 8,000 | CTR SW CCC |
| Petroleum – Diesel | 640 | SFIA 1999 |
| Petroleum – Gasoline | 3,700 | SFIA 1997 |
| Toluene | 2,500 | US EPA SW Acute LOEL |
| Tetrachloroethene | 230 | US EPA SW Chronic LOEL |
| Cis-1,2-Dichloroethene | 22,000 | US EPA SW Acute LOEL |
| Trans-1,2-Dichloroethene | 22,000 | US EPA SW Acute LOEL |
| Trichloroethene | 200 | US EPA SW Acute LOEL |
| Vinyl Chloride | 780 | US EPA CMC |

* Groundwater cleanup concentrations from the January 2019 Environmental Screening Levels
US EPA FW ECT: US EPA Ecotoxicity Freshwater Chronic Threshold
CTR SW CCC: California Toxic Rule Salt Water Chronic Continuous Concentration
SFIA 1999:1999 Burns-McDonnell study of diesel aquatic toxicity for San Francisco International Airport site
SFIA 1997: 1997 Burns-McDonnell study of diesel aquatic toxicity for San Francisco International Airport site
US EPA SW LOEL: US EPA Salt Water Lowest Observed Effect Level
US EPA CMC: US EPA Criteria Maximum Concentration

3. **Soil Cleanup Levels**: The following soil cleanup levels shall be met in all onsite and offsite vadose-zone soils.

| **Constituent** | **Concentration** (mg/kg) | **Basis*** |
|---|---|---|
| Benzene | 0.025 | Leaching to groundwater |
| Cis-1,2-Dichloroethene | 0.19 | Leaching to groundwater |
| Trans-1,2-Dichloroethene | 0.65 | Leaching to groundwater |
| Ethylbenzene | 0.43 | Leaching to groundwater |
| Methyl tertiary Butyl Ether | 0.028 | Leaching to groundwater |
| Petroleum – Diesel | 260 | Non-Cancer-Hazard |
| Petroleum – Gasoline | 100 | Odor Nuisance |
| Tetrachloroethene | 0.080 | Leaching to groundwater |
| Toluene | 3.2 | Leaching to groundwater |
| Trichloroethene | 0.085 | Leaching to groundwater |
| Vinyl Chloride | 0.0015 | Leaching to groundwater |
| Xylenes | 2.1 | Leaching to groundwater |

* Soil cleanup concentrations from the January 2019 Environmental Screening Levels

4. **Soil Vapor Cleanup Levels**: The following soil vapor cleanup levels shall be met in all onsite and offsite vadose-zone soils.

| **Constituent** | **Concentration** ($\mu g/m^3$) | **Basis*** |
|---|---|---|
| Benzene | 3.2 | Cancer Risk |
| Cis-1,2-Dichloroethene | 280 | Non-Cancer Hazard |
| Trans-1,2-Dichloroethene | 2,800 | Non-Cancer Hazard |
| Ethylbenzene | 37 | Cancer Risk |
| Methyl tertiary Butyl Ether | 360 | Cancer Risk |
| Petroleum - Diesel | 8,900 | Non-Cancer Hazard |
| Petroleum - Gasoline | 3,300 | Odor/Nuisance |
| Tetrachloroethene | 150 | Cancer Risk |
| Toluene | 10,000 | Non-Cancer Hazard |
| Trichloroethene | 160 | Cancer Risk |
| Vinyl Chloride | 0.32 | Cancer Risk |
| Xylenes | 35,000 | Non-Cancer Hazard |

* Soil vapor cleanup concentrations from the January 2019 Environmental Screening Levels

5. **Indoor Air Cleanup Levels**: The following indoor air cleanup levels shall be met in all onsite and offsite existing buildings.

| **Constituent** | **Concentration** ($\mu g/m^3$) | **Basis*** |
|---|---|---|
| Benzene | 0.42 | Cancer Risk |
| Cis-1,2-Dichloroethene | 35 | Non-Cancer Hazard |
| Trans-1,2-Dichloroethene | 350 | Non-Cancer Hazard |
| Ethylbenzene | 4.9 | Cancer Risk |
| Methyl tertiary Butyl Ether | 47 | Cancer Risk |
| Petroleum - Diesel | 1,100 | Non-Cancer Hazard |
| Petroleum - Gasoline | 2,500 | Odor/Nuisance |
| Tetrachloroethene | 2.0 | Cancer Risk |
| Toluene | 1,300 | Non-Cancer Hazard |
| Trichloroethene | 3.0 | Cancer Risk |
| Vinyl Chloride | 0.16 | Cancer Hazard |
| Xylenes | 440 | Non-Cancer Hazard |

