

# **OAKLAND ARMY BASE**

## **AIR QUALITY**

### **MMRP PROJECT MANUAL AIR QUALITY COMPONENT 5/8/2013**



**DRAFT**

**MITIGATION MONITORING AND REPORTING PROGRAM  
PROJECT MANUAL  
COMPONENTS FOR COMPLYING WITH CONSTRUCTION-  
RELATED AIR QUALITY REQUIREMENTS**

**Former Oakland Army Base Redevelopment Project  
Oakland, California**

May 8, 2013

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## **3.0 AIR QUALITY**

### **3.1 CONSTRUCTION MANAGEMENT PLAN**

#### **Plan and/or reporting required by:**

- **SCA AIR-1**
- **SCA AIR-2**
- **MM 4.3-13**
- **MM 4.4-6**
- **LDDA Community Benefits Matrix Item 14**
- **PMA Community Benefits Matrix Item 9**

This Construction Management Plan (CMP) is intended to provide a consistent framework and set of guidelines under which certain physical aspects of construction management will be implemented. The elements contained in this plan are related to the process of development. It is intended that the provisions of this CMP apply to the work associated within the proposed OAB Redevelopment Project and address mitigation measures identified in the SCA/MMRP. The CMP explains how the Developer will comply with these construction-related SCAs and mitigation measures, how they will be monitored and verified, how they will be reported, and the schedule for doing so.

This CMP cannot anticipate all situations. It is intended to assist, but not to substitute for competent work by design and construction professionals. This CMP does not intend to limit any innovative or creative efforts that could result in better construction or management quality, greater cost savings or schedule efficiencies. Any proposed departure from the CMP will be compared to the expectation that such variance will produce a comparable result, adequate for the Developer and City over the duration of the project.

The following sections outline the methods and procedures that the Developer, its General Contractor, and its subcontractors will implement during all phases of Project construction, including demolition.

#### ***3.1.1 Definitions***

The Developer will enter into a contract with Project Construction Team to perform construction in accordance with prescribed plans and specifications made part of the Contract. The Project Construction Team will provide construction management services. Inherent in the services

provided by the Project Construction Team are responsibilities pertaining to implementation, inspecting, verifying, monitoring, reporting, and enforcing this CMP, as described below. An organization chart outlining the primary individuals comprising the Project Construction Team for the horizontal construction phases is included as Figure 3.

**Developer** – Prologis CCIG Oakland Global has a signed LDDA with the City to overtake and facilitate the construction activities for the Project. This agreement allows the Developer to make decisions on the City’s behalf in accordance with the Project’s contractual requirements.

**Project Executive** – Duties of the Project Executive include the management of the scope, quality, schedule, cost, and phases of horizontal construction of the Project. The Project Executive will ensure subcontractor compliance with all requirements of this Project Manual, and will coordinate subcontractor activities with environmental and safety personnel. S/he will also establish the Construction Team members, and function as the primary contact with representatives of the Developer, Executive Management Committee, subcontractors, and the other Construction Team members. The Project Executive will assist the Design Team Manager in determining the scope of the Design Engineer’s services during construction, and negotiate agreements that identify the specific tasks and budget required of the Design Engineer during the horizontal construction phase. S/he will manage field staff, review construction schedules, monitor and document construction progress, initiate remedial actions as required, ensure submittals by subcontractors of updated and recovery schedules as changes occur, analyze change orders for schedule and budget impacts, negotiate contract changes with the Developer, prepare monthly progress report to Developer reflecting the status of the construction contract, and coordinate construction contract closeout procedures.

**Senior Project Manager** – The Senior Project Manager is responsible for ensuring compliance with construction plans. S/he will prepare agendas and conduct pre-bid meetings and pre-construction conferences, review requests for additional funding to support project initiatives, and work with the Cost Engineer in contract administration to ensure Project quality, schedule, and budget compliance. S/he will define the level of MM inspection services required by the CMP, secure the appropriate inspectors, ensure field personnel maintain proper inspection logs, review daily and other inspection reports, and coordinate inspection activities for the duration of the Project. The Senior Project Manager will manage the Project document control system to ensure proper filing of construction phase documents and maintain such files until project closeout. S/he will monitor compliance with Project and construction requirements, and will serve in place of the Project Executive during absences of that individual.

**Compliance Manager** – The Compliance Manager will be assigned to observe and inspect the Project and the materials and equipment to be used for compliance with the MMRP. Specific duties during horizontal construction include coordinating input and reviewing comments on subcontractor submittals with the Design Engineer and subcontractor, ensuring timely responses on submittals to subcontractors and proper logging and tracking of submittals, observing subcontractors during construction activities in accordance with the Developer’s directives, tracking and monitoring weather conditions and related delays, and observing implementation of the Project Construction Team’s and subcontractor’s Health and Safety Plans.

S/he will be responsible for performing visual inspections of construction activities that have the potential to impact air quality on the Project and vicinity. S/he will enforce the requirements of dust control, traffic control, erosion and sediment control, and any other programs or plans required under the MMRP related to construction air quality. S/he will review and follow up with complaint logs, truck inspection logs, and other construction logs required on the Project. S/he will convey the type and frequency of testing services required, if any, and ensure proper quality control documentation and implementation of corrective actions, as necessary. S/he will ensure construction meets MMRP requirements, perform Site visits, and review all submittals, field reports, and test reports related to the MMRP.

**Safety Representative** – The Safety Representative will make periodic Site visits to ensure compliance with the Project Health and Safety Plan.

**Cost Engineer** – The Cost Engineer is responsible to Project Executive for overall Project controls, scheduling, cost trending, cash flow projections, cost-to-date and cost-to-completion reporting, and consolidating inputs from all parties into a single monthly report.

**Administrative Specialist** – Specific duties include management of scheduling and document tracking programs, ensuring proper maintenance of field office equipment, preparing construction meeting minutes, producing monthly construction progress reports, tracking subcontractor submittals and uploading final versions to the Project website, and assisting the Senior Project Manager as needed.

### ***3.1.2 Documentation***

#### ***3.1.2.1 Permits***

The Contractor shall maintain all applicable local, state, and federal licenses and permits including any public utility and improvement agreements and related City ordinances. A copy of each permit will be stored onsite. Permits will be available for review by any local, state, or

federal official request during normal working hours. Permits will be kept with the Contractor for a minimum of 5 years after completion of Project and will be furnished in hard copy within 10 days to any requesting official. The Contractor will maintain a Site office located near the corner of Burma Road and Bataan Avenue. The Construction Site Office will be open at all times when construction activity is underway.

### *3.1.2.2 Signage*

Signs shall be constructed and posted per the requirements of mitigation measures SCA Air-2, SCA Noise-3, and SCA Trans-2. Signs shall be posted at all Site access points and shall meet criteria in City codes.

Required signs include:

- 15 mph speed limit on unpaved roads;
- Maximum idling times for diesel-fueled commercial vehicles over 10,000 lbs;
- Dust complaint reporting procedures (includes contractor's name and telephone number); and
- Permitted construction days/hours and complaint reporting procedures (includes both the City and construction contractor's names and telephone numbers for regular construction hours and off-hours).

Example signs are included in Appendix B. Additional signage may be required by the Construction Traffic Control Plan (Section 3.1.4.1) per SCA Trans-2 are discussed there.

### *3.1.2.3 Organization Chart and Designated Contacts*

An organization chart outlining the primary individuals comprising the Project Construction Team for the horizontal construction phases is included as Figure 3.

Prior to beginning construction activity and until construction of the Project is complete, the Contractor will maintain a Site office located near the corner of Burma Road and Bataan Avenue. The Construction Site Office will be open at all times when construction activity is underway. A Contractor's representative may be reached at the Construction Site Office by telephoning (510) 267-8100 or emailing [cmendoza@tcco.com](mailto:cmendoza@tcco.com). After hours or in the event the Construction Site Office is not open, the Contractor may be reached by telephoning (925) 580-2200 or emailing [dustin.knott@topgradeconstruction.com](mailto:dustin.knott@topgradeconstruction.com).

### **3.1.3 Project Implementation**

#### **3.1.3.1 Schedule**

A construction schedule is included as Appendix C. The anticipated construction start date is June 2013 and the currently anticipated completion date is September 2017. The proposed construction schedule is conditional on receipt of required approvals and subsequent completion of design documentation, and therefore the anticipated start date and allowable sequence of events within the construction schedule may be modified over time.

Construction activities will be conducted weekdays from 7:00 am to 4:00 pm. Saturday and holiday hours will be from 7:00 am to 4:00 pm with prior City approval.

The Developer or its Contractor will notify California Emergency Management Agency (CalEMA) prior to and at the completion of construction.

#### **3.1.3.2 Sequencing**

The construction schedule (Appendix C) includes all Project phasing, with item details, and specific item completion dates or duration of phasing. The schedule was developed using Oracle Primavera P6.

### **3.1.4 Construction-Related Air Pollution Controls**

This section and related appendices include several plans and programs to mitigate air pollution generated by construction activities.

#### **3.1.4.1 Traffic Control Plan**

The Traffic Control Plan (TCP) outlines the guidelines and procedures that are required for the transportation of material to be hauled offsite. Demolition debris and recyclable material will be the primary source of export. Transporter requirements and truck routes are provided in the TCP (Appendix D). The TCP also provides guidelines and plans for construction traffic routes and parking, as discussed in the following section.

##### **3.1.4.1.1 Construction Traffic and Parking**

Attachments 1 and 5 of Appendix D are drawings showing parking locations and construction traffic controls that will be used during the Project. Parking has been provided for vehicles of construction workers as well as construction site visitors.

#### *3.1.4.2 Dust Control Program*

In an effort to minimize fugitive dust, the Contractor will implement a Dust Control Program. It is imperative that the Site be kept damp to eliminate dust clouds from forming during soil disturbance and building demolition. Each dust-contributing operation will be addressed with proper dust mitigation measures, as outlined in Table 1. The Contractor will phase and schedule demolition activities to minimize dust emissions. On every work day when grading and hauling will occur, water will be sprayed on exposed surfaces in intervals required to keep soil damp and eliminate dust plumes. In addition, the Contractor will at all times ensure that reasonable controls are in place to minimize dust caused by wind. Monitoring of Site conditions will be conducted by an appointed Construction Site Manager and inspected by the Compliance Manager. The Compliance Manager will perform daily inspections, inclusive of exit gate checks. Appendix E contains a Dust Control Plan that is required for all subcontractors doing work onsite. The plan should be used as a template and modified for the construction-specific activity.

#### *3.1.4.3 Equipment Emissions Reduction Program*

The Equipment Emissions Reduction Program (EERP) of the CMP addresses the relationship between the CMP and CARB regulations, and the Developer's role in helping Contractors and Operators comply with these regulations to ensure that air emissions are reduced as quickly as possible. Trucks must be compliant with all laws and regulations, notably the CARB Off-Road Diesel Regulations. All emission standards and related requirements set forth in the CARB Regulations apply on the schedules set forth in the Regulations.

The Off-Road Regulation applies to all self-propelled off-road diesel vehicles over 25 horsepower (hp) used in California, and most two-engine vehicles (except on-road two-engine sweepers) are subject to the Regulation for In-Use Off-Road Diesel Fueled Fleets (Off-Road regulation). This includes vehicles that are rented or leased (rental or leased fleets).

The Contractor will perform periodic field inspections during demolition, grading, and construction to assess compliance with the EERP. The EERP is included as Appendix F.

##### *3.1.4.3.1 Idling Policy*

An Idling Policy (Appendix G) has been developed in accordance with the CCR Title 13, Section 2485. This idling policy is intended to reduce public exposure to DPM, greenhouse gas (GHG) emissions, and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles. Project signs (Appendix B) will notify Site visitors and workers of this Idling Policy.



## **TABLES**

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<b>AESTHETICS, WIND, AND SHADOWS</b>								
<b>SCA AES-1: Lighting Plan:</b> The proposed lighting fixtures shall be adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties. Plans shall be submitted to the Planning and Zoning Division and the Electrical Services Division of the Public Works Agency for review and approval. All lighting shall be architecturally integrated into the site.	<b>See Project Manual, Section 2.1.</b> Confirm in Project plans: <ul style="list-style-type: none"> <li>Shield lighting fixtures.</li> <li>Prevent unnecessary glare onto adjacent properties.</li> <li>Architecturally integrate lighting into the site.</li> </ul>	Prior to the issuance of an electrical or building permit.	City/Port	X		X		
<b>Mitigation 4.11-1:</b> New lighting shall be designed to minimize off-site light spillage; "stadium" style lighting shall be prohibited. Modern security lighting is available that directs light toward a specific site, and substantially reduces spillage of light onto adjacent properties. The City and the Port shall require the use of such directional lighting as a condition of approval for redevelopment projects throughout the project area. In no case shall the City and the Port allow the use of stadium-style lighting, which directs light outward across a broad area.	Confirm in Project plans: <ul style="list-style-type: none"> <li>Minimize off-site light spillage.</li> <li>No 'stadium style' lighting allowed.</li> </ul>	Prior to the issuance of an electrical or building permit.	City/Port	X		X		
<b>Mitigation 4.11-3:</b> New active or passive solar systems within or adjacent to the project area shall be set back from the property line a minimum of 25 feet. Through design review, the City shall ensure that proposed solar systems are not located in a manner that would unduly restrict design of future development. Such conflicts are to be resolved in design review. If the proposed solar system cannot be designed to accommodate adjacent actions, it shall be disallowed.	Confirm in Project plans: <ul style="list-style-type: none"> <li>Set back active/passive solar systems &gt;25 feet from property line.</li> <li>Solar system located such that they do not restrict future development.</li> </ul>	Prior to the issuance of an electrical or building permit.	City/Port			X		
<b>Mitigation 4.11-4:</b> New construction within the Gateway development area adjacent to a parcel containing permitted or existing active or passive solar systems shall demonstrate through design review that the proposed structures shall not substantially impair operation of existing solar systems. Through design review, the City shall ensure that the effectiveness an operation of existing or permitted active or passive solar systems shall not be substantially impaired. The design of the subsequent proposed structures shall be modified so as not to have such an adverse effect.	Confirm in Project plans: <ul style="list-style-type: none"> <li>New construction does not substantially impair operation of existing solar systems.</li> </ul>	Prior to the issuance of an electrical or building permit.	City			X		
<b>Mitigation 4.11-5:</b> The City and Port shall coordinate with respect to the design of new, permanent buildings constructed along the Port/Gateway boundary to minimize conflicts over solar access. The City and Port shall coordinate with one another regarding design of subsequent redevelopment activities within their respective jurisdictions that may affect operation of solar installations in the other's jurisdiction.	Confirm in Project plans: <ul style="list-style-type: none"> <li>Minimize conflicts over solar access.</li> </ul>	Prior to the issuance of an electrical or building permit.	City/Port			X		
<b>Mitigation 4.11-6:</b> New construction adjacent to a public park or open space shall demonstrate through design review that development shall not substantially impair enjoyment of the public utilizing the space. Through design review, the City shall ensure that new building or landscaping shall not shade existing or proposed parks or open spaces in a manner that would make these public spaces substantially less useful or enjoyable to the public. The City may require specific building placement, tiered roofs, or other means of reducing shadow effects on public opens spaces. It is not the intent of this measure to completely eliminate shade in these areas, but to reduce shade to the maximum extent feasible.	Confirm in Project plans: <ul style="list-style-type: none"> <li>New construction does not substantially impair public enjoyment of existing public park(s) or open space.</li> <li>Reduce shade from new building/landscaping to the maximum extent feasible.</li> </ul>	Prior to the issuance of a building permit	City/Port	X		X		

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		Schedule	Responsibility					
<b>AIR QUALITY</b>								
<p><b>SCA AIR-2: Construction-Related Air Pollution Controls (Dust and Equipment Emissions):</b> During construction, the project applicant shall require the construction contractor to implement all of the following applicable measures recommended by the Bay Area Air Quality Management District (BAAQMD):</p> <p>a) Water all exposed surfaces of active construction areas at least twice daily (using reclaimed water if possible). Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.</p> <p>b) Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</p> <p>c) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.</p> <p>d) Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.</p> <p>e) Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</p> <p>f) Limit vehicle speeds on unpaved roads to 15 miles per hour.</p> <p>g) Idling times on all diesel-fueled commercial vehicles over 10,000 lbs. shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by Title 13, Section 2485, of the California Code of Regulations. Clear signage to this effect shall be provided for construction workers at all access points.</p> <p>h) Idling times on all diesel-fueled off-road vehicles over 25 horsepower shall be shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes and fleet operators must develop a written idling policy (as required by Title 13, Section 2449 of the California Code of Regulations.)</p> <p>i) All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.</p> <p>j) Post a publicly visible sign that includes the contractor's name and telephone number to contact regarding dust complaints. When contacted, the contractor shall respond and take corrective action within 48 hours. The telephone numbers of contacts at the City and the BAAQMD shall also be visible. This information may be posted on other required on-site signage.</p> <p>k) All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.</p> <p>l) All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph.</p> <p>m) Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</p> <p>n) Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas</p>	<p><b>See Project Manual, Section 3.1.4.2.</b> Developer and/or its Contractor will perform periodic inspections, including exit gate checks, to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• Use water trucks to water exposed surfaces during construction activities at least twice daily or more frequently if winds exceed 15 mph. Suspend excavation, grading, and demolition activities when average wind speed exceeds 20 mph. Maintain minimum soil moisture of 12% as indicated by laboratory samples or a moisture meter. Use reclaimed water for dust mitigation.</li> <li>• Cover truck loads with tarpaulins or keep loads 2 feet below the sideboard of the truck bed to eliminate wind contact with soil or other loaded materials.</li> <li>• Require all operators tracking dirt/mud onto public roadways to have a wet power vacuum sweeper present daily during these activities and remove tracked dirt/mud at the end of each day or more frequently if needed.</li> <li>• Install construction area entrances at all ingress and egress sites to ensure dirt is kept off of public roads. Construction area entrances will be built using fabric and 3x5 rock to facilitate tire soil removal prior to leaving the site (or as defined by the guidelines in the Best Management Practice Handbook). Ingress/egress sites will also provide dry brushing of loose soil from tires and fenders.</li> <li>• As soon as practical and prior to rainy season, cover all access roads and/or permanent roads with aggregate or asphalt concrete to mitigate tracking of dirt and/or mud offsite.</li> <li>• As soon as possible after grading activities, cover exposed soil with aggregate base or concrete.</li> <li>• Cover all inactive soil material stockpiles with plastic sheeting or non-toxic soil binders. Water all active stockpiles to maintain 12% moisture.</li> <li>• Install fencing with attached windscreen fabric on the windward side of the actively disturbed area of the construction site.</li> <li>• Replant vegetation in disturbed areas as quickly as possible.</li> <li>• Limit simultaneous occurrence of excavation, grading, and ground disturbance activities on the same area at any one time.</li> <li>• Draft and implement a Project SWPPP. An onsite QSP will monitor runoff before, during, and after rain events. Deficiencies will be logged and corrected immediately. Inactive construction areas will be properly addressed with BMPs to eliminate erosion. Required BMPs will be outlined in the SWPPP and enforced with reporting and inspection.</li> <li>• Post signage and enforce 15 mph speed limit requirement for unpaved roads.</li> <li>• Post signage and enforce dust complaint reporting requirement. Take corrective action to remedy complaints within no more than 48 hours after receiving the complaint.</li> <li>• Assign a Compliance Manager to monitor and facilitate the implementation of mitigation measures. The Contractor will maintain Daily Inspection Logs throughout the Project.</li> </ul> <p><b>See Project Manual, Section 3.1.4.3.</b> Developer and/or its Contractor will perform periodic inspections, including exit gate checks, to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• Keep all construction equipment properly tuned by a certified mechanic in</li> </ul>	<p>Ongoing throughout demolition, grading, and/or construction</p>	<p>City, Port</p>		<p>X</p>		<p>X</p>	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>(previously graded areas inactive for one month or more).</p> <p>o) Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress.</p> <p>p) Install appropriate wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of the construction site to minimize wind-blown dust. Wind breaks must have a maximum 50 percent air porosity.</p> <p>q) Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.</p> <p>r) The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.</p> <p>s) All trucks and equipment, including tires, shall be washed off prior to leaving the site.</p> <p>t) Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.</p> <p>u) All equipment to be used on the construction site and subject to the requirements of Title 13, Section 2449 of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations") must meet Emissions and Performance Requirements one year in advance of any fleet deadlines. The project applicant shall provide written documentation that the fleet requirements have been met.</p> <p>v) Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).</p>	<p>accordance with manufacturer's specifications.</p> <ul style="list-style-type: none"> <li>Use late model heavy-duty diesel-powered equipment at the Project Site to the extent that it is readily available in the San Francisco Bay Area.</li> <li>Use diesel-powered equipment that has been retrofitted with after-treatment products (e.g., engine catalysts) to the extent that it is readily available in the San Francisco Bay Area.</li> <li>Use low-emission diesel fuel for all heavy-duty diesel-powered equipment operating and refueling at the Project Site to the extent that it is readily available and cost effective in the San Francisco Bay Area.</li> <li>Utilize alternative fuel construction equipment (i.e., compressed natural gas, liquid petroleum gas, and unleaded gasoline) to the extent that the equipment is readily available and cost effective in the San Francisco Bay Area.</li> <li>Rely on the electricity infrastructure surrounding the construction sites rather than electrical generators powered by internal combustion engines to the extent feasible.</li> <li>Operators will provide the Contractor with written documentation of equipment maintenance and emissions reports for all equipment to be used onsite.</li> <li>Post signage and enforce requirements of CCR Title 13, Section 2449 (CARB Off-Road Diesel Regulations) and Title 13, Section 2485 with reporting and/or inspection.</li> <li>Post signage and enforce construction equipment maintenance requirements with reporting and/or inspection.</li> <li>Assign a Compliance Manager to monitor and facilitate the implementation of mitigation measures. The Contractor will maintain Daily Inspection Logs throughout the Project.</li> </ul> <p><b>See Project Manual, Section 3.1.4.3.1.</b> Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>Limit truck and equipment idling time to five minutes or less.</li> <li>Post signage and enforce requirements of CCR Title 13, Section 2449 (CARB Off-Road Diesel Regulations) and Title 13, Section 2485 with reporting and/or inspection.</li> <li>Assign a Compliance Manager to monitor and facilitate the implementation of mitigation measures. The Contractor will maintain Daily Inspection Logs throughout the Project.</li> </ul> <p><b>See Project Manual, Section ????.</b> Use low VOC coatings beyond BAAQMD Regulation 8, Rule 3. [Architectural Dimensions to provide information on content and location in Project Manual.]</p>							
<p><b>Mitigation 4.4.3:</b> The Port shall develop and implement a criteria pollutant reduction program aimed at reducing or off-setting Port-related emissions in West Oakland from its maritime and rail operations to less than significant levels, consistent with applicable federal, state and local air quality standards. The program shall be sufficiently funded to strive to reduce emissions from redevelopment related contributors to local West Oakland air quality, and shall continually reexamine potential reductions toward achieving less than significant impacts as new technologies emerge. The adopted program shall define measurable reductions within</p>	<p>Applicable to Port.</p>	<p>Prior to starting operations</p>	<p>Port</p>					<p>✘</p>

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Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>specific time periods.</p> <p>This program shall be periodically reviewed and updated every one to three years, corresponding to regular updates of the CAP. The review and update shall include, and not be limited to, an assessment of any potential new strategies, a reassessment of funding requirements, technical feasibility, and cost benefit assumptions. Periodic updates shall be submitted to the City/Port Liaison Committee or its equivalent.</p> <p>The pollutant reduction program shall give priority to emission reduction strategies that address PM<sub>10</sub> emissions, but shall also provide for reductions in NO<sub>x</sub> and ROG emissions. The emission reduction program shall include a list of potential emission reduction strategies. Strategies that shall be included in the program and implemented over the buildout period include:</p> <ul style="list-style-type: none"> <li>• The Port shall expand its existing cargo handling equipment re-powering and retrofitting program (part of the Berths 55-58 Project air quality mitigation program) to include marine and rail terminal yard equipment added or relocated as part of redevelopment build-out.</li> <li>• The Port shall extend its grant program (part of the Berths 55-58 Project air quality mitigation program) to provide financial incentives to tugboat operators at New Berth 21 and other Port facilities to implement emission reduction control measures or to replace tugboat engines to low NO<sub>x</sub> technology.</li> <li>• The Port shall require rail terminal operators to use switch engines at the New Intermodal Facility that comply with federal air emission regulations for diesel operated locomotives as set forth in federal air regulations. In addition, the rail terminal operator and the Port are to exchange information with the goal of investigating options to accelerate compliance with Tier 0, 1 and 2 requirements of the federal regulations.</li> <li>• The Port shall not preclude in its design of the New Intermodal Facility the installation of an alternative fueling station and shall to the extent feasible accommodate such a fueling station.</li> <li>• The Port shall encourage ships to implement source control technologies when in the port area (such as reduced hoteling).</li> </ul> <p>Other strategies to be included in the Port criteria pollutant reduction program when technically and economically feasible, include:</p> <ul style="list-style-type: none"> <li>• Inclusion of an alternative fueling facility at the New Intermodal Facility.</li> </ul>								
<p><b>Mitigation 4.4-4:</b> The City and the Port shall jointly create, maintain and fund on a fair share basis, a truck diesel emission reduction program. The program shall be sufficiently funded to strive to reduce redevelopment related contributions to local West Oakland diesel emissions to less than significant levels, consistent with applicable federal, state and local air quality standards, and shall continually reexamine potential reductions toward achieving less than significant impacts as new technologies emerge. The adopted program shall define measurable reduction within specific time periods. This program shall be periodically reviewed and updated every one to three years, corresponding to regular updates of the CAP. The review and update shall include, and not be limited to, an assessment of any potential new strategies, a reassessment of funding requirements, technical feasibility, and cost benefit assumptions. Periodic updates shall be submitted to the City/Port Liaison Committee or its equivalent. The diesel emissions reduction program shall include a list of potential emission reduction strategies that shall include on-site Port improvements and/or practices; loan, grant or incentive-based programs; and on-going studies. Strategies that shall be included in the diesel emissions reduction program and implemented over the build-out period include the following:</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p><b>See Project Manual, Section 3.3.</b></p> <p>Will be documented in:</p> <ul style="list-style-type: none"> <li>• Emissions Reduction Program for Operations                             <ul style="list-style-type: none"> <li>○ Truck Diesel Emissions Reductions (<i>see Port's CTMP for an example</i>)</li> <li>○ Transportation Control Measures (TCMs)</li> <li>○ Emissions Reductions Demonstration Projects</li> </ul> </li> </ul>	<p>Prior to operations, reviewed and updated every one to three years during operations</p>	<p>City, Port</p>					<p>X</p>

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations						
		Schedule	Responsibility											
<p>1. On-site Port improvements.</p> <ul style="list-style-type: none"> <li>Configure truck parking in the Port to minimize traffic interference and reduce idling times.</li> <li>Allow easy access to a truck parking facility at the Port 24-hours a day.</li> <li>Synchronize traffic lights in the Port area to reduce congestion (requires coordination with the City).</li> </ul> <p>2. City/Port loan or grant/incentive programs for local businesses or entities.</p> <ul style="list-style-type: none"> <li>Provide incentives for re-powering, retrofiting, electrifying, or switching to alternative fuels to local businesses, franchises or truck fleets operating in West Oakland. Such businesses may include, for example, locally owned and operated trucking operations, refuse and recycling collection vehicles, school buses, Port and/or City fleet vehicles, and US Mail trucks.</li> </ul> <p>Other strategies to be included in the diesel emissions reduction program to be examined and incorporate when technically and economically feasible, include the following:</p> <p>1. On-site Port improvements.</p> <ul style="list-style-type: none"> <li>Allow trucks using alternative fuels to the head of queues or have separate gate entrances.</li> </ul> <p>2. On-going studies.</p> <ul style="list-style-type: none"> <li>Explore methods to minimize truck idling times at the Port.</li> <li>Explore and encourage the use of alternative fuels for Port marine, rail and truck operations.</li> <li>Propose and fund a random roadside heavy duty diesel vehicle (HDDV) emissions testing program and an HDDV repair subsidy program.</li> </ul> <p>3. City/Port loan or grant/incentive programs for local businesses or entities.</p> <ul style="list-style-type: none"> <li>Provide subsidies, training programs and/or voucher programs for local West Oakland businesses to conduct timing retard, compressions changes and other adjustments to diesel engines to reduce emissions.</li> <li>Install oxidative catalyst and particulate traps on diesel engines with low NOx, alternatively fueled or electrified engines.</li> </ul>														
<p><b>Mitigation Measure 4.4-5:</b> Major developers<sup>1</sup> shall fund on a fair share basis BAAQMD-recommended feasible Transportation Control Measures (TCMs) for reducing vehicle emissions from commercial, institutional, and industrial operations, as well as all CAP TCMs the BAAQMD has identified as appropriate for local implementation.</p> <p>Each major developer of a subsequent redevelopment activity shall fund its fair share toward some or all of the following TCMs:</p> <hr/> <p><b>BAAQMD-Recommended Transportation Control Measure, Modified for this Action</b></p> <hr/> <table border="1"> <thead> <tr> <th>Control Measure</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Construct transit facilities such as bus turnouts/bus bulbs, benches, shelters, etc. Improve transit bus service to the area.</td> </tr> <tr> <td>2</td> <td>Design and locate buildings to facilitate transit access, e.g., locate</td> </tr> </tbody> </table>	Control Measure	Measure	1	Construct transit facilities such as bus turnouts/bus bulbs, benches, shelters, etc. Improve transit bus service to the area.	2	Design and locate buildings to facilitate transit access, e.g., locate	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p><b>See Project Manual, Section 3.3.</b></p> <p>Will be documented in:</p> <ul style="list-style-type: none"> <li>Emissions Reduction Program for Operations <ul style="list-style-type: none"> <li>Truck Diesel Emissions Reductions (<i>see Port's CTMP for an example</i>)</li> <li>Transportation Control Measures (TCMs)</li> <li>Emissions Reductions Demonstration Projects</li> </ul> </li> </ul>	Prior to operations	City, Port					X
Control Measure	Measure													
1	Construct transit facilities such as bus turnouts/bus bulbs, benches, shelters, etc. Improve transit bus service to the area.													
2	Design and locate buildings to facilitate transit access, e.g., locate													

<sup>1</sup> Defined as City, Port, and private developers whose subsequent redevelopment activity would generate more than 20,000 square feet of employment-generating land uses, or that would generate 100 or greater local jobs.

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations						
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3	building entrances near transit stops, eliminate building setbacks, etc. Provide and make public transit convenient for 16th and Wood sub-district residents and tenants. <i>(Note: Not applicable to the 2012 OARB Project)</i>													
4	Encourage OARB sub-district tenants to use car pools, vanpools, and public transit by providing incentives.													
5	Provide a shuttle to and from the West Oakland BART station													
6	Provide on-site shops and services for employees, such as cafeteria, bank, dry cleaners, convenience market, etc.													
7	Provide on-site child care, or contribute to off-site child care within walking distance.													
8	Establish mid-day shuttle service from worksite to food service establishments/commercial areas.													
9	Provide preferential parking for carpool and vanpool vehicles													
10	Implement parking fees for single occupancy vehicle commuters.													
11	Provide secure, weather-protected bicycle parking for employees.													
12	Provide safe, direct access for bicyclists to adjacent bicycle routes.													
13	Provide showers and lockers for employees bicycling or walking to work.													
14	Provide direct, safe, attractive pedestrian access from project to transit stops and adjacent development.													
15	Provide neighborhood-serving shops and services within or adjacent to the 16th and Wood sub-district. <i>(Note: Not applicable to the 2012 OARB Project)</i>													
<p><b>Source:</b> BAAQMD 1996, as amended through 1999. Based on Table 15: "Mitigation Measures for Reducing Motor Vehicle Emissions from Commercial, Institutional, and Industrial Projects."</p> <p>Each major developer of a subsequent redevelopment activity shall also fund its fair share of the following CAP TCMs, which the BAAQMD has identified as appropriate for local implementation, with redevelopment-specific modifications:</p>														
<table border="1"> <thead> <tr> <th>CAP TCMs</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1. Support Voluntary Employer-Based Trip Reduction Programs</td> <td>The City and Port will explore ways to promote transit use and support employer-based trip reduction programs through development incentives such as density bonuses, reduced parking requirements, incentives for permanent bicycle facilities, etc. The City will encourage development of transit transfer stations near employment concentrations in the Gateway development area and 16th/Wood sub-district.</td> </tr> <tr> <td>9. Improve Bicycle Access and Facilities</td> <td>Redevelopment includes extensive multi-use trails serving as both "spine" thoroughfares and "spurs" connecting main trails to the Oakland waterfront. The City and Port will encourage employers and developers to provide permanent bicycle facilities.</td> </tr> </tbody> </table>									CAP TCMs	Description	1. Support Voluntary Employer-Based Trip Reduction Programs	The City and Port will explore ways to promote transit use and support employer-based trip reduction programs through development incentives such as density bonuses, reduced parking requirements, incentives for permanent bicycle facilities, etc. The City will encourage development of transit transfer stations near employment concentrations in the Gateway development area and 16th/Wood sub-district.	9. Improve Bicycle Access and Facilities	Redevelopment includes extensive multi-use trails serving as both "spine" thoroughfares and "spurs" connecting main trails to the Oakland waterfront. The City and Port will encourage employers and developers to provide permanent bicycle facilities.
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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>12. Improve Arterial Traffic Management</p> <p>Maritime Street and other roadways in the project area will include facilities to encourage bicycling and walking. Roadways and intersections will be designed to operate at City-standard LOS, to facilitate traffic flow and avoid unnecessary queuing.</p> <hr/> <p>15. Local Clean Air Plans, Policies and Programs</p> <p>Redevelopment as presented in Chapter 2.0 Project Description and Chapters 3.3 Air Quality and 3.16 Transportation and Traffic (in the 2012 OARB Project Initial Study/Addendum), incorporate land uses such as a rail terminal in conjunction with logistics uses, and measures intended to reduce the number and length of truck trips and single-occupant automobile trips.</p> <hr/> <p>17. Conduct Demonstration Projects</p> <p>The City will encourage through development incentives demonstration projects for fleet electrification or alternative fueling. In addition, the Port will not preclude alternative fueling in its design of rail facilities.</p> <hr/> <p>19. Pedestrian Travel</p> <p>OARB and Maritime sub-districts will include multi-use trails to encourage safe pedestrian travel.</p> <hr/> <p>20. Promote Traffic Calming Measures</p> <p>Redevelopment will include traffic calming measures to the extent appropriate, consistent with the General Plan and sound traffic management of the project area.</p> <p><b>Source:</b> BAAQMD CEQA Guidelines, revised 1999 Table 5.</p> <p>These TCMs shall be coordinated with transportation demand management (TDM) measures implemented under SCA TRANS-1.</p>								
<p><b>SCA AIR-1: Construction Management Plan:</b> The project applicant shall submit to the Planning and Zoning Division and the Building Services Division for review and approval a construction management plan that identifies the conditions of approval and mitigation measures to construction impacts of the project and explains how the project applicant will comply with these construction-related conditions of approval and mitigation measures.</p>	<p><b>See Project Manual, Section 3.1.</b> Submit CMP to City Planning and Zoning and Building Services Divisions for review and approval.</p>	Prior to issuance of a demolition, grading, or building permit, and ongoing throughout demolition, grading, and/or construction.	City, Port		X		X	
<p><b>Mitigation 4.4-6:</b> Title 24 of the International Building Code (IBC) requires that new construction include energy-conserving fixtures and designs. Additionally, the City and Port shall implement sustainable development policies and strategies related to new development design and construction. Implementation of IBC requirements would reduce the need for space and water heating that would emit pollutants. City and Port policies and strategies shall be conditioned for all new development within the redevelopment project area. Specific examples may include, and are not limited to the following:</p> <ul style="list-style-type: none"> <li>• Wood fire heating shall be prohibited in new live/work development.</li> <li>• Where siting allows and where feasible, buildings shall be oriented to take advantage of passive and active climate control designs.</li> <li>• To the maximum extent feasible, central water heating systems shall be installed.</li> </ul>	<p><b>Actions/schedule TBD by Vertical Construction team.</b> <b>See Project Manual, Sections 3.1.5 and 3.1.6.</b> Submit CMP to City Planning and Zoning and Building Services Divisions for review and approval.</p>	Prior to issuance of a demolition, grading, or building permit	City, Port			X		



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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>Mitigation Measure 5.4-1:</b> The City and the Port shall encourage, lobby, and potentially participate in emission reduction demonstration projects that promote technological advances in improving air quality.</p> <p>Such encouragement, lobbying, and participation may include the following:</p> <ul style="list-style-type: none"> <li>• Retrofitting locomotive engines to meet current federal standards.</li> <li>• Using reduced sulfur fuels in ships while the ships are in the San Francisco Bay.</li> <li>• Treating NO<sub>x</sub> with selective catalytic reductions.</li> <li>• Implementing random roadside emissions tests and develop a system of fines for trucks not in compliance with emission regulations.</li> <li>• Establishing emissions-based berthing fees.</li> <li>• Buying relatively old, highly polluting cars to take them off the road.</li> </ul> <p>Although these programs may assist in advancing emission reduction technologies or implementing emission reduction methods, the incremental contribution of the redevelopment program would remain cumulatively considerable, and the cumulative impact on air quality remains significant and unavoidable</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b>  <b>See Project Manual, Section 3.3.</b>                      Will be documented in:</p> <ul style="list-style-type: none"> <li>• Emissions Reduction Program (for Operations)                         <ul style="list-style-type: none"> <li>○ Truck Diesel Emissions Reductions (<i>see Port's CTMP for an example</i>)</li> <li>○ Transportation Control Measures (TCMs)</li> <li>○ Emissions Reductions Demonstration Projects</li> </ul> </li> </ul>		City, Port					X
<p><b>SCA AIR-3: Exposure to Air Pollution (Toxic Air Contaminants: Particulate Matter):</b></p> <p>A. Indoor Air Quality: In accordance with the recommendations of the California Air Resources Board (ARB) and the Bay Area Air Quality Management District, appropriate measures shall be incorporated into the project design in order to reduce the potential health risk due to exposure to diesel particulate matter to achieve an acceptable interior air quality level for sensitive receptors. The appropriate measures shall include <b>one</b> of the following methods:</p> <ol style="list-style-type: none"> <li>1) The project applicant shall retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with the ARB and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of project residents/occupants/users to air pollutants prior to issuance of a demolition, grading, or building permit. The HRA shall be submitted to the Planning and Zoning Division for review and approval. The applicant shall implement the approved HRA recommendations, if any. If the HRA concludes that the air quality risks from nearby sources are at or below acceptable levels, then additional measures are not required.</li> <li>2) The applicant shall implement all of the following features that have been found to reduce the air quality risk to sensitive receptors and shall be included in the project construction plans. These features shall be submitted to the Planning and Zoning Division and the Building Services Division for review and approval prior to the issuance of a demolition, grading, or building permit and shall be maintained on an ongoing basis during operation of the project.                         <ol style="list-style-type: none"> <li>a) Redesign the site layout to locate sensitive receptors as far as possible from any freeways, major roadways, or other sources of air pollution (e.g., loading docks, parking lots).</li> <li>b) Do not locate sensitive receptors near distribution center's entry and exit points.</li> <li>c) Incorporate tiered plantings of trees (redwood, deodar cedar, live oak, and/or oleander) to the maximum extent feasible between the sources of pollution and the sensitive receptors.</li> <li>d) Install, operate and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual residential unit, that meets or exceeds an efficiency standard of MERV 13. The HV system shall include the following</li> </ol> </li> </ol>	<p>HRA completed with 2012 EIR Addendum.                      HRA may be updated with data collected during the Air Quality Monitoring Program.</p>	Prior to issuance of a demolition, grading, or building permit	City, Port			X		

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
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<p>features: Installation of a high efficiency filter and/or carbon filter to filter particulates and other chemical matter from entering the building. Either HEPA filters or ASHRAE 85% supply filters shall be used.</p> <p>e) Retain a qualified HV consultant or HERS rater during the design phase of the project to locate the HV system based on exposure modeling from the pollutant sources.</p> <p>f) Install indoor air quality monitoring units in buildings.</p> <p>g) Project applicant shall maintain, repair and/or replace HV system on an ongoing and as needed basis or shall prepare an operation and maintenance manual for the HV system and the filter. The manual shall include the operating instructions and the maintenance and replacement schedule. This manual shall be included in the CC&amp;Rs for residential projects and distributed to the building maintenance staff. In addition, the applicant shall prepare a separate homeowners manual. The manual shall contain the operating instructions and the maintenance and replacement schedule for the HV system and the filters.</p> <p>B. Outdoor Air Quality: To the maximum extent practicable, individual and common exterior open space, including playgrounds, patios, and decks, shall either be shielded from the source of air pollution by buildings or otherwise buffered to further reduce air pollution for project occupants.</p>								
<b>BIOLOGICAL RESOURCES</b>								
<p><b>SCA BIO-1: Tree Removal During Breeding Season:</b> To the extent feasible, removal of any tree and/or other vegetation suitable for nesting of raptors shall not occur during the breeding season of March 15 through August 15. If tree removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting raptors or other birds. Pre-removal surveys shall be conducted within 15 days prior to start of work from March 15 through May 31, and within 30 days prior to the start of work from June 1 through August 15. The pre-removal surveys shall be submitted to the Planning and Zoning Division and the Tree Services Division of the Public Works Agency. If the survey indicates the potential presences of nesting raptors or other birds, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer will be determined by the biologist in consultation with the CDFG, and will be based to a large extent on the nesting species and its sensitivity to disturbance. In general, buffer sizes of 200 feet for raptors and 50 feet for other birds should suffice to prevent disturbance to birds nesting in the urban environment, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.</p>	<p><b>See Project Manual, Section 4.1.</b> Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Verify the existence of birds in the trees scheduled for removal.</li> <li>• Submit pre-removal survey to City for review and approval.</li> <li>• Per a qualified biologist’s recommendations, remove trees only when appropriate based on breeding season.</li> </ul> <p>Confirm in Project plans:</p> <ul style="list-style-type: none"> <li>• Identify trees and buffer zones according to the level of disturbance near the trees of concern.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	<p>Prior to issuance of a tree removal permit, and ongoing throughout demolition, grading, and/or construction.</p>	<p>City/Port</p>		<p>X</p>		<p>X</p>	