* Indoor Air cleanup concentrations from the January 2019 Environmental Screening Levels

## C. TASKS

### 1a. ADDITIONAL ONSITE VAPOR INTRUSION EVALUATION WORK PLAN

COMPLIANCE DATE: November 29, 2019

Submit a work plan acceptable to the Executive Officer to address updated toxicity values and attenuation rates. The work plan shall consider all relevant contaminants, media (soil, groundwater, soil vapor, and indoor air), exposure pathways, and receptors. The work plan shall also include a building survey and indoor air investigation. It shall be designed so that its implementation shall produce site data to assess contamination threat to human health and the environment. The work plan shall specify investigation methods and a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently, provided that this does not delay compliance.

1b. **ADDITIONAL ONSITE VAPOR INTRUSION EVALUATION REPORT**

COMPLIANCE DATE: According to schedule in Task 1a work plan approved by the Executive Officer

Complete tasks in the Task 1a work plan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to cleanup goals.

2a. **ADDITIONAL OFFSITE VAPOR INTRUSION WORK PLAN**

COMPLIANCE DATE: November 29, 2019

Submit a work plan acceptable to the Executive Officer to define the vertical and lateral extent of subsurface pollution. The work plan shall consider all relevant contaminants, media (soil, groundwater, soil vapor, and indoor air), exposure pathways, and receptors. The work plan shall also include a building survey and indoor air investigation, if the soil vapor cleanup levels near the building are exceeded. It shall be designed so that its implementation shall produce site data needed to assess contamination threat to human health and the environment. The work plan shall specify investigation methods and a proposed time schedule. To appropriately define the extent of the soil vapor contamination, the maximum distance between sampling locations should not exceed 200 feet.

2b. **ADDITIONAL OFFSITE VAPOR INTRUSION REPORT**

COMPLIANCE DATE: According to schedule in Task 2a work plan approved by the Executive Officer

Complete work in the Task 2a work plan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to cleanup goals.

3a. **ADDITIONAL SOIL VAPOR AND SOIL MITIGATION WORK PLAN**

COMPLIANCE DATE: January 29, 2020

Submit a work plan acceptable to the Executive Officer to implement interim mitigation of onsite and offsite secondary source areas. It shall be designed so that its implementation shall reduce the threat to human health and the environment. The work plan shall specify methods and a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently, provided that this does not delay compliance.

3b. **ADDITIONAL SOIL VAPOR AND SOIL MITIGATION REPORT**

COMPLIANCE DATE: According to schedule in Task 3a work plan approved by the Executive Officer

Complete work in the Task 3a work plan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall document the reduction of pollution down to cleanup goals.

4a. **GROUNDWATER MONITORING WELL NETWORK WORK PLAN**

COMPLIANCE DATE: March 30, 2020

Submit a work plan acceptable to the Executive Officer to achieve define the lateral extent of groundwater pollution. It shall be designed so that its implementation shall produce site data to assess contamination threat to human health and the environment. The work plan shall specify investigation methods and a proposed time schedule. To appropriately define the extent of the groundwater contamination, the maximum distance between sampling locations should not exceed 200 feet.

4b. **GROUNDWATER MONITORING WELL NETWORK COMPLETION REPORT**

COMPLIANCE DATE: 90 days after Executive Officer approval of Task 4a

Complete work in the Task 4a work plan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to cleanup goals

5. **REVISED HUMAN HEALTH AND ENVIRONMENTAL RISK ASSESSMENT**

COMPLIANCE DATE: May 31, 2020

Submit a revised human health and environmental risk assessment acceptable to the Executive Officer to estimate the human health and environmental risk under present and potential future conditions. The report shall comprise either a screening level evaluation or a site-specific risk assessment. The results of this report will help establish acceptable exposure levels, to be used in developing remedial alternatives in task 6a below.