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		Schedule	Responsibility					
<p><b>SCA BIO-5 Regulatory Permits and Authorizations:</b> Prior to construction in or near the water, the project applicant shall obtain all necessary regulatory permits and authorizations, including without limitation, from the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), San Francisco Bay Conservation and Development Commission (BCDC) and the City of Oakland, and shall comply with all conditions issued by applicable agencies. Required permit approvals and certifications may include, but not be limited to the following:</p> <p>a) U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in Waters of the U.S., if any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act.</p> <p>b) Regional Water Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above.</p> <p>c) San Francisco Bay Conservation and Development Commission (BCDC) approvals.</p>	<p>Obtain and comply with all applicable permits (related to the construction of the outfall at Wharf 5 and retrofits at Wharves 6, 6 ½, and 7). Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Prior to issuance of a demolition, grading, or building permit within vicinity of the shoreline	City/Port	X If applicable		X		
<p><b>Mitigation Measure 4.12-5:</b> A qualified observer shall be present on site during all in-water construction activities near potential herring spawning areas between December 1 and March 1. This measure shall be enforced via contract specifications. The observer shall have the authority to redirect, but not to stop work.</p>	<p><b>See Project Manual, Section 4.4.</b> Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>A qualified observer will be onsite during all in-water construction activities between December 1 and March 1.</li> </ul>	During construction	City/Port		X If applicable		X If applicable	
<p><b>Mitigation Measure 4.12-6:</b> If spawning is observed, in-water construction activities shall be redirected for 200 meters around the spawning area for two weeks. Work may resume in the spawning area after two weeks, providing additional spawning does not occur. This measure shall be enforced via contract specifications.</p>	<p><b>See Project Manual, Section 4.4.</b> Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>Redirect in-water construction activities 200 meters for two weeks if spawning is observed.</li> <li>Resume in-water construction activities in spawning area if qualified observer indicates spawning is not occurring.</li> </ul>	During construction	City/Port		X If applicable		X If applicable	
<p><b>Mitigation Measure 4.12-10:</b> The Port shall continue to enforce its tariff requirements regarding ballast water and if the State law sunsets, shall implement the remainder of its ballast water ordinance, as it may be amended from time to time. Item No. 02215 of the Port's tariff (its operating rules and regulations) defines the Port's Ballast Water Management Program. Among other things, the Port's program compiles information regarding the ballasting behavior of carriers calling at the Port of Oakland. This information is expected to be valuable in crafting durable solutions to the problems ballast water-borne invasive species pose to the ecology of the Bay, and to invasive species issues elsewhere. This mitigation measure would continue the Port's program through the build-out year of this project, or 2020, or until required by regulatory permit conditions, whichever is later. Should portions of the Port's program be redundant to federal, state, or regional programs, or be pre-empted by such programs, the Port will continue to operate those non-pre-empted portions of its program that provide information not obtained through other programs.</p>	Applicable to Port.	During construction [?]	Port					X
<p><b>Modified Mitigation Measure 4.12-11:</b> The Port, and developer and sub-tenants at Berths 7 and 8 (Wharves 6½ and 7), shall continue to develop and implement a carrier ballast water education program. Either by itself or by participating in programs by others, e.g., Sea Grant, the Port and developer and sub-tenants at Berths 7 and 8 (Wharves 6½ and 7) shall create a program to educate ocean carriers regarding the potential harm of ballasting activities.</p>	Actions/schedule TBD by Vertical Construction/Lease team.	Operations	City/Port					X

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<p>The program shall at a minimum, include the following elements:</p> <ul style="list-style-type: none"> <li>Educate carriers to all applicable regulations and guidelines.</li> <li>Inform carriers of the benefits of ships constructed with internal ballast water transfer systems. These systems allow ballast water to be shifted internally from tank to tank, minimizing or eliminating the need for discharge of ballast water when ships are at berth</li> <li>Encourage carriers to purchase internally-ballasting vessels when they place orders for new ships.</li> <li>Educate carriers regarding potential benefits of reducing ballast water discharges, even if ballast water has already been exchanged in the open ocean.</li> </ul>								
<p><b>Modified Mitigation Measure 4.12-12:</b> The Port, and developer and sub-tenants at Berths 7 and 8 (Wharves 6½ and 7), shall support international and United States efforts to adopt uniform international or national standards to avoid introduction of exotic species through shipping activities.</p> <p>The Port and developer and sub-tenants at Berths 7 and 8 (Wharves 6½ and 7) shall provide in-kind (personnel) support to assist international and U.S. entities to develop and adopt a uniform set of standards to reduce the risk of invasive species. In order to achieve optimal environmental success and to maintain a competitive market between ports, it is important that such standards be effective and uniformly applied.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	Operations	City/Port					X
<p><b>Mitigation Measure 3.4-1a:</b> The developer shall submit a Landscape Plan for City review and approval. The plan shall not include tall ornamental trees that could provide perches for raptors in the northern project site, in the vicinity of Gateway Park.</p> <p><b>Mitigation Measure 3.4-1b:</b> The developer shall submit a Lighting Plan for City review and approval. The plan shall note that raptor deterrents shall be placed on light standards in the northern project site, in the vicinity of Gateway Park, or lighting fixtures or posts in the area shall have limited horizontal elements which could be used as perches.</p>	<p><b>See Project Manual, Section 4.2. [Architectural Dimensions to provide.]</b> Confirm in Project plans:</p> <ul style="list-style-type: none"> <li>No tall ornamental trees allowed in the vicinity of Gateway Park that could provide raptor perches.</li> </ul> <p><b>See Project Manual, Section 4.3. [Architectural Dimensions to provide.]</b> Confirm in Project plans:</p> <ul style="list-style-type: none"> <li>Place raptor deterrents on light standards in the vicinity of Gateway Park.</li> <li>Limit horizontal elements.</li> </ul>	Prior to issuance of a building permit, associated with the Planned Unit Development (PUD) process	City/Port	X If applicable		X		
<p><b>SCA BIO-2: Tree Removal Permit:</b> Prior to removal of any protected trees, per the Protected Tree Ordinance, located on the project site or in the public right-of-way adjacent to the project, the project applicant must secure a tree removal permit from the Tree Division of the Public Works Agency, and abide by the conditions of that permit.</p>	<p><b>See Project Manual, Section 4.1.</b> Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>Submit pre-removal survey to City for review and approval.</li> <li>Per a qualified biologist's recommendations, remove trees only when appropriate based on breeding season.</li> </ul> <p>Confirm in Project plans: <i>[Architectural Dimensions to provide.]</i></p> <ul style="list-style-type: none"> <li>No trees are identified as 'protected trees'.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Prior to issuance of a demolition, grading, or building permit, and ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	
<p><b>SCA BIO-3: Tree Replacement Plantings:</b> Replacement plantings shall be required for erosion control, groundwater replenishment, visual screening and wildlife habitat, and in order to prevent excessive loss of shade, in accordance with the following criteria:</p> <p>a) No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.</p> <p>b) Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Arbutus menziesii (Madrone), Aesculus californica (California Buckeye) or Umbellularia californica (California Bay Laurel) or other tree species acceptable to the Tree Services Division.</p> <p>c) Replacement trees shall be at least of twenty-four (24) inch box size, unless a</p>	<p><b>See Project Manual, Section 4.2.</b> Confirm in Project plans:</p> <ul style="list-style-type: none"> <li>Replacement of non-native species is not required.</li> <li>Replacement of trees removed for the benefit of remaining trees is not required.</li> <li>Replacement of trees where insufficient room for mature trees is not required.</li> <li>Replace trees with approved species, at least 24-inch box size, in appropriately sized planting area.</li> </ul> <p>Developer, its Contractor, and/or its consultant will perform periodic inspections to confirm compliance.</p>	Prior to issuance of a final inspection of the building permit, and ongoing throughout demolition, grading, and/or construction.	City/Port	X		X		

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>smaller size is recommended by the arborist, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.</p> <p>d) Minimum planting areas must be available on site as follows:</p> <p>i. For Sequoia sempervirens, three hundred fifteen square feet per tree;</p> <p>ii. For all other species listed in #2 above, seven hundred (700) square feet per tree.</p> <p>e) In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.</p> <p>f) Plantings shall be installed prior to the issuance of a final inspection of the building permit, subject to seasonal constraints, and shall be maintained by the project applicant until established. The Tree Reviewer of the Tree Division of the Public Works Agency may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the project applicant's expense.</p>								
<p><b>SCA BIO-4: Tree Protection During Construction:</b> Adequate protection shall be provided during the construction period for any trees which are to remain standing, including the following, plus any recommendations of an arborist:</p> <p>a) Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the City Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree.</p> <p>b) Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the City Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree.</p> <p>c) No storage or dumping of oil, gas, chemicals, or other substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree.</p> <p>d) Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration.</p> <p>e) If any damage to a protected tree should occur during or as a result of work on</p>	<p><b>See Project Manual, Sections 4.1 and 4.2.</b> Developer, its Contractor, and/or its consultant will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• No trees will be retained/protected trees.</li> <li>• Remove tree removal debris from the site within two weeks.</li> </ul>	<p>Prior to issuance of a demolition, grading, or building permit, and ongoing throughout demolition, grading, and/or construction.</p>	<p>City/Port</p>		<p>X</p>		<p>X</p>	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>the site, the project applicant shall immediately notify the Public Works Agency of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed.</p> <p>f) All debris created as a result of any tree removal work shall be removed by the project applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the project applicant in accordance with all applicable laws, ordinances, and regulations.</p>								
<b>CULTURAL RESOURCES</b>								
<p><b>SCA CULT-4: Compliance with Policy 3.7 of the Historic Preservation Element (Property Relocation Rather than Demolition)</b></p> <p>The project applicant shall make a good faith effort to relocate the buildings considered contributors to the Historic District to a site acceptable to the Planning and Zoning Division and the Oakland Cultural Heritage Survey. Good faith efforts include, at a minimum, the following:</p> <p>a) Advertising the availability of the building by: (1) posting of large visible signs (such as banners, at a minimum of 3'x 6' size or larger) at the site; (2) placement of advertisements in Bay Area news media acceptable to the City ;and (3) contacting neighborhood associations and for-profit and not-for-profit housing and preservation organizations;</p> <p>b) Maintaining a log of all the good faith efforts and submitting that along with photos of the subject building showing the large signs (banners) to the Planning and Zoning Division;</p> <p>c) Maintaining the signs and advertising in place for a minimum of 90 days; and</p> <p>d) Making the building available at no or nominal cost (the amount to be reviewed by the Oakland Cultural Heritage Survey) until removal is necessary for construction of a replacement project, but in no case for less than a period of 90 days after such advertisement.</p>	<p>Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Advertise building availability.</li> <li>• Make good faith efforts to relocate buildings considered contributors to the Historic District.</li> <li>• Maintain a log of good faith efforts.</li> </ul>	Prior to issuance of a demolition permit	City/Port	X If applicable				
<p><b>Mitigation Measure 4.6-2:</b> The City, Port and OARB sub-district developers shall fund on a fair-share basis development of a commemoration site, including preparation of a Master Plan for such a site, at a public place located within the Gateway development area. The City shall ensure that the scale and scope of the commemoration site reflects the actual loss of historic resources.</p> <p>Land shall be set aside for development of a commemoration site at a publicly accessible place located within the Gateway development area (potentially the Gateway Park at the Bay Bridge touchdown peninsula). The commemoration site should include relocated physical elements of the OARB Historic District, along with appropriate monument(s) to memorialize the contributions of civilians and the military in the Bay Area to all wars.</p> <ul style="list-style-type: none"> <li>• An appropriate location shall be set aside for development of a commemoration site. The commemoration site shall be at a publicly accessible place. It may be located within or adjacent to any historic district contributor buildings that are preserved on a permanent basis (see Mitigation Measure 4.6-16). If that is not feasible, another potential location is within or near to the Gateway Park.</li> <li>• A design plan for the commemoration site shall be prepared, and shall include the design of monuments and the selection of appropriate relocated physical elements from the OARB, potentially including relocated structures or portions of</li> </ul>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p><b>See Project Manual, Sections 5.3 and 5.4.</b></p>	Prior to approval of PUD.	City/Port			X		X

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>structures to be included in the site. The City and the Port shall identify structures and/or portions of structures to be preserved or moved to the commemoration site prior to demolition.</p> <ul style="list-style-type: none"> <li>The master planning process should involve the City and the Port, the public and interested historical and veterans groups, historic experts, and other public agencies.</li> <li>Implementation of the commemoration site master plan may be phased along with the timing of new development.</li> <li>The master plan shall include an endowment to be funded by the City and the Port, or their designee, for on-going maintenance and replacement and may also include curator costs associated with commemoration site and with trail signage, exhibits, and design elements as described below.</li> <li>The City and the Port shall develop an ongoing outreach program informing the public of the importance of the OARB to the community and the region, and of the existence of the commemorative site.</li> </ul>								
<p><b>Mitigation Measure 4.6-3:</b> The City shall ensure the commemoration site is linked to the Gateway Park and the Bay Trail via a public access trail. Within the Gateway development area, this trail may be located along the shoreline. Beyond the Gateway, the trail would follow the new alignment of Maritime Street, connecting to 7th Street, which connects to the Port’s Middle Harbor Shoreline Park and other existing and planned trail segments.</p> <ul style="list-style-type: none"> <li>The design and development of this on-site trail shall include a series of interpretive panels, exhibits and design elements that communicate the scope and historical significance of Base activities and their impact on the community throughout the life of the Base.</li> <li>A brochure shall be developed and made available describing the history of the Army Base that could be used as a self-guided tour, related to the interpretive panels and exhibits described above.</li> </ul>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Prior to approval of PUD.</p>	<p>City/Port</p>			<p>X</p>		<p>X</p>
<p><b>Mitigation Measure 4.6-5:</b> The City, Port, and OARB sub-district developers shall fund on a fair share basis collaboration with “military.com” or a similar military history web site.</p> <ul style="list-style-type: none"> <li>The parties shall fund development of an interactive web page to be provided to military.com or other web-based organization where former military personnel can be connected to the OARB documentation.</li> <li>A list of list of draftees/enlistees processed through the OARB during WWII and the Korean and Vietnam Wars may be an element of such a site.</li> </ul>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Prior to issuance of a building permit.</p>	<p>City/Port</p>					<p>X</p>
<p><b>Mitigation Measure 4.6-7:</b> If determined of significant historical educational value by the Oakland Landmarks Preservation Advisory Board and the Oakland Heritage Alliance, the City, Port, and OARB sub-district developers shall fund on a fair share basis distribution of copies of “A Job Well Done” documentary video published by the Army. The Army has produced a television broadcast-quality video documentary that describes the mission and historical significance of the OARB. This documentary is not widely distributed, and has not been viewed by the Oakland Landmarks Preservation Advisory Board or the Oakland Heritage Alliance. This documentary is currently available to the public, but is not widely distributed. This mitigation measure will ensure that the documentary is widely distributed and made available to a larger audience interested in the history of the Base. It will also offset the modification and/or destruction of many of the historic buildings on the base, preserve their images, and provide a description of their function and role to the interested public.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Prior to issuance of a building permit.</p>	<p>City/Port</p>					<p>X</p>

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations	
		Schedule	Responsibility						
Copies of the video shall be distributed to: the Oakland History Room, Oakland Public Library, Bancroft Library, University of California; the Port of Oakland Archives; local public schools and libraries; and local public broadcasting stations. Funding shall also be used to copy this video onto more permanent archive-stable medium such as a CD.									
<p><b>Mitigation Measure 4.6-9:</b> The City, Port, and OARB sub-district developers shall fund on a fair share basis a program to salvage as whole timber posts, beams, trusses and siding of warehouses to be deconstructed. These materials shall be used on site if deconstruction is the only option. Reuse of a warehouse building or part of a warehouse building at its current location, or relocated to another Gateway location is preferable.</p> <p>To the extent feasible, these materials shall be used in whole, on site, in the construction of new buildings within the Gateway development area. Special consideration shall be given to the use of these materials at the commemoration site through the site's Master Planning effort</p> <p>If on-site reuse is found infeasible, opportunities shall be sought for reuse of these materials in other East Bay Area construction, or be sold into the recycled construction materials market. Landfill disposal of salvageable construction material from contributing historic structures shall be prohibited by contract specification. Salvage and reuse requirements shall be enforced via contract specification.</p> <p>Salvage operations shall employ members of local job-training bridge programs (Youth Employment Program, Joint Apprenticeship Training Committee, Homeless Collaborative) or other similar organizations, if feasible, to provide construction-training opportunities to Oakland residents.</p> <p>Salvage and reuse of the timber from these structures will help to reduce the impacts on the environment and save this ecologically and historically valuable material for reuse in the local community.</p>	<p><b>See Project Manual, Sections 13.1 and 13.3.</b></p> <p>Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• All material that can be salvaged will be reused on site per CEQA Guidelines Section 15064.5.</li> <li>• Material that does not meet the requirements for new construction will be reused at other East Bay construction sites or sent to recycling facilities.</li> <li>• Landfill disposal of salvageable material is prohibited.</li> <li>• Local job training program members will be employed for salvage operations.</li> </ul> <p>Developer and/or its Contractor will submit a Waste Reduction and Recycling Plan to City for review and approval.</p>	Prior to issuance of a building permit, and ongoing throughout demolition, grading, and/or construction.	City/Port	X If applicable	X If applicable	X If applicable	X If applicable		
<p><b>Mitigation Measure 4.6-10:</b> The City, Port, and OARB sub-district developers shall fund on a fair share basis production of a brochure describing history and architectural history of the OARB.</p> <ul style="list-style-type: none"> <li>• The brochure shall be distributed to local libraries and schools, and be made available to the public at select pick-up and drop-off locations along the Bay Trail to be used for self-guided tours.</li> <li>• This brochure shall build upon the previously completed historical documentation produced by the Port of Oakland, the Navy, and the Army for previous projects and on the original research completed for preparation of the Historical Resource Documentation Program and book.</li> <li>• This brochure shall will document the history of the redevelopment area and provide references to where more detailed information about the Base may be found.</li> </ul>	<b>Actions/schedule TBD by Vertical Construction/Lease team.</b>	Prior to issuance of a building permit	City/Port						X
<p><b>Modified Mitigation Measure 4.6-14:</b> No demolition or deconstruction of contributing structures to the OARB Historic District shall occur until a master plan and/or Lease Disposition and Development Agreement has been approved by the City, and demolition or deconstruction of a building is required to realize the master infrastructure development plan necessary for approved redevelopment activities, in conformity with applicable General Plan Historic Preservation Element and City of Oakland Planning requirements.<sup>2</sup></p>	<p>LDDA approved July 3, 2012.</p> <p>Confirm Project plans comply with General Plan Historic Preservation Element and City of Oakland Planning requirements.</p>	Approval of master plan and/or Lease Disposition and Development Agreement.	City/Port	X If applicable					

<sup>2</sup> The 2002 EIR mitigation measure 4.6-14 states that the Port shall not demolish or deconstruct structures until it has approved a final development plan for the relevant new facility or facilities. This requirement shall continue to apply to the Port in the absence of a Lease Disposition and Development Agreement.