The assessment shall use current U.S. EPA toxicity and attenuation values. The risk assessment shall consider all relevant contaminants, media (soil, soil vapor, groundwater, indoor air, and surface water), exposure pathways, and receptors. The risk assessment shall include a summation of the cancer risk and human

health hazard of the five chlorinated compounds present in the onsite and offsite areas. The risk assessment may use narrative estimations of risk to environmental receptors where there are uncertainties or a lack of guidance. The risk assessment shall evaluate onsite and offsite conditions in response to the regulatory changes noted in Finding 7, above.

The assessment shall include a fate and transport model. The revised model shall assess the potential for terrestrial and surface water impact due to projected sea-level rise.

6a. **REVISED FEASIBILITY STUDY/ REMEDIAL ACTION PLAN**

COMPLIANCE DATE: July 30, 2020

Submit a technical report acceptable to the Executive Officer containing:

a. Summary of remedial investigation
b. Summary of risk assessment
c. Evaluation of the installed interim remedial actions
d. Feasibility study evaluating alternative final remedial actions
e. Recommended final remedial actions and cleanup levels
f. Implementation tasks and time schedule

The remedial action plan must propose remedial work that has a high probability of eliminating unacceptable threats to human health and restoring beneficial uses of groundwater in a reasonable time, with "reasonable time" based on the severity of impact to the beneficial use (for current impacts) or the time before the beneficial use will occur (for potential future impacts). The remedial action plan must address the full extent of contamination originating at the Site, including any contamination that extends beyond the source-property boundary such as at the CMA.

Item d shall include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through d shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. § 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code section 25356.1(c), and State Water Board Resolution No. 92-49 as amended ("*Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*").

Item e shall consider the cleanup levels for soil, soil vapor, indoor air, and groundwater identified in Section B Cleanup Levels above and shall address the attainability of background levels of water quality.

6b. **FS/RAP IMPLEMENTATION WORK PLAN**

COMPLIANCE DATE: 90 days after Executive Officer approval of Task 6a

Submit a technical report acceptable to the Executive Officer. The report shall include a detailed plan for implementing the chosen remedial action alternative outlined in the FS/RAP. This RAP Implementation Plan must include the following:

- Detailed design of the chosen remedial action alternative;
- Plan for managing the discharge of any extracted groundwater during implementation of the FS/RAP;
- RAP implementation schedule.

6c. **IMPLEMENTATION OF REMEDIATION SYSTEM**

COMPLIANCE DATE: 90 days after Executive Officer approval of Task 6b

Complete work in the Task 6b implementation work plan and submit a technical report acceptable to the Executive Officer documenting their completion. For ongoing actions, such as soil vapor extraction or groundwater extraction, the report shall document system start-up (as opposed to completion) and shall present initial results on system effectiveness (e.g., capture zone or area of influence). Proposals for further system expansion or modification may be included in annual reports (see attached Self-Monitoring Program).

7. **FIVE-YEAR STATUS REPORTS**

COMPLIANCE DATE: October 31, 2025, and every five years thereafter

Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the approved remedial action plan. The report shall include:

a. Summary of effectiveness in controlling contaminant migration and protecting human health and the environment
b. Comparison of contaminant concentration trends with cleanup levels
c. Comparison of anticipated versus actual costs of cleanup activities
d. Performance data (e.g., groundwater volume extracted, chemical mass removed, mass removed per million gallons extracted)
e. Cost effectiveness data (e.g., cost per pound of contaminant removed)
f. Summary of additional investigations (including results) and significant modifications to remediation systems


**Figure 1**

*Site Location Map*
*First Semiannual 2018 Groundwater Monitoring Report*
*4186 Park Road*
*Benicia Industrial Park*
*Benicia, California*