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		Schedule	Responsibility					
<p><b>SCA CULT-1: Archaeological Resources:</b></p> <p>a) Pursuant to CEQA Guidelines section 15064.5 (f), “provisions for historical or unique archaeological resources accidentally discovered during construction” should be instituted. Therefore, in the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the project applicant and/or lead agency shall consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified archaeologist would meet to determine the appropriate avoidance measures or other appropriate measure, with the ultimate determination to be made by the City of Oakland. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.</p> <p>b) In considering any suggested measure proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the project applicant shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while measure for historical resources or unique archaeological resources is carried out.</p> <p>c) Should an archaeological artifact or feature be discovered on-site during project construction, all activities within a 50-foot radius of the find would be halted until the findings can be fully investigated by a qualified archaeologist to evaluate the find and assess the significance of the find according to the CEQA definition of a historical or unique archaeological resource. If the deposit is determined to be significant, the project applicant and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate measure, subject to approval by the City of Oakland, which shall assure implementation of appropriate measure measures recommended by the archaeologist. Should archaeologically-significant materials be recovered, the qualified archaeologist shall recommend appropriate analysis and treatment, and shall prepare a report on the findings for submittal to the Northwest Information Center.</p> <p>d) Require storage (curation) of recovered materials, such as artifacts and soil samples, and records generated by an archaeological study in a facility that allows access to the materials.</p>	<p><b>See Project Manual, Section 5.1.</b></p> <p>Developer, its Contractor/subcontractors, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Halt all activities shall within a 50-foot radius of discovery of prehistoric or historic subsurface cultural resources, contact a qualified archaeologist or paleontologist to review discovery, and immediately notify the City.</li> <li>• Determine avoidance measures and/or further actions in consultation with City and a qualified archaeologist or paleontologist.</li> <li>• Provide a secure storage site for any discovery-related materials.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	

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		Schedule	Responsibility					
<p><b>SCA CULT-3: Paleontological Resources:</b> In the event of an unanticipated discovery of a paleontological resource during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards [SVP 1995,1996]). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in Section 15064.5 of the CEQA Guidelines. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.</p>	<p><b>See Project Manual, Section 5.1.</b> Developer, its Contractor/subcontractors, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Halt all activities shall within a 50-foot radius of discovery of prehistoric or historic subsurface cultural resources, contact a qualified archaeologist or paleontologist to review discovery, and immediately notify the City.</li> <li>• Determine avoidance measures and/or further actions in consultation with City and a qualified archaeologist or paleontologist.</li> <li>• Provide a secure storage site for any discovery-related materials.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	
<p><b>SCA CULT-2: Human Remains:</b> In the event that human skeletal remains are uncovered at the project site during construction or ground-breaking activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.</p>	<p><b>See Project Manual, Section 5.2.</b> Developer, its Contractor/subcontractors, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Halt all activities upon discovery of human skeletal remains, contact the Alameda County Coroner to review discovery, and immediately notify the City.</li> <li>• Cease all activities shall within a 50-foot radius of discovery if the County Coroner determines that the remains are Native American, until appropriate arrangements are made.</li> </ul> <p>Developer and/or its Contractor will work closely with the City and Coroner to ensure proper treatment and appropriate measures in recovery of discoveries.</p>	Ongoing throughout demolition, grading, and/or construction	City/Port		X		X	
<b>GEOLOGY AND SOILS</b>								
<p><b>SCA GEO-2: Soils Report:</b> A preliminary soils report for each construction site within the project area shall be required as part of this project and submitted for review and approval by the Building Services Division. The soils reports shall be based, at least in part, on information obtained from on-site testing. Specifically the minimum contents of the report should include:</p> <p>A. Logs of borings and/or profiles of test pits and trenches:</p> <p>a) The minimum number of borings acceptable, when not used in combination with test pits or trenches, shall be two (2), when in the opinion of the Soils Engineer such borings shall be sufficient to establish a soils profile suitable for the design of all the footings, foundations, and retaining structures.</p> <p>b) The depth of each boring shall be sufficient to provide adequate design criteria for all proposed structures.</p> <p>c) All boring logs shall be included in the soils report.</p> <p>B. Test pits and trenches</p> <p>a) Test pits and trenches shall be of sufficient length and depth to establish a suitable soils profile for the design of all proposed structures.</p> <p>b) Soils profiles of all test pits and trenches shall be included in the soils report.</p> <p>C. A plat shall be included which shows the relationship of all the borings, test pits, and trenches to the exterior boundary of the site. The plat shall also show the location of all proposed site improvements. All proposed improvements shall be labeled.</p> <p>D. Copies of all data generated by the field and/or laboratory testing to determine</p>	<p><b>See Project Manual, Section 6.1.</b></p> <ul style="list-style-type: none"> <li>• A geotechnical and soils report has been completed (Berlogar, Stevens, and Associates, March 7, 2012, Updated Master Plan Level Geotechnical Investigation Report).</li> <li>• A supplemental peer review of this report has been completed (Kleinfelder, February 8, 2013, Interim Results of Geotechnical Analyses of Consolidation Settlement).</li> </ul>	Prior to issuance of demolition, grading or building permit	City/Port	X		X		

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>allowable soil bearing pressures, sheer strength, active and passive pressures, maximum allowable slopes where applicable and any other information which may be required for the proper design of foundations, retaining walls, and other structures to be erected subsequent to or concurrent with work done under the grading permit.</p> <p>E. Soils Report. A written report shall be submitted which shall include, but is not limited to, the following:</p> <ul style="list-style-type: none"> <li>a) Site description;</li> <li>b) Local and site geology;</li> <li>c) Review of previous field and laboratory investigations for the site;</li> <li>d) Review of information on or in the vicinity of the site on file at the Information Counter, City of Oakland, Office of Planning and Building;</li> <li>e) Site stability shall be addressed with particular attention to existing conditions and proposed corrective attention to existing conditions and proposed corrective actions at locations where land stability problems exist;</li> <li>f) Conclusions and recommendations for foundations and retaining structures, resistance to lateral loading, slopes, and specifications, for fills, and pavement design as required;</li> <li>g) Conclusions and recommendations for temporary and permanent erosion control and drainage. If not provided in a separate report they shall be appended to the required soils report;</li> <li>h) All other items which a Soils Engineer deems necessary;</li> <li>i) The signature and registration number of the Civil Engineer preparing the report.</li> </ul> <p>F. The Director of Planning and Building may reject a report that she/he believes is not sufficient. The Director of Planning and Building may refuse to accept a soils report if the certification date of the responsible soils engineer on said document is more than three years old. In this instance, the Director may be require that the old soils report be recertified, that an addendum to the soils report be submitted, or that a new soils report be provided.</p>								
<p><b>SCA-GEO-3: Geotechnical Report:</b></p> <p>a) A site-specific, design level, landslide or liquefaction geotechnical investigation for each construction site within the project area shall be required as part of this project and submitted for review and approval by the Building Services Division. Specifically:</p> <ul style="list-style-type: none"> <li>i. Each investigation shall include an analysis of expected ground motions at the site from identified faults. The analyses shall be accordance with applicable City ordinances and polices, and consistent with the most recent version of the California Building Code, which requires structural design that can accommodate ground accelerations expected from identified faults.</li> <li>ii. The investigations shall determine final design parameters for the walls, foundations, foundation slabs, surrounding related improvements, and infrastructure (utilities, roadways, parking lots, and sidewalks).</li> <li>iii. The investigations shall be reviewed and approved by a registered geotechnical engineer. All recommendations by the project engineer, geotechnical engineer, shall be included in the final design, as approved by the City of Oakland.</li> <li>iv. The geotechnical report shall include a map prepared by a land surveyor or civil engineer that shows all field work and location of the "No Build" zone. The map shall include a statement that the locations and limitations of the</li> </ul>	<p><b>See Project Manual, Section 6.1.</b></p> <ul style="list-style-type: none"> <li>• A geotechnical and soils report has been completed (Berlogar, Stevens, and Associates, March 7, 2012, Updated Master Plan Level Geotechnical Investigation Report).</li> <li>• A supplemental peer review of this report has been completed (Kleinfelder, February 8, 2013, Interim Results of Geotechnical Analyses of Consolidation Settlement).</li> </ul> <p>Developer, its Contractor/subcontractors, and/or its consultant will submit additional Geotechnical Investigation Reports to the City Building Services Division for review and approval if applicable.</p>	<p>Prior to issuance of demolition, grading or building permit</p>	<p>City/Port</p>	<p>X</p>		<p>X</p>		

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>geologic features are accurate representations of said features as they exist on the ground, were placed on this map by the surveyor, the civil engineer or under their supervision, and are accurate to the best of their knowledge.</p> <p>v. Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the project’s design phase, shall be incorporated in the project.</p> <p>vi. Final seismic considerations for the site shall be submitted to and approved by the City of Oakland Building Services Division prior to commencement of the project.</p> <p>vii. A peer review is required for the Geotechnical Report. Personnel reviewing the geologic report shall approve the report, reject it, or withhold approval pending the submission by the applicant or subdivider of further geologic and engineering studies to more adequately define active fault traces.</p> <p>b) Tentative Tract or Parcel Map approvals shall require, but not be limited to, approval of the Geotechnical Report.</p>								
<p><b>Mitigation 4.13-1:</b> Redevelopment elements shall be designed in accordance with criteria established by the IBC, soil investigation and construction requirements established in the Oakland General Plan, the Bay Conservation and Development Commission Safety of Fill Policy, and wharf design criteria established by the Port or City of Oakland (depending on the location of the wharf). The IBC requires structures in the San Francisco Bay Area to be designed to withstand a ground acceleration of 0.4 g or the most current standard. A licensed engineer should monitor construction activities to ensure that the design and construction criteria are followed. The Health and Safety element of the Oakland General Plan requires a soils and geologic report be submitted to the Department of Public Works (DPW) prior to the issuance of any building permit. The Oakland General Plan also requires all structures of three or more stories to be supported on pile foundations that penetrate Bay Mud deposits, and to be anchored in firm, non-compressible materials unless geotechnical findings indicate a more appropriate design. The General Plan also provides for the identification and evaluation of existing structural hazards and abatement of those hazards to acceptable levels of risk. To comply with the BCDC safety of fill policy, the plans and specifications for the placement of Bay fill will be submitted to the BCDC Engineering Criteria Review Board for review and approval. The Port of Oakland has developed wharf design criteria to be used in the design, construction, reconstruction, and repairs of existing and future wharf structures, except in the event that current engineering practice requires adjustments or modification of the wharf design criteria. All construction associated with New Berth 21 must adhere to the wharf design criteria established by the Port of Oakland. A licensed engineer should monitor construction activities to ensure that the design and construction criteria are followed.  The City shall adopt wharf design criteria and apply them to any wharf in the City’s jurisdiction.</p>	<p><b>Actions/schedule TBD by Horizontal Construction/Vertical Construction team.</b> Confirm Project plans comply with the IBC, Oakland General Plan, Bay Conservation and Development Commission Safety of Fill Policy, and Port or City of Oakland wharf design criteria.</p>	Prior to issuance of demolition, grading or building permit	City/Port	X		X		
<p><b>Mitigation 4.13-2:</b> Redevelopment elements shall be designed and constructed in accordance with requirements of a site-specific geotechnical evaluation. Site-specific geotechnical, soils, and foundation investigation reports shall be prepared by a licensed geotechnical or soil engineer experienced in construction methods on fill materials in an active seismic area. The reports shall provide site-specific construction</p>	<p><b>Actions/schedule TBD by Horizontal Construction/Vertical Construction team. See Project Manual, Section 6.1.</b></p> <ul style="list-style-type: none"> <li>A geotechnical and soils report has been completed (Berlogar, Stevens, and Associates, March 7, 2012, Updated Master Plan Level Geotechnical Investigation Report).</li> </ul>	Prior to issuance of demolition, grading or building permit, and ongoing	City/Port	X	X	X	X	

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>methods and recommendations regarding grading activities, fill placement, compaction, foundation construction, drainage control (both surface and subsurface), and seismic safety. Designers and contractors shall comply with recommendations in the reports. A licensed geotechnical or soil engineer shall monitor earthwork and construction activities to ensure that recommended site-specific construction methods are followed.</p> <p>The Oakland General Plan requires all structures of three or more stories to be supported on pile foundations that penetrate Bay Mud deposits and to be anchored in firm, non-compressible materials unless geotechnical findings indicate a more appropriate design. The General Plan also provides for the identification and evaluation of existing structural hazards and abatement of those hazards to acceptable levels of risk.</p>	<ul style="list-style-type: none"> <li>A supplemental peer review of this report has been completed (Kleinfelder, February 8, 2013, Interim Results of Geotechnical Analyses of Consolidation Settlement).</li> </ul> <p>Developer, its Contractor/subcontractors, and/or its consultant will submit additional Geotechnical Investigation Reports to the City Building Services Division for review and approval if applicable, and confirm Project plans comply with the Oakland General Plan and in accordance with the site-specific Geotechnical Investigation Reports.</p>	throughout demolition, grading, and/or construction.						
<p><b>SCA GEO-1: Erosion and Sedimentation Control Plan:</b> Prior to issuance of a demolition, grading, or building permit.</p> <p>A. The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.660 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan for review and approval by the Building Services Division. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment.</p> <p>Ongoing throughout and construction activities</p> <p>B. The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.</p>	<p><b>See Project Manual, Sections 6.2 and 9.1.</b> Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>Prevent excessive storm water runoff.</li> <li>Utilize as appropriate short-term erosion control planning, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, storm water retention basins, and devices to trap, store, and filter sediment.</li> <li>Update the Erosion and Sedimentation Control Plan as conditions change.</li> <li>Ensure that the storm drain system is cleared of debris and/or sediment throughout construction activities.</li> <li>Inspect the storm drain system when construction is complete.</li> <li>Submit pre-removal survey to City for review and approval.</li> <li>Prohibit grading between October 15 and April 15 unless written authorization is obtained from the City Building Services Division.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Prior to issuance of a demolition, grading, or building permit; and ongoing throughout demolition, grading, and/or construction activities (refer to SCA language to the left).	City/Port		X		X	
<p><b>Mitigation 4.13-4:</b> The project applicant shall thoroughly review available building and environmental records.</p> <p>The City and Port shall keep a record of, and the designer shall review, available plans, and facility, building, and environmental records in order to identify underground utilities and facilities, so that these may be either avoided or incorporated into design as relevant.</p>	Confirm building and environmental records have been reviewed.	Prior to issuance of demolition, grading or building permit; and on-going	City/Port	X		X		
<p><b>Mitigation 4.13-5:</b> The developer shall perform due diligence, including without limitation, retaining the services of subsurface utility locators and other technical experts prior to any ground-disturbing activities.</p> <p>The contractor shall utilize Underground Service Alert or other subsurface utility locators to identify and avoid underground utilities and facilities during construction of redevelopment elements. The contractor shall keep a record of its contacts regarding underground features, and shall make these records available to the City or Port upon</p>	<p>Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>Notify Underground Service Alert (USA) at least 48 hours in advance of any excavation.</li> <li>Notify CalTrans and the Port at least 48 hours in advance of any excavation activity.</li> <li>Mark excavation area of interest with white paint prior to utility owner's arrival onsite.</li> </ul>	Prior to issuance of demolition, grading or building permit, and ongoing throughout demolition,	City/Port		X		X	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
request. This condition shall be enforced through contract specification.	Developer and/or its Contractor will perform periodic inspections to confirm compliance.	grading, and/or construction.						
<b>GREENHOUSE GAS EMISSIONS</b>								
<p><b>SCA GCC-1: Greenhouse Gas (GHG) Reduction Plan:</b> The project applicant shall retain a qualified air quality consultant to develop a Greenhouse Gas (GHG) Reduction Plan for City review and approval. The applicant shall implement the approved GHG Reduction Plan.</p> <p>The goal of the GHG Reduction Plan shall be to increase energy efficiency and reduce GHG emissions by at least 20 percent, with a goal of 36 percent below the project's "adjusted" baseline GHG emissions (as explained below) to help achieve the City's goal of reducing GHG emissions. The GHG Reduction Plan shall include, at a minimum, (a) a detailed GHG emissions inventory for the project under a "business-as-usual" scenario with no consideration of project design features, or other energy efficiencies, (b) an "adjusted" baseline GHG emissions inventory for the project, taking into consideration energy efficiencies included as part of the project (including the City's Standard Conditions of Approval, proposed mitigation measures, project design features, and other City requirements), (c) a comprehensive set of quantified <u>additional</u> GHG reduction measures available to further reduce GHG emissions beyond the adjusted GHG emissions, and (d) requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented. If the project is to be constructed in phases, the GHG Reduction Plan shall provide GHG emission scenarios by phase.</p> <p>Specifically, the applicant/sponsor shall adhere to the following:</p> <p>a) <b>GHG Reduction Measures Program.</b> Prepare and submit to the City Planning Director or his/her designee for review and approval a GHG Reduction Plan that specifies and quantifies GHG reduction measures that the project will implement by phase.</p> <p>Potential GHG reduction measures to be considered include, but are not be limited to, measures recommended in BAAQMD's latest CEQA Air Quality Guidelines, the California Air Resources Board Scoping Plan (December 2008, as may be revised), the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures Document (August 2010, as may be revised), the California Attorney General's website, and Reference Guides on Leadership in Energy and Environmental Design (LEED) published by the U.S. Green Building Council.</p> <p>The proposed GHG reduction measures must be reviewed and approved by the City Planning Director or his/her designee. The types of allowable GHG reduction measures include the following (listed in order of City preference): (1) physical design features; (2) operational features; and (3) the payment of fees to fund GHG-reducing programs (i.e., the purchase of "offset carbon credits," pursuant to item "b" below).</p> <p>The allowable locations of the GHG reduction measures include the following (listed in order of City preference): (1) the project site; (2) off-site within the City of Oakland; (3) off-site within the San Francisco Bay Area Air Basin; (4) off-site within the State of California; then (5) elsewhere in the United States.</p> <p>b) <b>Offset Carbon Credits Guidelines.</b> For GHG reduction measures involving the purchase of offset carbon credits, evidence of the payment/purchase shall be submitted to the City Planning Director or his/her designee for review and approval prior to completion of the project (or prior to completion of the project</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p><b>See Project Manual, Section 7.</b></p> <p>Will be documented in:</p> <ul style="list-style-type: none"> <li>Greenhouse Gas Reduction Plan</li> </ul>	Prior to approval of PUD.	City, Port			X		X

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		Schedule	Responsibility					
<p>phase, if the project includes more one phase).</p> <p>As with preferred locations for the implementation of all GHG reductions measures, the preference for offset carbon credit purchases include those that can be achieved as follows (listed in order of City preference): (1) within the City of Oakland; (2) within the San Francisco Bay Area Air Basin; (3) within the State of California; then (4) elsewhere in the United States. The cost of offset carbon credit purchases shall be based on current market value at the time purchased and shall be based on the Project’s operational emissions estimated in the GHG Reduction Plan or subsequent approved emissions inventory, which may result in emissions that are higher or lower than those estimated in the GHG Reduction Plan.</p> <p>c) <b>Plan Implementation and Documentation.</b> For physical GHG reduction measures to be incorporated into the design of the project, the measures shall be included on the drawings submitted for construction-related permits. For operational GHG reduction measures to be incorporated into the project, the measures shall be implemented on an indefinite and ongoing basis beginning at the time of project completion (or at the completion of the project phase for phased projects).</p> <p>For physical GHG reduction measures to be incorporated into off-site projects, the measures shall be included on drawings and submitted to the City Planning Director or his/her designee for review and approval and then installed prior to completion of the subject project (or prior to completion of the project phase for phased projects). For operational GHG reduction measures to be incorporated into off-site projects, the measures shall be implemented on an indefinite and ongoing basis beginning at the time of completion of the subject project (or at the completion of the project phase for phased projects).</p> <p>d) <b>Compliance, Monitoring and Reporting.</b> Upon City review and approval of the GHG Reduction Plan program by phase, the applicant/sponsor shall satisfy the following requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented. The GHG Reduction Plan requires regular periodic evaluation over the life of the Project (generally estimated to be at least 40 years) to determine how the Plan is achieving required GHG emissions reductions over time, as well as the efficacy of the specific additional GHG reduction measures identified in the Plan.</p> <p>Implementation of the GHG reduction measures and related requirements shall be ensured through the project applicant/sponsor’s compliance with Conditions of Approval adopted for the project. Generally, starting two years after the City issues the first Certificate of Occupancy for the project, the project applicant/sponsor shall prepare each year of the useful life of the project an Annual GHG Emissions Reduction Report (Annual Report), subject to the City Planning Director or his/her designee for review and approval. The Annual Report shall be submitted to an independent reviewer of the City Planning Director’s or his/her designee’s choosing, to be paid for by the project applicant/sponsor (see <i>Funding</i>, below), within two months of the anniversary of the Certificate of Occupancy. The Annual Report shall summarize the project’s implementation of GHG reduction measures over the preceding year, intended upcoming changes, compliance with the conditions of the Plan, and include a brief summary of the previous year’s Annual Report results (starting the second year). The Annual Report shall include a comparison of annual project emissions to the baseline emissions reported in the GHG Plan.</p> <p>The GHG Reduction Plan shall be considered fully attained when project emissions</p>								

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>are 36 percent below the project’s “adjusted” baseline GHG emissions, as confirmed by the City Planning Director or his/her designee through an established monitoring program unless the applicant demonstrates it is infeasible to achieve the 36 percent goal. Monitoring and reporting activities will continue at the City’s discretion, as discussed below.</p> <p>e) <b>Funding.</b> Within two months after the Certificate of Occupancy, the project applicant/sponsor shall fund an escrow-type account or endowment fund to be used exclusively for preparation of Annual Reports and review and evaluation by the City Planning Director or his/her designee, or its selected peer reviewers. The escrow-type account shall be initially funded by the project applicant/sponsor in an amount determined by the City Planning Director or his/her designee and shall be replenished by the project applicant/sponsor so that the amount does not fall below an amount determined by the City Planning Director or his/her designee. The mechanism of this account shall be mutually agreed upon by the project applicant/sponsor and the City Planning Director or his/her designee, including the ability of the City to access the funds if the project applicant/sponsor is not complying with the GHG Reduction Plan requirements, and/or to reimburse the City for its monitoring and enforcement costs.</p> <p>f) <b>Corrective Procedure.</b> If the third Annual Report, or any report thereafter, indicates that, in spite of the implementation of the GHG Reduction Plan, the project is not achieving the GHG reduction goal, the project applicant/sponsor shall prepare a report for City review and approval, which proposes additional or revised GHG measures to better achieve the GHG emissions reduction goals, including without limitation, a discussion on the feasibility and effectiveness of the menu of other additional measures (Corrective GHG Action Plan). The project applicant/sponsor shall then implement the approved Corrective GHG Action Plan.</p> <p>If, one year after the Corrective GHG Action Plan is implemented, the required GHG emissions reduction target is still not being achieved, or if the project applicant/owner fails to submit a report at the times described above, or if the reports do not meet City requirements outlined above, the City Planning Director or his/her designee may, in addition to its other remedies, (a) assess the project applicant/sponsor a financial penalty based upon actual percentage reduction in GHG emissions as compared to the percent reduction in GHG emissions established in the GHG Reduction Plan; or (b) refer the matter to the City Planning Commission for scheduling of a compliance hearing to determine whether the project’s approvals should be revoked, altered or additional conditions of approval imposed.</p> <p>The penalty as described in (a) above shall be determined by the City Planning Director or his/her designee and be commensurate with the percentage GHG emissions reduction not achieved (compared to the applicable numeric significance thresholds) or required percentage reduction from the “adjusted” baseline.</p> <p>In determining whether a financial penalty or other remedy is appropriate, the City shall not impose a penalty if the project applicant/sponsor has made a good faith effort to comply with the GHG Reduction Plan.</p> <p>The City would only have the ability to impose a monetary penalty after a reasonable cure period and in accordance with the enforcement process outlined in Planning Code Chapter 17.152. If a financial penalty is imposed, such penalty sums shall be used by the City solely toward the implementation of the GHG</p>								



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		Schedule	Responsibility					
<p>Reduction Plan.</p> <p>g) <b>Timeline Discretion and Summary.</b> The City Planning Director or his/her designee shall have the discretion to reasonably modify the timing of reporting, with reasonable notice and opportunity to comment by the applicant, to coincide with other related monitoring and reporting required for the project.</p> <ul style="list-style-type: none"> <li>•Fund Escrow-type Account for City Review: Certificate of Occupancy plus 2 months</li> <li>•Submit Baseline Inventory of “Actual Adjusted Emissions”: Certificate of Occupancy plus 1 year</li> <li>•Submit Annual Report #1: Certificate of Occupancy plus 2 years</li> <li>•Submit Corrective GHG Action Plan (if needed): Certificate of Occupancy plus 4 years (based on findings of Annual Report #3)</li> <li>•Post Attainment Annual Reports: Minimum every 3 years and at the City Planning Director’s or his/her designee’s reasonable discretion</li> </ul>								
<b>HAZARDS AND HAZARDOUS MATERIALS</b>								
<p><b>SCA HAZ-1: Best Management Practices for Soil and Groundwater Hazards</b></p> <p>The project applicant shall implement all of the following Best Management Practices (BMPs) regarding potential soil and groundwater hazards.</p> <p>a) Soil generated by construction activities shall be stockpiled onsite in a secure and safe manner or if designated for off-site disposal at a permitted facility, the soil shall be loaded, transported and disposed of in a safe and secure manner. All contaminated soils determined to be hazardous or non-hazardous waste must be adequately profiled (sampled) prior to acceptable reuse or disposal at an appropriate off-site facility. Specific sampling and handling and transport procedures for reuse or disposal shall be in accordance with applicable local, state and federal agencies laws, in particular, the Regional Water Quality Control Board (RWQCB) and/or the Alameda County Department of Environmental Health (ACDEH) and policies of the City of Oakland. The excavation, on-site management, and off-site disposal of soil from Project areas within the OARB shall follow the DTSC-approved RAP/RMP.</p> <p>b) Groundwater pumped from the subsurface shall be contained onsite in a secure and safe manner, prior to treatment and disposal, to ensure environmental and health issues are resolved pursuant to applicable laws and policies of the City of Oakland, the RWQCB and/or the ACDEH. The on-site management and off-site disposal of groundwater extracted from Project areas within the OARB shall follow the DTSC-approved RAP/RMP for Project areas within the OARB. Engineering controls shall be utilized, which include impermeable barriers to prohibit groundwater and vapor intrusion into the building (pursuant to the Standard Condition of Approval regarding Radon or Vapor Intrusion from Soil and Groundwater Sources.</p> <p>c) Prior to issuance of any demolition, grading, or building permit, the applicant shall submit for review and approval by the City of Oakland, written verification that the appropriate federal, state or county oversight authorities, including but not limited to the RWQCB and/or the ACDEH, have granted all required clearances and confirmed that the all applicable standards, regulations and conditions for all previous contamination at the site. The applicant also shall provide evidence from the City’s Fire Department, Office of Emergency Services, indicating compliance with the Standard Condition of Approval requiring a Site Review by the Fire Services Division pursuant to City Ordinance No. 12323, and compliance with the</p>	<p><b>See Project Manual, Section 8.</b></p> <p>Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Comply with the RAP/RMP and Soils Management Plan.</li> <li>• Stockpile soil in a secure and safe manner.</li> <li>• Profile soil prior to reuse or disposal.</li> <li>• Load, transport, and dispose of soil in a secure and safe manner and in accordance with applicable local, state, and federal laws, regulations, and/or policies.</li> <li>• Contain groundwater pumped onsite in a secure and safe manner.</li> <li>• Use engineering controls to prohibit groundwater entry and vapor intrusion into buildings.</li> <li>• Dispose of soil and groundwater not suitable for reuse only at permitted facilities.</li> <li>• Obtain all required clearances for previous site contamination from local and state oversight agencies.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	<p>Ongoing throughout demolition, grading, and/or construction activities.</p>	<p>City/Port</p>		<p>X</p>		<p>X</p>	

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		Schedule	Responsibility					
Standard Condition of Approval requiring a Phase I and/or Phase II Reports.								
<p><b>SCA HAZ-2: Hazards Best Management Practices:</b> The project applicant and construction contractor shall ensure Best Management Practices (BMPs) are implemented as part of construction to minimize the potential negative effects to groundwater and soils. These shall include the following:</p> <p>a) Follow manufacture’s recommendations on use, storage, and disposal of chemical products used in construction;</p> <p>b) Avoid overtopping construction equipment fuel gas tanks;</p> <p>c) During routine maintenance of construction equipment, properly contain and remove grease and oils;</p> <p>d) Properly dispose of discarded containers of fuels and other chemicals.</p> <p>e) Ensure that construction would not have a significant impact on the environment or pose a substantial health risk to construction workers and the occupants of the proposed development. Soil sampling and chemical analyses of samples shall be performed to determine the extent of potential contamination beneath all USTs, elevator shafts, clarifiers, and subsurface hydraulic lifts when on-site demolition, or construction activities would potentially affect a particular development or building.</p> <p>f) If soil, groundwater or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notification of regulatory agency(ies) and implementation of the actions described in the City’s Standard Conditions of Approval (and DTSC-approved RAP/RMP for Project area within the OARB), as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the City or regulatory agency, as appropriate.</p>	<p><b>See Project Manual, Sections 8.1, 8.3, and 9.1.</b> Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>Comply with the RAP/RMP and Soils Management Plan.</li> <li>Prepare a Project Storm Water Pollution Prevention Plan that includes site hazardous materials and waste management BMPs, proper procedures for storing and handling construction materials onsite, and cleanup measures for accidental releases.</li> <li>Collect environmental samples if suspected contamination, abandoned drums, USTs, elevator shafts, clarifiers, or subsurface hydraulic lifts are encountered during construction, and immediately notify the City.</li> <li>Prepare task-specific Health and Safety Plans for construction activities in areas with known or suspected contamination.</li> <li>Follow recommendations provided by a qualified environmental consultant for the profiling, handling, treating, transportation, and/or disposal of any other materials classified as potentially hazardous waste.</li> <li>Prepare a Hazardous Materials Business Plan if hazardous materials or waste will be handled or stored in quantities subject to State reporting requirements.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Prior to and ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	
<p><b>SCA HAZ-3: Hazardous Materials Business Plan:</b> The project applicant shall submit a Hazardous Materials Business Plan for review and approval by Fire Prevention Bureau, Hazardous Materials Unit. Once approved this plan shall be kept on file with the City and will be updated as applicable. The purpose of the Hazardous Materials Business Plan is to ensure that employees are adequately trained to handle the materials and provides information to the Fire Services Division should emergency response be required. The Hazardous Materials Business Plan shall include the following:</p> <p>a) The types of hazardous materials or chemicals stored and/or used on site, such as petroleum fuel products, lubricants, solvents, and cleaning fluids.</p> <p>b) The location of such hazardous materials.</p> <p>c) An emergency response plan including employee training information.</p> <p>d) A plan that describes the manner in which these materials are handled, transported and disposed.</p>	<p><b>See Project Manual, Section 8.1.</b> Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>Prepare a Hazardous Materials Business Plan if hazardous materials or waste will be handled or stored in quantities subject to State reporting requirements.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance during construction phases.</p>	Prior to issuance of a business license.	City/Port					X
<p><b>SCA HAZ-4: Asbestos Removal in Structures:</b> If asbestos-containing materials (ACM) are found to be present in building materials to be removed, demolished and disposed of, the project applicant shall submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code;</p>	<p><b>See Project Manual, Section 8.2.</b> The Developer’s Demolition Contractor will hold an active C-21 license issued by the California State License Board with an Asbestos certification. All removal and containment of ACM will be completed in accordance with applicable state laws and regulations. Developer and/or its Contractor will confirm compliance.</p>	Prior to issuance of a demolition permit, and ongoing throughout demolition,	City/Port		X			

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
Division 3; California Health & Safety Code 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended.		grading, and/or construction						
<b>SCA HAZ-5: Lead-Based Paint/Coatings, Asbestos, or PCB Occurrence Assessment:</b> The project applicant shall submit a comprehensive assessment report to the Fire Prevention Bureau, Hazardous Materials Unit, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials (ACM), lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.	<b>See Project Manual, Section 8.2.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>Prepare and submit a report documenting the presence/absence of ACM, lead-based paint, or any other materials classified as potentially hazardous waste.</li> </ul>	Prior to issuance of any demolition, grading or building permit	City/Port		X			
<b>SCA HAZ-6: Lead-Based Paint Remediation:</b> If lead-based paint is present, the project applicant shall submit specifications to the Fire Prevention Bureau, Hazardous Materials Unit signed by a certified Lead Supervisor, Project Monitor, or Project Designer for the stabilization and/or removal of the identified lead paint in accordance with all applicable laws and regulations, including but not necessarily limited to: Cal/OSHA's Construction Lead Standard, 8 CCR1532.1 and DHS regulation 17 CCR Sections 35001 through 36100, as may be amended.	<b>See Project Manual, Section 8.2.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>Follow recommendations provided by a certified Lead Supervisor, Project Monitor, or Project Designer for the stabilization and/or removal of any lead-based paint present on the Project.</li> </ul> Developer and/or its Contractor will confirm compliance.	Prior to issuance of any demolition, grading or building permit; and ongoing throughout demolition, grading, and/or construction	City/Port		X			
<b>SCA HAZ-7: Other Materials Classified as Hazardous Waste:</b> If other materials classified as hazardous waste by State or federal law are present, the project applicant shall submit written confirmation to Fire Prevention Bureau, Hazardous Materials Unit that all State and federal laws and regulations shall be followed when profiling, handling, treating, transporting and/or disposing of such materials.	<b>See Project Manual, Section 8.3.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>Follow recommendations provided by a qualified environmental consultant for the profiling, handling, treating, transportation, and/or disposal of any other materials classified as potentially hazardous waste.</li> </ul>	Prior to issuance of any demolition, grading or building permit; and ongoing throughout demolition, grading, and/or construction	City/Port		X		X	
<b>SCA HAZ-8: Health and Safety Plan per Assessment:</b> If the required lead-based paint/coatings, asbestos, or PCB assessment finds presence of such materials, the project applicant shall create and implement a health and safety plan to protect workers from risks associated with hazardous materials during demolition, renovation of affected structures, and transport and disposal.	<b>See Project Manual, Section 8.3.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>Prepare task-specific Health and Safety Plans for construction activities in areas with known or suspected contamination.</li> <li>Follow recommendations provided by a qualified environmental consultant for the profiling, handling, treating, transportation, and/or disposal of any other materials classified as potentially hazardous waste.</li> </ul>	Prior to issuance of any demolition, grading or building permit; and ongoing throughout demolition, grading, and/or construction	City/Port		X			
<b>Mitigation 4.7-3:</b> Implement RAP/RMP as approved by DTSC, and if future use proposals include uses not identified in the Reuse Plan and incorporated into the RAP/RMP or if future amendments to the remediation requirements are proposed, obtain DTSC and, as required, City approval.	Developer, its Contractor, and/or its consultant will comply with the RAP/RMP. <b>Additional actions/schedule, if required, TBD by Lease Team, City, and/or Port.</b>	Prior to issuance of any demolition, grading or building permit; and on-going	City/Port	X	X	X	X	X
<b>Mitigation 4.7-4:</b> For the project areas not covered by the DTSC-approved RAP/RMP, investigate potentially contaminated sites; if contamination is found, assess potential risks to human health and the environment, prepare and implement a cleanup plan for DTSC or RWQCB approval, prepare and implement a Risk Management Plan and prepare and implement a Site Health and Safety Plan prior to commencing work.	The City and/or Port will investigate potentially contaminated sites not covered by the RAP/RMP and perform follow-on actions as appropriate.	Prior to issuance of any demolition, grading or building permit;	City/Port	X	X	X	X	X

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Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>Since implementation of the RAP/RMP approved by DTSC is proposed as part of the project for the OARB, and the RAP/RMP requires remediation to be fully protective of human health and the environment for the proposed future uses of the OARB, no further mitigation is required for the OARB unless either (1) future use proposals include those that were not identified in the Reuse Plan and incorporated into the RAP/RMP or (2) future amendments are proposed to the remediation requirements included in the approved RAP/RMP. In either of these two circumstances, required remediation includes obtaining the DTSC and, as required, City approval, for proposed changes in full conformance with applicable legal requirements including but not limited to the HSAA and CEQA.</p> <p>Specific contaminants and concentrations may vary across the redevelopment project area. Nevertheless, the types of impacts expected, and therefore, the general response actions and approaches to mitigation would be consistent throughout the redevelopment project area. With respect to the OARB and as described in greater detail above, the process across the redevelopment project area would mirror the RAP/RMP process that is already underway at the OARB. With respect to the OARB sub-district, pursuant to HSAA Chapter 6.8, the OBRA has proposed a RAP/RMP. The OBRA's remedial goal is to remediate soil and groundwater contamination consistent with the City of Oakland ULR Program 10<sup>-5</sup> remedy with appropriate land use restrictions. This RAP/RMP must be approved by DTSC, which has the legal discretion to impose remedies falling within the 10<sup>-4</sup> and 10<sup>-6</sup> risk range.</p> <p>For the other sub-districts and areas not included in the DTSC-approved RAP/RMP, prior to beginning redevelopment-related activities, potentially affected areas shall be investigated, potentially including additional studies or site characterization activities, as required by the regulatory agencies (DTSC or RWQCB). Once contaminated areas are identified, potential human health risks from contaminants of concern based upon realistic future land use shall be assessed, health risk-based and environmental risk-based cleanup goals shall be established, and a determination regarding the need for additional site assessment work shall be made.</p> <p>The potential risks associated with affected areas shall be assessed in accordance with regulatory agency guidance and approvals and may result in remediation requirements. Such cleanup plans shall address each area where soil or groundwater is contaminated above ULR goals could be encountered during redevelopment. The clean up plan, the names of which vary based on the type and source of contamination and the legal framework for the particular oversight agency, shall specify measures to be taken to protect workers and the public from exposure to potential contamination and certify that the proposed remediation measures, including removal, disposal, stabilization and/or institutional controls are protective of human health and the environment and implemented in accordance with federal, state and local requirements. Additionally, a Risk Management Plan may be required by the oversight agency to address site redevelopment activities and operations and provide an enforcement structure to be in place during and post-construction. Finally, a Site Health and Safety Plan shall be prepared in accordance with the OSHA and Cal/OSHA regulations. Off-hauling of contamination shall comply with applicable laws, and construction hours shall be limited as provided for in SCA NOI-1 through SCA NOI-6 in order to prevent night-time glare. Additionally, potential odor impact measures, and dust or other nuisance conditions from remediation-related truck traffic is provided for in Mitigation Measure 4.3-13, and safety concerns are addressed in Mitigation Measure 4.9-3.</p>		and on-going						
<b>Mitigation 4.7-5:</b> For the project areas not covered by the DTSC-approved RAP/RMP,	The City and/or Port will remediate contaminated sites not covered by the	Prior to issuance	City/Port	X	X	X	X	X

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
remediate soil and groundwater contamination consistent with the City of Oakland ULR [Urban Land Redevelopment] Program and other applicable laws and regulations. The City of Oakland ULR Program has determined that reducing the target risk level to 1x10 <sup>-5</sup> for commercial or industrial land uses in combination with appropriate institutional controls would reduce the risk to future residents, employees, and visitors to less than significant. Within the OARB area covered by the DTSC-approved RAP/RMP, implementation will result in avoidance of any potentially significant impact to future commercial/industrial/maritime/utility workers, and site visitors. Moreover, the measures required for the areas not covered by the DTSC-approved RAP/RMP, (Measure 4.7-4) would evaluate and control potential human health risks from contaminants of concern in the redevelopment project area and will sufficiently address this potential impact. In addition, Mitigation Measures 4.14-1 and 4.14-2, which prohibit the installation of groundwater wells for any purpose other than construction de-watering and remediation and require that even for construction de-watering and remediation use of those wells be minimized, will reduce the potential for contaminants to migrate to other underlying ground aquifers, thus lessening the impact to future residents, employees and visitors to less than significant.	RAP/RMP in accordance with the City of Oakland ULR Program and perform follow-on actions as appropriate.	of any demolition, grading or building permit; and on-going						
<b>Mitigation 4.7-6:</b> Buildings and structures constructed prior to 1978 slated for demolition or renovation that have not previously been evaluated for the presence of LBP shall be sampled to determine whether LBP is present in painted surfaces, and the safety precautions and work practices as specified in government regulations shall be followed during demolition.	<b>See Project Manual, Section 8.2.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>• Sample for the presence of lead-based paint in pre-1978 structures slated for demolition that have not been previously evaluated.</li> <li>• Follow recommendations provided by a certified Lead Supervisor, Project Monitor, or Project Designer, and follow safety precautions and work practices in government regulations and guidance.</li> </ul>	Prior to issuance of any demolition, grading or building permit; and on-going throughout demolition, grading, and/or construction	City/Port		X			
<b>Mitigation 4.7-7:</b> Buildings, structures and utilities that have not been surveyed for ACM, shall be surveyed to determine whether ACM is present prior to demolition or renovation, and the safety precautions and work practices as specified in government regulations shall be followed during demolition.	<b>See Project Manual, Section 8.2.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>• Survey for ACM structures slated for demolition or renovation that have not been previously evaluated.</li> <li>• Follow recommendations provided by a qualified environmental consultant, and follow safety precautions and work practices in government regulations and guidance.</li> </ul>	Prior to issuance of any demolition, grading or building permit; and on-going throughout demolition, grading, and/or construction	City/Port		X			
<b>Mitigation 4.7-8:</b> Buildings and structures proposed for demolition or renovation shall be surveyed for PCB-impacted building materials, and the safety precautions and work practices as specified in government regulations shall be followed during demolition.	<b>See Project Manual, Section 8.2.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>• Survey for PCBs structures slated for demolition or renovation that have not been previously evaluated.</li> <li>• Follow recommendations provided by a qualified environmental consultant, and follow safety precautions and work practices in government regulations and guidance.</li> </ul>	Prior to issuance of any demolition, grading or building permit; and on-going throughout demolition, grading, and/or construction	City/Port		X			
<b>Mitigation 4.7-9:</b> For above-ground and underground storage tanks (ASTs/USTs) on the OARB, implement the RAP/RMP.	Developer, its Contractor/subcontractors, and/or its consultant will perform periodic inspections to confirm compliance with the RAP/RMP during construction phases.	Prior to issuance of any demolition,	City/Port		X			