References:
TOPO! Software, Version 2.6.8

Environmental Resources Management
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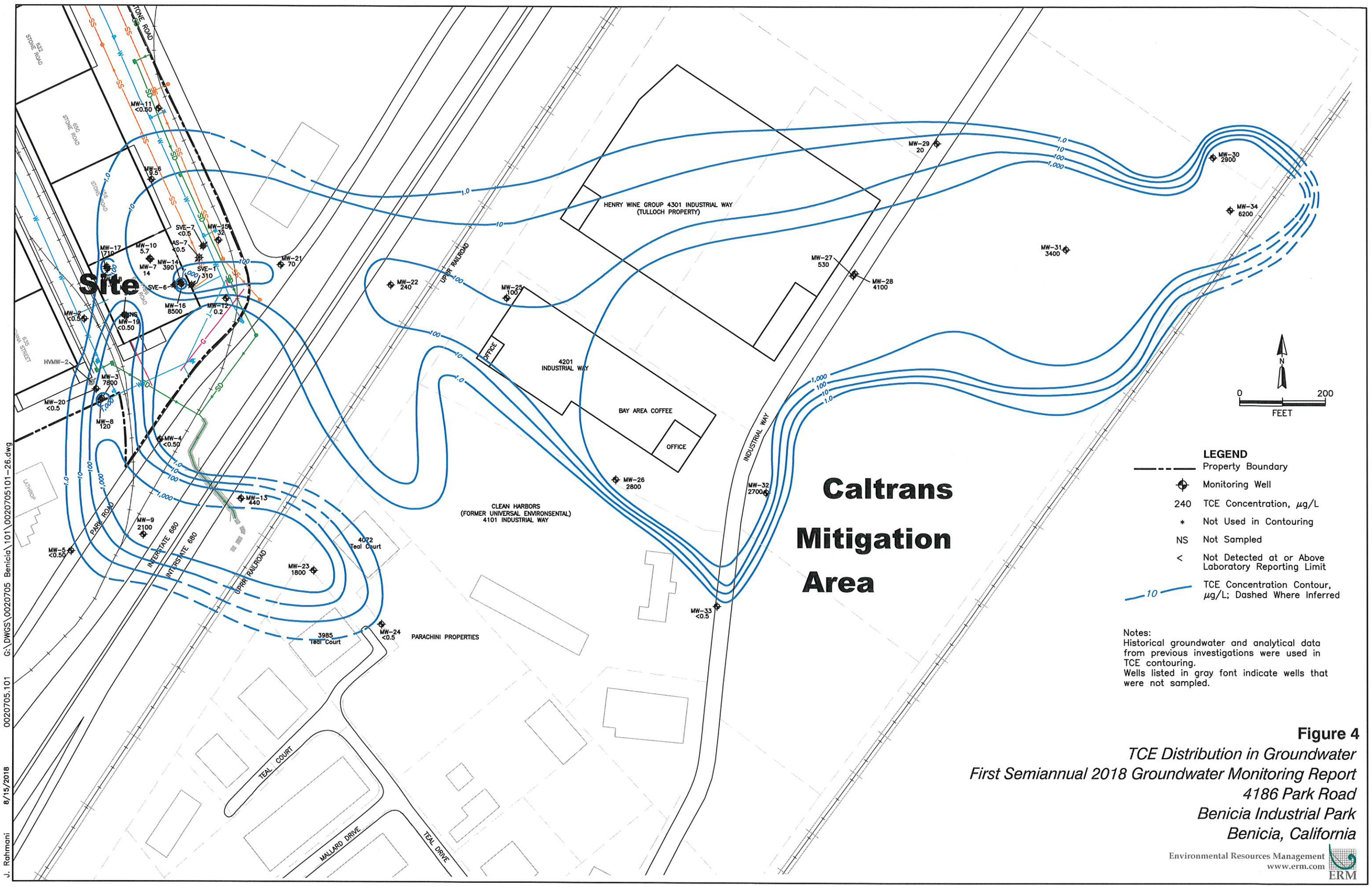


**LEGEND**

- Property Boundary
- Monitoring Well
- 240 TCE Concentration, µg/L
- * Not Used in Contouring
- NS Not Sampled
- < Not Detected at or Above Laboratory Reporting Limit
- 10 TCE Concentration Contour, µg/L; Dashed Where Inferred

Notes:
Historical groundwater and analytical data from previous investigations were used in TCE contouring.
Wells listed in gray font indicate wells that were not sampled.

**Figure 4**

*TCE Distribution in Groundwater*
*First Semiannual 2018 Groundwater Monitoring Report*
*4186 Park Road*
*Benicia Industrial Park*
*Benicia, California*

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