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
		grading or building permit; and on-going throughout demolition, grading, and/or construction						
<b>Mitigation 4.7-11:</b> For LBP-impacted ground on the OARB, implementation of RAP/RMP to be approved by DTSC as part of the project will result in avoidance of this potentially significant impact. For the remainder of the development project area, sampling shall be performed on soil or paved areas around buildings that are known or suspected to have LBP, and the safety precautions and work practices specified in government regulations shall be followed.	Developer, its Contractor/subcontractors, and/or its consultant will perform periodic inspections to confirm compliance with the RAP/RMP and Project Site Safety and Health Program during construction phases.	Prior to issuance of any demolition, grading or building permit; and on-going throughout demolition, grading, and/or construction	City/Port		X			
<b>Mitigation 4.7-12:</b> The condition of identified ACM shall be assessed annually, and prior to reuse of a building known to contain ACM.	<b>Actions/schedule TBD by Design/Horizontal Construction team.</b>	Prior to issuance of any demolition, grading or building permit; and on-going	City/Port	X				
<b>Mitigation 4.7-13:</b> No future tenancies shall be authorized at the OARB for use categories that are inconsistent with the Reuse Plan without an updated environmental analysis and DTSC approval as provided for in the RAP/RMP. For the OARB, baseline environmental analyses have been completed to support current interim uses of existing structures, including numerous commercial, trucking, warehouse and other tenants, the Oakland Military Institute and transitional housing uses for formerly-incarcerated women and their families and for various homeless service providers including an overnight shelter. Other environmental hazards may also be encountered by future interim occupants of existing OARB structures, and completion of a baseline environmental evaluation to identify and abate such hazards prior to occupancy by tenants will mitigate such hazards. Interim occupancy by future tenants who may propose land uses which are inconsistent with the Reuse Plan, and thus may not have been considered in the DTSC-approved RAP/RMP, shall occur only after DTSC approval as provided for in the RAP/RMP in order to assure that such future non-conforming tenants are protected from other environmental hazards. As stated above, for the remainder of the redevelopment project area, any building that has not been surveyed for ACM but potentially contains ACM shall be surveyed to determine whether ACM is present prior to demolition, renovation or reuse.	<b>Actions/schedule TBD by Vertical Construction/Lease team.</b>	Pre-operations	City/Port			X	X	
<b>Mitigation 4.7-16:</b> Oil-filled electrical equipment in the redevelopment project area that has not been surveyed shall be investigated prior to the equipment being taken out of service to determine whether PCBs are present. Equipment found to contain PCBs should be part of an ongoing monitoring program. Surface and subsurface contamination from any PCB equipment shall be investigated and remediated in compliance with applicable laws and regulations.	<b>See Project Manual, Sections 8.2 and 8.3.</b> Developer, its Contractor/subcontractors, and/or its consultant will: <ul style="list-style-type: none"> <li>Prepare task-specific Health and Safety Plans for construction activities in areas with known or suspected contamination.</li> <li>Follow recommendations provided by a qualified environmental consultant for the profiling, handling, treating, transportation, and/or disposal of any other materials classified as potentially hazardous waste.</li> </ul> Developer, its Contractor/subcontractors, and/or its consultant will perform	Prior to issuance of any demolition, grading or building permit; and on-going during operations;	City/Port		X			

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
	periodic inspections to confirm compliance with the RAP/RMP and Project Site Safety and Health Program during construction phases.	Ongoing throughout demolition, grading, and/or construction						
<p><b>Mitigation 4.7-17:</b> PCB-containing or PCB-contaminated equipment taken out of service shall be handled and disposed in compliance with applicable laws and regulations.</p> <p>Equipment filled with dielectric fluid (oil) including transformers, ballast, etc. containing more than 5 ppm PCBs is considered a hazardous waste in California</p>	<p><b>See Project Manual, Sections 8.2 and 8.3.</b></p> <p>Developer, its Contractor/subcontractors, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare task-specific Health and Safety Plans for construction activities in areas with known or suspected contamination.</li> <li>• Follow recommendations provided by a qualified environmental consultant for the profiling, handling, treating, transportation, and/or disposal of any other materials classified as potentially hazardous waste.</li> </ul> <p>Developer, its Contractor/subcontractors, and/or its consultant will perform periodic inspections to confirm compliance with the RAP/RMP and Project Site Safety and Health Program during construction phases.</p>	Prior to issuance of any demolition, grading or building permit; and on-going during operations; Ongoing throughout demolition, grading, and/or construction	City/Port		X			
<b>HYDROLOGY AND WATER QUALITY</b>								
<p><b>SCA HYD-1: Stormwater Pollution Prevention Plan (SWPPP):</b> The project applicant must obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The project applicant must file a notice of intent (NOI) with the SWRCB. The project applicant will be required to prepare a stormwater pollution prevention plan (SWPPP) and submit the plan for review and approval by the Building Services Division. At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Prior to the issuance of any construction-related permits, the project applicant shall submit to the Building Services Division a copy of the SWPPP and evidence of submittal of the NOI to the SWRCB. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project. After construction is completed, the project applicant shall submit a notice of termination to the SWRCB.</p>	<p><b>See Project Manual, Section 9.1.</b></p> <p>Developer and/or its Contractor will:</p> <ul style="list-style-type: none"> <li>• Prepare a construction SWPPP signed by a Qualified SWPPP Developer (QSD).</li> <li>• File a NOI with the SWRCB.</li> <li>• Submit SWPPP to the Water Board and City for review and approval.</li> <li>• File a NOT with the SWRCB at the completion of construction.</li> </ul> <p>On behalf of the Developer and/or its Contractor, a QSP will perform periodic inspections to confirm compliance.</p>	Prior to and ongoing throughout demolition, grading, and/or construction activities.	City/Port		X		X	
<p><b>Mitigation 4.15-1:</b> Prior to in-water construction, the contractor shall prepare a water quality protection plan acceptable to the RWQCB, including site-specific best management practices for protection of Bay waters, and shall implement this plan during construction.</p> <p>BMPs to effectively control turbidity and/or contaminant suspension and migration would be site-specific. They may include, and are not limited to, the following:</p> <ul style="list-style-type: none"> <li>• Use environmental or clamshell dredges or hydraulic cutterhead dredges designed to reduce release of solids.</li> <li>• Reduce or eliminate overflow of decant water from barges used to transport material.</li> <li>• Use silt curtains or other specialized equipment to reduce dispersion of material during dredging and filling operations.</li> </ul>	<p><b>See Project Manual, Sections 4.4 and 9.1.</b></p> <p>Developer and/or its Contractor will:</p> <ul style="list-style-type: none"> <li>• Submit a water quality protection plan to the Water Board and install/utilize BMPs to protect the San Francisco Bay prior to in-water construction.</li> <li>• Control turbidity and/or contaminant suspension/migration by using environmental or clamshell or hydraulic cutterhead dredges, reducing or eliminating overflow of decant water from barges, and/or using silt curtains to reduce dispersion.</li> </ul> <p>On behalf of the Developer and/or its Contractor, a QSP will perform periodic inspections to confirm compliance during construction phases.</p>	Prior to issuance of any demolition, grading or building permit; and on-going during operations; Ongoing throughout demolition, grading, and/or construction	City/Port		X If applicable		X	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>Mitigation 4.15-2:</b> Contractors and developers shall comply with all permit conditions from the Corps, RWQCB and BCDC. This measure shall be enforced on Contractors by contract specifications.</p>	<p>Developer and/or its Contractor will comply with all permit conditions. Developer, its Contractor, and/or its consultant will perform periodic inspections to confirm subcontractor compliance during construction phases.</p>	<p>Prior to issuance of any demolition, grading or building permit; and on-going during operations; Ongoing throughout demolition, grading, and/or construction</p>	<p>City/Port</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p><b>Mitigation 3.9-1:</b> Coordinate and consult with EBMUD and if necessary design and build storm drain improvements resulting from increased elevation in the North Gateway area.</p>	<p>Developer and/or its Contractor will consult with EBMUD regarding storm drain improvements in the North Gateway area.</p>	<p>Prior to issuance of building permit (or other construction-related permit).</p>	<p>City/Port</p>	<p>X If applicable</p>	<p>X If applicable</p>			
<p><b>SCA HYD-2: Post-Construction Stormwater Management Plan:</b> The applicant shall comply with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) permit issued to the Alameda Countywide Clean Water Program. The applicant shall submit with the application for a building permit (or other construction-related permit) a completed Construction-Permit-Phase Stormwater Supplemental Form to the Building Services Division. The project drawings submitted for the building permit (or other construction-related permit) shall contain a stormwater management plan, for review and approval by the City, to manage stormwater run-off and to limit the discharge of pollutants in stormwater after construction of the project to the maximum extent practicable.</p> <p>a) The post-construction stormwater management plan shall include and identify the following:</p> <ol style="list-style-type: none"> <li>i. All proposed impervious surface on the site;</li> <li>ii. Anticipated directional flows of on-site stormwater runoff; and</li> <li>iii. Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and</li> <li>iv. Source control measures to limit the potential for stormwater pollution;</li> <li>v. Stormwater treatment measures to remove pollutants from stormwater runoff; and</li> <li>vi. Hydromodification management measures so that post-project stormwater runoff does not exceed the flow and duration of pre-project runoff, if required under the NPDES permit.</li> </ol> <p>b) The following additional information shall be submitted with the post-construction stormwater management plan:</p> <ol style="list-style-type: none"> <li>i. Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and</li> <li>ii. Pollutant removal information demonstrating that any proposed manufactured/mechanical (i.e., non-landscape-based) stormwater treatment measure, when not used in combination with a landscape-based treatment measure, is capable of removing the range of pollutants typically removed by landscape-based treatment measures and/or the range of pollutants expected to be generated by the project.</li> </ol>	<p><b>Actions/schedule TBD by Horizontal/Vertical Construction/Lease team. See Project Manual, Section 9.2.</b></p> <p>Developer and/or its Contractor will:</p> <ul style="list-style-type: none"> <li>• Prepare a post-construction Storm Water Management Plan in compliance with the NPDES permit issued to the Alameda Countywide Clean Water Program.</li> <li>• Submit a Construction-Permit-Phase Stormwater Supplemental Form to the City for review and approval.</li> <li>• Incorporate appropriate planting materials for storm water treatment in the Project landscape and irrigation plans.</li> <li>• Demonstrate compliance with the City's Alternative Compliance Program.</li> </ul>	<p>Prior to issuance of building permit (or other construction-related permit). Prior to final permit inspection, the applicant shall also implement the approved stormwater management plan.</p>	<p>City/Port</p>	<p>X</p>		<p>X</p>	<p>X</p>	



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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
All proposed stormwater treatment measures shall incorporate appropriate planting materials for stormwater treatment (for landscape-based treatment measures) and shall be designed with considerations for vector/mosquito control. Proposed planting materials for all proposed landscape-based stormwater treatment measures shall be included on the landscape and irrigation plan for the project. The applicant is not required to include on-site stormwater treatment measures in the post-construction stormwater management plan if he or she secures approval from Planning and Zoning of a proposal that demonstrates compliance with the requirements of the City's Alternative Compliance Program.								
<b>SCA HYD-3: Maintenance Agreement for Stormwater Treatment Measures:</b> For projects incorporating stormwater treatment measures, the applicant shall enter into the "Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement," in accordance with Provision C.3.e of the NPDES permit, which provides, in part, for the following: i. The applicant accepting responsibility for the adequate installation/construction, operation, maintenance, inspection, and reporting of any on-site stormwater treatment measures being incorporated into the project until the responsibility is legally transferred to another entity; and ii. Legal access to the on-site stormwater treatment measures for representatives of the City, the local vector control district, and staff of the Regional Water Quality Control Board, San Francisco Region, for the purpose of verifying the implementation, operation, and maintenance of the on-site stormwater treatment measures and to take corrective action if necessary. The agreement shall be recorded at the County Recorder's Office at the applicant's expense.	Actions/schedule TBD by Vertical Construction/Lease team.	Prior to final zoning inspection.	City/Port					X
<b>SCA HYD-4: Stormwater and Sewer:</b> Confirmation of the capacity of the City's surrounding stormwater and sanitary sewer system and state of repair shall be completed by a qualified civil engineer with funding from the project applicant. The project applicant shall be responsible for the necessary stormwater and sanitary sewer infrastructure improvements to accommodate the proposed project. In addition, the applicant shall be required to pay additional fees to improve sanitary sewer infrastructure if required by the Sewer and Stormwater Division. Improvements to the existing sanitary sewer collection system shall specifically include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow to offset sanitary sewer increases associated with the proposed project. To the maximum extent practicable, the applicant will be required to implement Best Management Practices to reduce the peak stormwater runoff from the project site. Additionally, the project applicant shall be responsible for payment of the required installation or hook-up fees to the affected service providers.	Actions/schedule TBD by Horizontal/Vertical Construction/Lease team.	Prior to completing the final design for the project's sewer service.	City/Port	X		X		
<b>Mitigation 4.15-5:</b> Post-construction controls of stormwater shall be incorporated into the design of new redevelopment elements to reduce pollutant loads. NPDES permitting requires that BMPs to control post-construction stormwater be implemented to the maximum extent practicable. Analysis of anticipated runoff volumes and potential effects to receiving water quality from stormwater shall be made for specific redevelopment elements, and site-specific BMPs shall be incorporated into design. BMPs shall be incorporated such that runoff volume from 85 percent of average annual rainfall at a development site is pre-treated prior to its discharge from that site, or a pre-treated volume in compliance with RWQCB policy in effect at the time of design. Non-structural BMPs may include and are not limited to good housekeeping and other	Actions/schedule TBD by Horizontal/Vertical Construction/Lease team. <b>See Project Manual, Section 9.2.</b> Developer and/or its Contractor will: • Install/utilize site-specific BMPs to control post-construction storm water such that runoff representing 85% average rainfall is pretreated prior to discharge from that site (or pretreated in compliance with Water Board policy in effect at time of design).	Prior to issuance of building permit (or other construction-related permit).	City/Port	X		X		

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>source control measures, such as the following:</p> <ul style="list-style-type: none"> <li>• Stencil catch basins and inlets to inform the public they are connected to the Bay;</li> <li>• Sweep streets on a regular schedule;</li> <li>• Use and dispose of paints, solvents, pesticides, and other chemicals properly;</li> <li>• Keep debris bins covered; and</li> <li>• Clean storm drain catch basins and properly dispose of sediment.</li> </ul> <p>Structural BMPs may include and are not limited to the following:</p> <ul style="list-style-type: none"> <li>• Minimize impervious areas directly connected to storm sewers;</li> <li>• Include drainage system elements in design as appropriate such as: <ul style="list-style-type: none"> <li>o infiltration basins</li> <li>o detention/retention basins</li> <li>o vegetated swales (biofilters)</li> <li>o curb/drop inlet protection.</li> </ul> </li> </ul>								
<p><b>Mitigation 4.14-1:</b> Installation of groundwater extraction wells into the shallow water-bearing zone or Merritt Sand aquifer for any purpose other than construction de-watering and remediation, including monitoring, shall be prohibited. Implementation of this measure would prevent saltwater from being drawn into the aquifer and potentially causing fresh water to become brackish or saline. Limiting extraction of shallow groundwater and groundwater from the Merritt Sand unit will prevent potential impacts to existing study area groundwater resources.</p>	<p>Confirm in Project plans:</p> <ul style="list-style-type: none"> <li>• Except for temporary construction dewatering (including wick drains), no shallow groundwater extraction wells are allowed.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance during construction phases.</p>	Prior to issuance of building permit (or other construction-related permit); and during operations; Ongoing throughout demolition, grading, and/or construction	City/Port		X		X	X
<p><b>Mitigation 4.14-2:</b> Extraction of groundwater for construction de-watering or remediation, including monitoring, shall be minimized where practicable; if extraction will penetrate into the deeper aquifers, than a study shall be conducted to determine whether contaminants of concern could migrate into the aquifer; if so, extraction shall be prohibited in that location. Implementation of this measure would prevent unnecessary extraction of groundwater and prohibit its extraction where contaminants of concern could migrate into deeper aquifers; therefore it will help avoid or reduce the potential migration of contaminants. The City and Port shall ensure that groundwater extraction, other than for remediation or construction dewatering, is minimized where practicable in the redevelopment project area.</p>	<p>Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• Minimize groundwater extraction for construction dewatering, remediation, and/or monitoring.</li> <li>• Perform hydrogeologic analysis and execute appropriate professional practices for deeper extraction wells to prevent contaminant migration.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance during construction phases.</p>	Prior to issuance of building permit (or other construction-related permit); and during operations; Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	X
<p><b>Mitigation 4.15-6:</b> Site-specific design and best management practices shall be implemented to prevent runoff of recycled water to receiving waters. Design of subsequent redevelopment activities shall ensure recycled water does not leave the site and enter receiving waters. Best management practices shall be implemented to prevent runoff of recycled water. These BMPs may be either structural or non-structural in nature and may include but are not limited to the following:</p> <ul style="list-style-type: none"> <li>• Preventing recycled water from escaping designated use areas through the use of: <ul style="list-style-type: none"> <li>o berms</li> <li>o detention/retention basins</li> <li>o vegetated swales (biofilters)</li> </ul> </li> <li>• Not allowing recycled water to be applied to irrigation areas when soils are saturated.</li> </ul>	<p><b>Actions/schedule TBD by Horizontal/Vertical Construction/Lease team. See Project Manual, Section 9.2.</b></p> <p>Developer and/or its Contractor will:</p> <ul style="list-style-type: none"> <li>• Design measures or install/utilize site-specific BMPs to prevent recycled water runoff into receiving waters.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance during construction phases.</p>	Prior to issuance of building permit (or other construction-related permit).	City/Port	X		X		X

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<ul style="list-style-type: none"> <li>Plumbing portions of irrigation systems adjacent to receiving waters with potable water.</li> </ul>								
<b>NOISE</b>								
<p><b>SCA NOI-1: Days/Hours of Construction Operation:</b> The project applicant shall require construction contractors to limit standard construction activities as follows:</p> <ul style="list-style-type: none"> <li>a) Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Saturday, except that barging and unloading of soil shall be allowed 24 hours per day, 7 days per week for about 15 months.</li> <li>b) Any construction activity proposed to occur outside of the standard hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior written authorization of the Building Services Division. The project applicant shall also submit an air quality report prepared by a qualified professional evaluating the air quality impacts of the special activities, if the duration of each activity exceeds 6 months.</li> <li>c) No construction activity shall take place on Sundays or Federal holidays, except as noted above.</li> <li>d) Construction activities include but are not limited to: truck idling, moving equipment (including trucks, elevators, etc) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.</li> <li>e) Applicant shall use temporary power poles instead of generators where feasible.</li> </ul>	<p><b>See Project Manual, Section 3.1.3.1.</b> Developer and/or its Contractor will specify in the Project Plans, install signage, and perform periodic inspections, including gate checks, to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• Construction activities will be conducted weekdays from 7:00 am to 4:00 pm.</li> <li>• Saturday and holiday hours will be from 7:00 am to 4:00 pm with prior City approval.</li> </ul>	Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	
<p><b>SCA NOI-2: Noise Control:</b> To reduce noise impacts due to construction, the project applicant shall require construction contractors to implement a site-specific noise reduction program, subject to the Planning and Zoning Division and the Building Services Division review and approval, which includes the following measures:</p> <ul style="list-style-type: none"> <li>a) Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).</li> <li>b) Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, <u>if such jackets are commercially available</u> and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.</li> <li>c) Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.</li> </ul>	<p><b>See Project Manual, Section 10.</b> Developer and/or its Contractor will specify in the Project Plans, install signage, and perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• Use BACTs for noise control on construction equipment and trucks.</li> <li>• Use hydraulically or electrically powered impact tools.</li> <li>• Use exhaust mufflers when pneumatically powered tools are imperative.</li> <li>• Locate stationary noise sources as far from receptors as possible.</li> <li>• Limit the noisiest phases of construction to periods of no more than 10 consecutive days.</li> <li>• Comply with decibel levels and other aspects of the City of Oakland Noise Ordinance.</li> </ul>	Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	

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Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
d) The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.								
<p><b>SCA NOI-3: Noise Complaint Procedures:</b> Prior to the issuance of each building permit, along with the submission of construction documents, the project applicant shall submit to the Building Services Division a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include:</p> <ul style="list-style-type: none"> <li>a) A procedure and phone numbers for notifying the Building Services Division staff and Oakland Police Department; (during regular construction hours and off-hours);</li> <li>b) A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign shall also include a listing of both the City and construction contractor’s telephone numbers (during regular construction hours and off-hours);</li> <li>c) The designation of an on-site construction complaint and enforcement manager for the project;</li> <li>d) Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and</li> <li>e) A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.</li> </ul>	<p><b>See Project Manual, Section 10.</b> Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• Hold a pre-construction meeting and inspection to verify noise control measures.</li> <li>• Post signage and enforce noise requirements. Take corrective action to remedy complaints no more than 48 hours after receiving the complaint.</li> <li>• Notify neighbors and occupants within 300 feet at least 30 days in advance of extreme noise generating activities.</li> </ul>	Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	
<p><b>SCA NOI-6: Pile Driving and Other Extreme Noise Generators:</b> To further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90dBA, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the Planning and Zoning Division and the Building Services Division to ensure that maximum feasible noise attenuation will be achieved. This plan shall be based on the final design of the project. A third-party peer review, paid for by the project applicant, may be required to assist the City in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project applicant. <u>The criterion for approving the plan shall be a determination that maximum feasible noise attenuation will be achieved.</u> A special inspection deposit is required to ensure compliance with the noise reduction plan. The amount of the deposit shall be determined by the Building Official, and the deposit shall be submitted by the project applicant concurrent with submittal of the noise reduction plan. The noise reduction plan shall include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures shall include as many of the following control strategies as applicable to the site and construction activity:</p> <ul style="list-style-type: none"> <li>a) Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;</li> <li>b) Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;</li> <li>c) Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;</li> </ul>	<p><b>See Project Manual, Section 10.</b> Developer, its Contractor, and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Hire a Certified Acoustical Consultant to prepare a Noise Reduction Plan.</li> <li>• Submit Noise Reduction Plan to City for review and approval.</li> </ul> <p>Developer and/or its Contractor will perform periodic inspections to confirm compliance.</p>	Ongoing throughout demolition, grading, and/or construction.	City/Port		X		X	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>d) Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and</p> <p>e) Monitor the effectiveness of noise attenuation measures by taking noise measurements.</p>								
<p><b>SCA NOI-4: Interior Noise:</b> If necessary to comply with the interior noise requirements of the City of Oakland’s General Plan Noise Element and achieve an acceptable interior noise level, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls), and/or other appropriate features/measures, shall be incorporated into project building design, based upon recommendations of a qualified acoustical engineer and submitted to the Building Services Division for review and approval prior to issuance of building permit. Final recommendations for sound-rated assemblies, and/or other appropriate features/measures, will depend on the specific building designs and layout of buildings on the site and shall be determined during the design phases. Written confirmation by the acoustical consultant, HVAC or HERS specialist, shall be submitted for City review and approval, prior to Certificate of Occupancy (or equivalent) that:</p> <p>a) Quality control was exercised during construction to ensure all air-gaps and penetrations of the building shell are controlled and sealed; and</p> <p>b) Demonstrates compliance with interior noise standards based upon performance testing of a sample unit.</p> <p>c) Inclusion of a Statement of Disclosure Notice in the CC&amp;R’s on the lease or title to all new tenants or owners of the units acknowledging the noise generating activity and the single event noise occurrences. Potential features/measures to reduce interior noise could include, but are not limited to, the following:</p> <p>i) Installation of an alternative form of ventilation in all units identified in the acoustical analysis as not being able to meet the interior noise requirements due to adjacency to a noise generating activity, filtration of ambient make-up air in each unit and analysis of ventilation noise if ventilation is included in the recommendations by the acoustical analysis.</p> <p>ii) Prohibition of Z-duct construction.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p>If applicable, confirm in Project plans:</p> <ul style="list-style-type: none"> <li>Compliance with interior noise requirements of the City’s General Plan Noise Element.</li> </ul>	Prior to issuance of a building permit and Certificate of Occupancy.	City/Port			X	X If applicable	
<p><b>SCA NOI-5: Operational Noise-General:</b> Noise levels from the activity, property, or any mechanical equipment on site shall comply with the performance standards of Section 17.120 of the Oakland Planning Code and Section 8.18 of the Oakland Municipal Code. If noise levels exceed these standards, the activity causing the noise shall be abated until appropriate noise reduction measures have been installed and compliance verified by the Planning and Zoning Division and Building Services.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	Ongoing	City/Port			X		X
<b>PUBLIC SERVICES</b>								
<p><b>SCA PSU-1: Underground Utilities:</b> The project applicant shall submit plans for review and approval by the Building Services Division and the Public Works Agency, and other relevant agencies as appropriate that show all fire alarm conduits and similar facilities placed underground. The new facilities shall be placed underground along the project applicant’s street frontage and from the project applicant’s structures to the point of service. The plans shall show all fire water service and fire alarm facilities installed in accordance with standard specifications of the serving utilities.</p>	<p><b>Actions/schedule TBD by Horizontal Construction/Vertical Construction team.</b></p>	Prior to issuance of a building permit.	City/Port	X	X	X	X	

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>SCA PSU-2: Fire Safety Phasing Plan:</b> The project applicant shall submit a separate fire safety phasing plan to the Planning and Zoning Division and Fire Services Division for their review and approval. The fire safety plan shall include all of the fire safety features incorporated into the project and the schedule for implementation of the features. Fire Services Division may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase.</p>	<p><b>Actions/schedule TBD by Horizontal Construction/Vertical Construction/Lease team.</b></p>	<p>Prior to issuance of a demolition, grading, and/or construction and concurrent with any p-job submittal permit.</p>	<p>City/Port</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p><b>Mitigation 4.9-1:</b> The City and Port shall cooperatively investigate the need for, and if required shall fund on a fair-share basis, development and operation of increased firefighting and medical emergency response services via fireboat to serve the OARB sub-district. The City and Port of Oakland will each contribute a fair share toward cooperatively investigating the need for increased firefighting and emergency response services to serve the redevelopment area west of I-880. This investigation shall include consultation with the OES and OFD. Should this investigation conclude, based on detailed redevelopment design, that increased fireboat services are required, the Port and the City shall each fund its fair share to equip and staff fireboat-based services in the OARB sub-district. In addition, as subsequent redevelopment activities occur, the City and Port shall be allowed to develop fee formulae (to recoup initial investment from future development or tenants), as well as a long-term cost-sharing formula (to equitably distribute the cost of continuing operations). The fire facility will be constructed after basic underground infrastructure is constructed, and before any people-attracting subsequent redevelopment activities begin operations.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b> <b>See Project Manual, Section 12.2.</b> Will be documented in: • Emergency Service Program and Emergency Evacuation Plan</p>	<p>Pre-operations; at time Port and Gateway development area employees exceed 2,044 (1995 baseline)</p>	<p>City/Port</p>					<p>X</p>
<p><b>Mitigation 4.9-2:</b> The Port and City shall work with OES to ensure changes in local area circulation are reflected in the revised Response Concept. The Port and City would provide information to the OES to facilitate that agency's accurate revision of its Response Concept and Annex H. In particular, the City and Port would provide OES information regarding new and proposed project area development, intensification and changes in land uses, realignment of area roadways, and construction of new local circulation facilities.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b> <b>See Project Manual, Section 12.2.</b> Will be documented in: • Emergency Service Program and Emergency Evacuation Plan</p>	<p>Pre-construction</p>	<p>City/Port</p>	<p>X</p>		<p>X</p>		<p>X</p>
<p><b>Mitigation 4.9-3:</b> The Port and City shall require developers within their respective jurisdictions to notify OES of their plans in advance of construction or remediation activities. Each developer proposing construction in the redevelopment project area would be required to notify OES prior to initiation of construction, so that OES may plan emergency access and egress taking into consideration possible conflicts or interference during the construction phase. The developer would also be required to notify OES once construction is complete.</p>	<p>The Developer or its Contractor will: • Notify California Emergency Management Agency (CalEMA, formerly OES) prior to and at the completion of construction.</p>	<p>Pre-construction</p>	<p>City/Port</p>		<p>X</p>		<p>X</p>	
<p><b>TRAFFIC AND TRANSPORTATION</b></p>								
<p><b>Mitigation Measure 3.16-1: 7th Street &amp; I-880 Northbound Off-Ramp (#12)<sup>3</sup>.</b> The project sponsor shall fund, prepare, and install the approved plans and improvements: • Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</p>	<p><b>Actions/schedule TBD by Vertical Construction team.</b></p>	<p>At issuance of first Certificate of Occupancy (CO)</p>	<p>City/Port</p>			<p>X</p>		

<sup>3</sup> The numbers appearing after the location of the intersection listed refer to Figure 3.16-1 in the IS/Addendum that illustrates the study intersections.

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		Schedule	Responsibility					
<ul style="list-style-type: none"> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Engineering Division and Caltrans for review and approval:</p> <ul style="list-style-type: none"> <li>Plans, Specifications, and Estimates (PS&amp;E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction.</li> </ul> <p>Current City Standards call for the elements listed below:</p> <ul style="list-style-type: none"> <li>2070L Type Controller</li> <li>GPS communication (clock)</li> <li>Accessible pedestrian crosswalks according to Federal and State Access Board guidelines</li> <li>City Standard ADA wheelchair ramps</li> <li>Full actuation (video detection, pedestrian push buttons, bicycle detection)</li> <li>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</li> <li>Countdown Pedestrian Signals</li> <li>Signal interconnect and communication to City Traffic Management Center for corridors identified in the City's ITS Master Plan for a maximum of 600 feet</li> <li>Signal timing plans for the signals in the coordination group.</li> </ul>								
<p><b>Mitigation Measure 3.16-2: San Pablo Ave &amp; Ashby Avenue (#42).</b> To implement this measure, the Project Sponsor shall coordinate with City of Berkeley and Caltrans, and shall fund, prepare, and install the improvements consistent with City of Berkeley and/or Caltrans standards.</p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul>	Actions/schedule TBD by Vertical Construction team.	At issuance of first Certificate of Occupancy (CO)	City/Port			X		
<p><b>Mitigation Measure 3.16-3: 7<sup>th</sup> Street &amp; Harrison Street (#18).</b> To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	Actions/schedule TBD by Vertical Construction team.	At issuance of first Certificate of Occupancy (CO)	City/Port			X		
<p><b>Mitigation Measure 3.16-4: 12<sup>th</sup> Street &amp; Castro Street (#29).</b> To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul>	Actions/schedule TBD by Vertical Construction team.	At issuance of first Certificate of Occupancy (CO)	City/Port			X		

**TABLE 1**

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
The project sponsor shall fund, prepare, and install the approved plans and improvements.								
<p><b>SCA TRANS-1: Parking and Transportation Demand Management:</b> The project sponsor shall pay for and submit for review and approval by the City a Transportation Demand Management (TDM) plan containing strategies to:</p> <ol style="list-style-type: none"> <li>1. Reduce the amount of traffic generated by new development and the expansion of existing development, pursuant to the City's police power and necessary in order to protect the public health, safety and welfare.</li> <li>2. Ensure that expected increases in traffic resulting from growth in employment and housing opportunities in the City of Oakland will be adequately mitigated.</li> <li>3. Reduce drive-alone commute trips during peak traffic periods by using a combination of services, incentives, and facilities.</li> <li>4. Promote more efficient use of existing transportation facilities and ensure that new developments are designed in ways to maximize the potential for alternative transportation usage.</li> <li>5. Establish an ongoing monitoring and enforcement program to ensure that the desired alternative mode use percentages are achieved.</li> </ol> <p>The project sponsor shall implement the approved TDM plan. The TDM plan shall include strategies to increase pedestrian, bicycle, transit, and carpool/vanpool use. All four modes of travel shall be considered, and parking management and parking reduction strategies should be included.</p> <p>Actions to consider include the following:</p> <ol style="list-style-type: none"> <li>a) Inclusion of additional long term and short term bicycle parking that meets the design standards set forth in chapter five of the Bicycle Master Plan, and Bicycle Parking Ordinance, and shower and locker facilities in commercial developments that exceed the requirement.</li> <li>b) Construction of and/or access to bikeways per the Bicycle Master Plan; construction of priority bikeways, onsite signage and bike lane striping.</li> <li>c) Installation of safety elements per the Pedestrian Master Plan (such as cross walk striping, curb ramps, count down signals, bulb outs, etc.) to encourage convenient and safe crossing at arterials.</li> <li>d) Installation of amenities such as lighting, street trees, trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan.</li> <li>e) Construction and development of transit stops/shelters, pedestrian access, way finding signage, and lighting around transit stops per transit agency plans or negotiated improvements.</li> <li>f) Direct onsite sales of transit passes purchased and sold at a bulk group rate (through programs such as AC Transit Easy Pass or a similar program through another transit agency).</li> <li>g) Employees or residents can be provided with a subsidy, determined by the project sponsor and subject to review by the City, if the employees or residents use transit or commute by other alternative modes.</li> <li>h) Provision of ongoing contribution to AC Transit service to the area between the development and nearest mass transit station. If that is not available, an ongoing contribution to an existing area shuttle service between the development and nearest mass transit station. The last option is establishment of a new shuttle service between the development and nearest mass transit station may be developed. The contribution required for the service (any option) will be based on the cost of the last option.</li> <li>i) Guaranteed ride home program for employees, either through 511.org or through</li> </ol>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b>  <b>See Project Manual, Sections 3.3 and 12.1.</b>                      Will be documented in:</p> <ul style="list-style-type: none"> <li>• Emission Reduction Program for Operations</li> <li>• Transportation Demand Management Plan</li> </ul>	<p><u>For construction:</u>                      Prior to issuance of first permit related to construction (e.g., demolition, grading, etc.)  <u>For operation:</u>                      Prior to issuance of a final building permit and on-going related to submission of Parking and TDM Plan annual compliance report</p>	City, Port		X If applicable		X	X



**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>separate program.</p> <p>j) Pre-tax commuter benefits (commuter checks) for employees.</p> <p>k) Free designated parking spaces for on-site car-sharing program (such as City Car Share, Zip Car, etc.) and/or car-share membership for employees or tenants.</p> <p>l) On-site carpooling and/or vanpool program that includes preferential (discounted or free) parking for carpools and vanpools.</p> <p>m) Distribution of information concerning alternative transportation options.</p> <p>n) Parking spaces sold/leased separately for residential units. Charge employees for parking, or provide a cash incentive or transit pass alternative to a free parking space in commercial properties.</p> <p>o) Parking management strategies; including attendant/valet parking and shared parking spaces.</p> <p>p) Requiring tenants to provide opportunities and the ability to work off-site.</p> <p>q) Allow employees or residents to adjust their work schedule in order to complete the basic work requirement of five eight-hour workdays by adjusting their schedule to reduce vehicle trips to the worksite.</p> <p>r) Provide or require tenants to provide employees with staggered work hours involving a shift in the set work hours of all employees at the workplace or flexible work hours involving individually determined work hours.</p> <p>The project sponsor shall submit an annual compliance report for review and approval by the City. This report will be reviewed either by City staff (or a peer review consultant, chosen by the City and paid for by the project sponsor). If timely reports are not submitted, the reports indicate a failure to achieve the stated policy goals, or the required alternative mode split is still not achieved, staff will work with the project sponsor to find ways to meet their commitments and achieve trip reduction goals. If the issues cannot be resolved, the matter may be referred to the Planning Commission for resolution. Project sponsors shall be required, as a condition of approval, to reimburse the City for costs incurred in maintaining and enforcing the trip reduction program for the approved project.</p>								
<p><b>Mitigation 4.3-5:</b> Redevelopment elements shall be designed in accordance with standard design practice and shall be subject to review and approval of the City or Port design engineer.</p> <p>Through design review, the City and/or Port, as applicable, shall ensure the design of roadways, bicycle and pedestrian facilities, parking lots, and other transportation features comply with design standards and disallow design proposals that likely to result in traffic hazards. Any mitigation or redevelopment features that may directly affect Caltrans facilities shall be submitted for review by that agency.</p>	<p>Actions/schedule TBD by Horizontal Construction/Vertical Construction/Lease team.</p>	<p>Prior to approval of PUD.</p>	<p>City/Port</p>	<p>X</p>		<p>X</p>		
<p><b>Mitigation 4.3-7:</b> The City and the Port shall continue and shall work together to create a truck management plan designed to reduce the effects of transport trucks on local streets. The City and Port shall fund on a fair share basis, implementation of this plan.</p> <p>The truck management plan may include, and is not limited to, the following elements:</p> <ul style="list-style-type: none"> <li>Analyze truck traffic in West Oakland;</li> <li>Traffic calming strategies on streets not designated as truck routes designed to discourage truck through travel;</li> <li>Truck driver education programs;</li> <li>Expanded signage, including truck prohibitions on streets not designated as truck routes;</li> <li>Traffic signal timing improvements;</li> <li>Explore the feasibility of truck access to Frontage Road;</li> </ul>	<p>Actions/schedule TBD by Vertical Construction/Lease team. See Project Manual, Sections 3.3 and 12.1. Will be documented in:</p> <ul style="list-style-type: none"> <li>Emission Reduction Program for Operations</li> <li>Transportation Demand Management Plan</li> </ul>	<p>Prior to issuance of a final building permit.</p>	<p>City/Port</p>					<p>X</p>

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<ul style="list-style-type: none"> <li>Roadway and terminal gate design elements to prevent truck queues from impeding the flow of traffic on public streets; and</li> <li>Continue Port funding of two police officers to enforce truck traffic prohibitions on local streets.</li> </ul>								
<p><b>Mitigation 4.3-8:</b> Provide an emergency service program and emergency evacuation plan using waterborne vessels.</p> <p>The City shall provide emergency access to the OARB sub-district by vessel. The area is currently served by fire boat out of the Jack London Square Fire Station. The City may elect to equip that fire boat with first response medical emergency personnel as well as limited hazardous materials response personnel and equipment (see also Mitigation Measure 4.9-1). Major developers shall fund these improvements on a fair share basis.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p><b>See Project Manual, Section 12.2.</b></p> <p>Will be documented in:</p> <ul style="list-style-type: none"> <li>Emergency Service Program and Emergency Evacuation Plan</li> </ul>	Pre-operations; at time Port and Gateway development area employees exceed 2,044 (1995 baseline).	City/Port					X
<p><b>With regard to Maritime Street between 7<sup>th</sup> Street and West Grand Avenue:</b></p> <p><b>Mitigation Measure 3.16-5:</b> The City shall provide a shoulder with a minimum width of 8 feet on the west side of Maritime Street to accommodate queuing trucks and minimize intrusion onto the southbound travel lane.</p> <p><b>Mitigation Measure 3.16-6:</b> The City shall provide a 9-foot wide area along the entire west side of Maritime Street in this area to accommodate a sidewalk and utilities; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.</p> <p><b>Mitigation Measure 3.16-7:</b> The City shall provide an 18-foot wide area along the entire east side of Maritime Street in this area to accommodate a Class 1 bicycle path and utilities; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.</p>	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				
<p><b>With regard to North Maritime (formerly Wake Avenue):</b></p> <p><b>Mitigation Measure 3.16-8:</b> The City shall provide 2 travel lanes in each direction in this area with shoulders on each side for bicycle lanes. The exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.</p>	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				
<p><b>With regard to Burma Road between Maritime Street and West Oakland (Burma East):</b></p> <p><b>Mitigation Measure 3.16-9:</b> The City shall provide a 9-foot wide area along the entire north side of Burma Street in this area to accommodate utilities and a sidewalk; bicycles will be accommodated on the shoulder; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.</p>	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				
<p><b>Mitigation Measure 3.16-10:</b> The City shall provide a 7-foot wide area along the entire south side of Burma Street in this area to accommodate utilities; bicycles will be accommodated on the shoulder; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.</p>	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				
<p><b>With regard to Burma Road between Maritime Street and Railroad Tracks (Burma West):</b></p> <p><b>Mitigation Measure 3.16-11:</b> The City shall provide a 9-foot wide area along the entire south side of Burma Street in this area to accommodate utilities and a sidewalk; bicycles will be accommodated on the shoulder; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.</p> <p><b>Mitigation Measure 3.16-12:</b> The City shall provide a 20-foot wide area along the entire north side of Burma Street in this area to accommodate utilities and a Class 1 bicycle path; exact dimensions of these elements will be determined by the City's</p>	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
Transportation and Infrastructure Divisions during the PUD process.								
<b>With regard to Burma Road between Railroad Tracks and Gateway Park (Burma Far West):</b> <b>Mitigation Measure 3.16-13:</b> The City shall provide an 8-foot wide area along the entire south side of Burma Street in this area to accommodate utilities and a sidewalk; bicycles will be accommodated on the shoulder with a Class 2 bicycle lane; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				
<b>Mitigation Measure 3.16-14:</b> The City shall provide a shoulder along the entire north side of Burma Street in this area to accommodate bicycles with a Class 2 bicycle lane; exact dimensions of these elements will be determined by the City's Transportation and Infrastructure Divisions during the PUD process.	Actions/schedule TBD by the City.	Prior to approval of the PUD.	City/Port	X City				
<b>With regard to Emergency Access:</b> <b>Mitigation Measure 3.16-15a:</b> The Project Sponsor shall develop, in consultation and coordination with adjacent property owners, including EBMUD, an emergency response plan for the 2012 Army Base Project, which addresses emergency ingress/egress. <b>Mitigation Measure 3.16-15b:</b> The Project Sponsor shall include in the design of West Burma Road turn-outs and turn-arounds at the appropriate locations and dimensions as required by the Fire Department, in order to allow for appropriate ingress and egress of emergency vehicles.	<b>Actions/schedule TBD by Vertical Construction/Lease team.</b> <b>See Project Manual, Section 12.2.</b> Will be documented in: • Emergency Service Program and Emergency Evacuation Plan	For MM 3.15-15a: at the time of issuance of the first Certificate of Occupancy (CO); For MM 3.15-15b: prior to approval of the PUD.	City/Port	X If applicable		X		
<b>SCA TRANS-3: Railroad Crossings:</b> Any proposed new or relocated railroad crossing improvements must be coordinated with California Public Utility Commission (CPUC) and affected railroads and all necessary permits/approvals obtained, including a GO 88-B Request (Authorization to Alter Highway Rail Crossings), if applicable. Appropriate safety-related design features and measures should be incorporated, including without limitation: a) Installation of grade separations at crossings, i.e., physically separating roads and railroad tracks by constructing overpasses or underpasses. b) Improvements to warning devices at existing highway rail crossings that are impacted by project traffic. c) Installation of additional warning signage. d) Improvements to traffic signaling at intersections adjacent to crossings, e.g., signal preemption. e) Installation of median separation to prevent vehicles from driving around railroad crossing gates. f) Where soundwalls, landscaping, buildings, etc. would be installed near crossings, maintaining the visibility of warning devices and approaching trains. g) Prohibition of parking within 100 feet of the crossings to improve the visibility of warning devices and approaching trains. h) Construction of pull-out lanes for buses and vehicles transporting hazardous materials. i) Installation of vandal-resistant fencing or walls to limit the access of pedestrians onto the railroad right-of-way. j) Elimination of driveways near crossings. k) Increased enforcement of traffic laws at crossings. l) Rail safety awareness programs to educate the public about the hazards of highway-rail grade crossings.	<b>Actions/schedule TBD by Horizontal Construction/Vertical Construction/Lease team.</b>	Action required prior to railroad crossing construction.	City/Port	X		X	X	
<b>Mitigation Measure 3.16-16:</b>	<b>Actions/schedule TBD by Horizontal Construction team.</b>	At the time of	City/Port	X				

**TABLE 1**

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>a. Redesign the Engineers Road to intersect the EBMUD driveway at least 100 feet north of the at-grade rail crossing or configure an internal circulation plan that prohibits turns from Engineers Road onto Wake Avenue.</p> <p>b. Provide a high visibility crosswalk with pedestrian crossing signs at the pedestrian crossing just west of the rail crossing on West Burma Road.</p> <p>c. Paint “KEEP CLEAR” on West Burma Road for westbound vehicles at the Truck Services driveway.</p> <p>d. Unless approved otherwise by the California Public Utility Commission (CPUC), construct all rail crossings at a minimum street-crossing angle of 45 degrees consistent with Institute of Transportation Engineers recommendations, 90 degrees is preferred for cross-traffic safety.</p>		issuance of the first Certificate of Occupancy (CO).		If applicable				
<p><b>Mitigation 4.3-9:</b> Redevelopment plans shall conform to City of Oakland or Port development standards with facilities that support transportation alternatives to the single-occupant automobile. Facilities that support transportation alternatives to the single-occupant automobile may include, and are not limited to, bus turnouts, bicycle racks, on-site showers, on-site lockers, and pedestrian and bicycle ways.</p>	<p><b>Actions/schedule TBD by Horizontal Construction/Vertical Construction/Lease team.</b></p>	Prior to issuance of first permit related to construction (e.g., demolition, grading, etc.).	City/Port	X		X		
<p><b>SCA TRANS-2: Construction Traffic and Parking:</b> The project sponsor and construction contractor shall meet with appropriate City of Oakland agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project (see also SCA TRANS-1, especially “h”) and other nearby projects that could be simultaneously under construction. The project sponsor shall develop a construction management plan. The plan shall be submitted to EBMUD, the Port, and Caltrans for their review and comment ten (10) business days before submittal to the City. The project sponsor shall consider in good faith such comments and revise the plan as appropriate. The revised plan shall be submitted for review and approval by the City’s Planning and Zoning Division, the Building Services Division, and the Transportation Services Division. The plan shall include at least the following items and requirements:</p> <p>a) A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes.</p> <p>b) Notification procedures for adjacent project sponsors and public safety personnel regarding when major deliveries, detours, and lane closures will occur.</p> <p>c) Location of construction staging areas for materials, equipment, and vehicles at an approved location.</p> <p>d) A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. The manager shall determine the cause of the complaints and shall take prompt action to correct the problem. Planning and Zoning shall be informed who the Manager is prior to the issuance of the first permit issued by Building Services.</p> <p>e) Provision for accommodation of pedestrian flow.</p> <p>f) Provision for parking management and spaces for all construction workers to ensure that construction workers do not park in on-street spaces (see also SCA TRANS-1, especially “h”).</p> <p>g) Any damage to the street caused by heavy equipment, or as a result of this construction, shall be repaired, at the applicant’s expense, within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to issuance of a final</p>	<p><b>See Project Manual, Section 3.1.4.1.</b></p> <p>The Developer, its Contractor, or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare a Traffic Control Plan. Provide Traffic Control Plan to EBMUD, the Port, and CalTrans for review and comment no less than 10 days prior to submittal to the City. Incorporate comments and revise plan as appropriate.</li> <li>• Submit the Traffic Control Plan to the City for review and approval.</li> <li>• Schedule major truck trips and deliveries to avoid peak traffic hours.</li> <li>• Designate construction access routes, construction staging areas, remediation staging areas, construction and visitor parking areas, and pedestrian walkways. Delineate these areas on Project plans.</li> <li>• Notify adjacent property owners and occupants and public safety personnel and erect electronic message boards in advance of major deliveries, detours, and/or lane closures.</li> <li>• Survey and document existing conditions prior to construction. Repair damage to streets caused by construction equipment within one week of occurrence unless damage is anticipated to continue. Immediately repair damage that is a threat to public health or safety.</li> <li>• Transport heavy equipment to the site by truck/trailer.</li> <li>• Require all operators tracking dirt/mud onto public roadways to have a wet power vacuum sweeper present daily during these activities and remove tracked dirt/mud at the end of each day or more frequently if needed.</li> <li>• Install construction area entrances at all ingress and egress sites to ensure dirt is kept off of public roads.</li> <li>• Draft and implement a Project SWPPP. Required BMPs will be outlined in the SWPPP and enforced with reporting and inspection.</li> <li>• Inspect construction area and vicinity daily, and collect and properly dispose of construction-related litter, whether located on the property, within the public rights-of-way, or adjacent properties.</li> <li>• Post signage and enforce traffic control measures with reporting and/or inspection.</li> <li>• Develop a process for receiving, responding to, and tracking complaints.</li> <li>• Assign a Compliance Manager to monitor and facilitate the implementation of</li> </ul>	Prior to the issuance of a demolition, grading or building permit; and ongoing throughout demolition, grading, and/or construction	City, Port		X		X	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>inspection of the building permit. All damage that is a threat to public health or safety shall be repaired immediately. The street shall be restored to its condition prior to the new construction as established by the City Building Inspector and/or photo documentation, at the applicant's expense, before the issuance of a Certificate of Occupancy.</p> <p>h) Any heavy equipment brought to the construction site shall be transported by truck, where feasible.</p> <p>i) No materials or equipment shall be stored on the traveled roadway at any time.</p> <p>j) Prior to construction, a portable toilet facility and a debris box shall be installed on the site, and properly maintained through project completion.</p> <p>k) All equipment shall be equipped with mufflers.</p> <p>l) Prior to the end of each work day during construction, the contractor or contractors shall pick up and properly dispose of all litter resulting from or related to the project, whether located on the property, within the public rights-of-way, or properties of adjacent or nearby neighbors.</p> <p>Specifically, to further implement SCA TRANS-2, a traffic construction management analysis was performed which recommended certain improvements to the Adeline/5<sup>th</sup> and Adeline/3<sup>rd</sup> Street and Adeline Street intersection, which is discussed under construction impacts of the Traffic and Transportation section of the 2012 OARB Initial Study/Addendum.</p>	<p>mitigation measures. The Contractor will maintain Daily Inspection Logs throughout the Project.</p> <ul style="list-style-type: none"> <li>•All equipment will be equipped with mufflers to reduce pollutants and noise. Developer, its Contractor, and/or its consultant will perform periodic inspections to confirm compliance.</li> </ul>							
<p><b>Mitigation 4.3-13:</b> Prior to commencing hazardous materials or hazardous waste remediation, demolition, or construction activities, a Traffic Control Plan (TCP) shall be implemented to control peak hours trips to the extent feasible, assure the safety on the street system and assure that transportation activities are protective of human health, safety, and the environment.</p> <p>Construction and remediation TCPs shall be designed and implemented to reduce to the maximum feasible extent traffic and safety impacts to regional and local roadways. The TCP shall address items including but not limited to: truck routes, street closures, parking for workers and staff, access to the project area and land closures or parking restrictions that may require coordination with and/or approval by the City, the Port and/or Caltrans. The TCP shall be submitted to the City Traffic Engineering and Planning divisions or the Port, as appropriate, for review and approval prior to the issuance of any building, demolition or grading permits. The City and the Port shall coordinate their respective approvals to maximize the effectiveness of the TCP measures. DTSC would have ongoing authority under its Remedial Action Plan/Remedial Monitoring Plan oversight and the Hazardous Substances Account Act to regulate remediation transportation activities, which must be protective of human health, safety and the environment.</p> <p>Remediation and demolition/construction traffic shall be restricted to designated truck routes within the City, and the TCP shall include a signage program for all truck routes serving the site during remediation or demolition/construction. A signage program details the location and type of truck route signs that would be installed during remediation and demolition/construction to direct trucks to and from the project area. Truck access points for entry and exit should be included in the TCP. In addition, as determined by City of Port staff, the developer shall be responsible for repairing any damage to the pavement that is caused by remediation or demolition/construction vehicles for restoring pavement to pre-construction conditions.</p> <p>Remediation and demolition/construction-related trips will be restricted to daytime hours, unless expressly permitted by the City or the Port, and to the extent feasible, trips will be minimized during the a.m. and p.m. peak hours.</p>	<p><b>See Project Manual, Section 3.1.4.1.</b></p> <p>The Developer, its Contractor, or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare a Traffic Control Plan. Provide Traffic Control Plan to EBMUD, the Port, and CalTrans for review and comment no less than 10 days prior to submittal to the City. Incorporate comments and revise plan as appropriate.</li> <li>• Submit the Traffic Control Plan to the City for review and approval.</li> <li>• Schedule major truck trips and deliveries to avoid peak traffic hours.</li> <li>• Designate construction access routes, construction staging areas, remediation staging areas, construction and visitor parking areas, and pedestrian walkways. Delineate these areas on Project plans. Provide a shuttle to transfer workers from a satellite parking area if there is parking within walking distance to the construction site.</li> <li>• Notify adjacent property owners and occupants and public safety personnel and erect electronic message boards in advance of major deliveries, detours, and/or lane closures.</li> <li>• Survey and document existing conditions prior to construction. Repair damage to streets caused by construction equipment within one week of occurrence unless damage is anticipated to continue. Immediately repair damage that is a threat to public health or safety.</li> <li>• Draft and implement a Dust Control Plan and Project SWPPP. Required BMPs will be outlined in the SWPPP and enforced with reporting and inspection.</li> <li>• Post signage and enforce traffic control measures with reporting and/or inspection.</li> <li>• Assign a Compliance Manager to monitor and facilitate the implementation of mitigation measures. The Contractor will maintain Daily Inspection Logs throughout the Project.</li> </ul> <p>Developer, its Contractor, and/or its consultant will perform periodic inspections to confirm compliance.</p>	<p>Prior to issuance of first permit related to construction (e.g., demolition, grading, etc.)</p>	<p>City, Port</p>		<p>X</p>		<p>X</p>	

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		Schedule	Responsibility					
<p>The TCP shall identify locations for construction/remediation staging. Remediation staging areas are anticipated to be located near construction areas, since remediation will be largely coordinated with redevelopment. In addition, the TCP shall identify and provide off-street parking for remediation and demolition/construction staff to the extent possible throughout all phases of redevelopment. If there is insufficient parking available within walking distance of the site for workers, the developer shall provide a shuttle bus or other appropriate system to transfer workers between the satellite parking areas and remediation or demolition/construction site.</p> <p>The TCP shall also include measures to control dust, requirements to cover all loads to control odors, and provisions for emergency response procedures, health and safety driver education, and accident notification.</p>								
<p><b>Mitigation Measure 3.16-17: West Grand Avenue &amp; I-880 Frontage Road (#2).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>At the time of issuance of the first Certificate of Occupancy (CO)</p>	<p>City/Port</p>			<p>X</p>		
<p><b>Mitigation Measure 3.16-18: San Pablo Ave &amp; Ashby Ave (#42).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall coordinate with the City of Berkeley and Caltrans, and shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>At the time of issuance of the first Certificate of Occupancy (CO)</p>	<p>City/Port</p>			<p>X</p>		
<p><b>Mitigation Measure 3.16-19: West Grand Avenue &amp; Maritime Street (#1).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this intersection may be required by Year 2028. Investigation of the need for this mitigation shall be studied in 2028 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	<p>City/Port</p>					<p>X</p>
<p><b>Mitigation Measure 3.16-20: 7th Street &amp; Union Street (#15).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour.</li> </ul>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this intersection may be required by</p>	<p>City/Port</p>					<p>X</p>

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<ul style="list-style-type: none"> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>		Year 2032. Investigation of the need for this mitigation shall be studied in 2032 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.						
<p><b>Mitigation Measure 3.16-21: West Grand Avenue &amp; Northgate Avenue (#8).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	Actions/schedule TBD by Vertical Construction/Lease team.	Mitigation at this intersection may be required by Year 2030. Investigation of the need for this mitigation shall be studied in 2030 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.	City/Port					X
<p><b>Mitigation Measure 3.16-22: 5th Street &amp; Union Street / I-880 North Ramps (#21).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., increase the traffic signal cycle length to 100 seconds and adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	Actions/schedule TBD by Vertical Construction/Lease team.	Mitigation at this intersection may be required by Year 2022. Investigation of the need for this mitigation shall be studied in 2022 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.	City/Port					X
<p><b>Mitigation Measure 3.16-23: MacArthur Boulevard &amp; Market Street (#33).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection</li> </ul>	Actions/schedule TBD by Vertical Construction/Lease team.	Mitigation at this intersection may	City/Port					X

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p>approach) for the AM peak hour.</p> <ul style="list-style-type: none"> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>		<p>be required by Year 2032.</p> <p>Investigation of the need for this mitigation shall be studied in 2032 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>						
<p><b>Mitigation Measure 3.16- 24: West Grand Avenue &amp; I-880 Frontage Road (#2).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., increase the traffic signal cycle length and adjust the allocation of green time for each intersection approach) for the AM and PM peak hours.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this intersection may be required by Year 2021.</p> <p>Investigation of the need for this mitigation shall be studied in 2021 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	City/Port					X
<p><b>Mitigation Measure 3.16- 25: West Grand Avenue &amp; Adeline Street (#4).</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., increase the traffic signal cycle length to 90 seconds and adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this intersection may be required by Year 2032.</p> <p>Investigation of the need for this mitigation shall be studied in 2032 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	City/Port					X
<p><b>Mitigation Measure 3.16- 26: West Grand Avenue &amp; Market Street (#5)</b></p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this</p>	City/Port					X



**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<ul style="list-style-type: none"> <li>Provide split phasing for northbound and southbound movements.</li> <li>Optimize signal timing (i.e., increase the traffic signal cycle length to 120 seconds and adjust the allocation of green time for each intersection approach) for both the AM and PM peak hours.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>		intersection may be required by Year 2022. Investigation of the need for this mitigation shall be studied in 2022 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.						
<p><b>Mitigation Measure 3.16- 27: West Grand Avenue &amp; San Pablo Avenue (#6)</b></p> <ul style="list-style-type: none"> <li>Remove approximately seven (7) parking spaces on the south side of West Grand Avenue; add an eastbound through lane between San Pablo Avenue and Martin Luther King Jr. Way; and convert the eastbound right turn lane to a through-right combination lane.</li> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	Actions/schedule TBD by Vertical Construction/Lease team.	Mitigation at this intersection may be required by Year 2026. Investigation of the need for this mitigation shall be studied in 2026 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.	City/Port					X
<p><b>Mitigation Measure 3.16- 28: West Grand Avenue &amp; Harrison Street (#9)</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	Actions/schedule TBD by Vertical Construction/Lease team.	Mitigation at this intersection may be required by Year 2025. Investigation of the need for this mitigation shall be studied in 2025 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.	City/Port					X

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>Mitigation Measure 3.16- 29: 7th Street &amp; Harrison Street (#18)</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., increase the traffic signal cycle length to 80 seconds and adjust the allocation of green time for each intersection approach) for the PM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p>Actions/schedule TBD by Vertical Construction/Lease team.</p>	<p>Mitigation at this intersection may be required at the time of Project construction. Investigation of the need for this mitigation shall be studied at the time of construction and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	<p>City/Port</p>	<p>X</p>		<p>X</p>		<p>X</p>
<p><b>Mitigation Measure 3.16- 30: 6th Street &amp; Jackson Street (#20)</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., increase the traffic signal cycle length to 80 seconds and adjust the allocation of green time for each intersection approach) for the AM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p>Actions/schedule TBD by Vertical Construction/Lease team.</p>	<p>Mitigation at this intersection may be required by Year 2025. Investigation of the need for this mitigation shall be studied in 2025 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	<p>City/Port</p>					<p>X</p>
<p><b>Mitigation Measure 3.16- 31: 12th Street &amp; Brush Street (#28)</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., increase the traffic signal cycle length to 120 seconds and adjust the allocation of green time for each intersection approach) for the AM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City's standards to City of Oakland's Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p>Actions/schedule TBD by Vertical Construction/Lease team.</p>	<p>Mitigation at this intersection may be required by Year 2023. Investigation of the need for this mitigation shall be studied in 2023 and every three years thereafter until 2035 or until the</p>	<p>City/Port</p>					<p>X</p>

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
		mitigation measure is implemented, whichever occurs first.						
<p><b>Mitigation Measure 3.16- 32: Powell Street &amp; Hollis Street (#37)</b></p> <ul style="list-style-type: none"> <li>Provide protected plus permitted traffic signal phasing for the northbound and southbound Hollis Street movements.</li> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for both the AM and PM peak hours.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City’s standards to City of Emeryville’s Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this intersection may be required by Year 2028. Investigation of the need for this mitigation shall be studied in 2028 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	<p>City/Port</p>					<p>X</p>
<p><b>Mitigation Measure 3.16- 33: Powell Street/Stanford Avenue &amp; San Pablo Avenue (#38)</b></p> <ul style="list-style-type: none"> <li>Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour.</li> <li>Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group.</li> </ul> <p>To implement this measure, the project sponsor shall submit plans specifications and estimates (PS&amp;E) as detailed in Mitigation Measure 3.16-1 that are consistent with the City’s standards to City of Oakland’s Transportation Engineering Division for review and approval.</p> <p>The project sponsor shall fund, prepare, and install the approved plans and improvements.</p>	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p>	<p>Mitigation at this intersection may be required by Year 2021. Investigation of the need for this mitigation shall be studied in 2021 and every three years thereafter until 2035 or until the mitigation measure is implemented, whichever occurs first.</p>	<p>City/Port</p>					<p>X</p>
<b>UTILITIES</b>								
<p><b>SCA UTL-3: Underground Utilities:</b> The project applicant shall submit plans for review and approval by the Building Services Division and the Public Works Agency, and other relevant agencies as appropriate, that show all new electric and telephone facilities; fire alarm conduits; street light wiring; and other wiring, conduits, and similar facilities placed underground. The new facilities shall be placed underground along the project applicant’s street frontage and from the project applicant’s structures to the point of service. The plans shall show all electric, telephone, water service, fire water service, cable, and fire alarm facilities installed in accordance with standard specifications of the serving utilities.</p>	<p><b>Actions/schedule TBD by Horizontal Construction team.</b></p>	<p>Prior to issuance of a building permit.</p>	<p>City/Port</p>		<p>X</p>		<p>X</p>	

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>SCA UTL-5: Improvements in the Public Right-of Way (Specific):</b> Final building and public improvement plans submitted to the Building Services Division shall include the following components: Examples include:</p> <p>a) Install additional standard City of Oakland streetlights.</p> <p>b) Remove and replace any existing driveway that will not be used for access to the property with new concrete sidewalk, curb and gutter.</p> <p>c) Reconstruct drainage facility to current City standard.</p> <p>d) Provide separation between sanitary sewer and water lines to comply with current City of Oakland and Alameda Health Department standards.</p> <p>e) Construct wheelchair ramps that comply with Americans with Disability Act requirements and current City Standards.</p> <p>f) Remove and replace deficient concrete sidewalk, curb and gutter within property frontage.</p> <p>g) Provide adequate fire department access and water supply, including, but not limited to currently adopted fire codes and standards.</p>	<p><b>Actions/schedule TBD by Horizontal Construction team.</b></p>	Approved prior to the issuance of a grading or building permit.	City/Port	X		X		
<p><b>SCA UTL-6: Payment for Public Improvements:</b> The project applicant shall pay for and install public improvements made necessary by the project including damage caused by construction activity.</p>	<p><b>Actions/schedule TBD by Horizontal Construction team.</b>  <b>See Project Manual, Section 3.1.4.1.</b>                      The Developer, its Contractor, or its consultant will:</p> <ul style="list-style-type: none"> <li>• Survey and document existing conditions prior to construction. Repair damage to streets caused by construction equipment within one week of occurrence unless damage is anticipated to continue. Immediately repair damage that is a threat to public health or safety.</li> </ul>	Prior to issuance of a final inspection of the building permit.	City/Port		X		X	
<p><b>Mitigation 4.9-4:</b> Individual actions with landscaping requirements of one or more acres shall plumb landscape areas for irrigation with recycled water. As subsequent redevelopment activities are designed, the City and Port would require that activities of a certain magnitude shall include a reclaimed landscaping irrigation system. The City and Port would make this a condition of approval for private actions that require such approval, and would include reclaimed landscape water systems in the design of their own public projects.</p>	<p><b>Actions/schedule TBD by Horizontal Construction team.</b></p>	Prior to issuance of a building permit or other construction-related permit.	City/Port	X If applicable			X	
<p><b>Mitigation 4.9-5:</b> Individual buildings with gross floor area exceeding 10,000 square feet shall install dual plumbing for both potable and recycled water, unless determined to be infeasible by the approving agency (City or Port). Any major subsequent redevelopment activity that includes total usable floor area within or more building of 10,000 square feet or more would be required to provide a dual plumbing system—one for potable water, and one for reclaimed water. Reclaimed water may be used for certain industrial uses, and for landscape irrigation, toilet flushing, and other appropriate purposes.</p>	<p><b>Actions/schedule TBD by Horizontal Construction team.</b></p>	Prior to issuance of a building permit or other construction-related permit.	City/Port			X		
<p><b>Mitigation 4.9-6:</b> Site design shall facilitate use of recycled water, and shall comply with requirements of CCR Title 22 regarding prohibitions of site run-off to surface waters. When subsequent redevelopment activities are required to include reclaimed water in their design, the City and Port would ensure that requirements of Title 22 intended to protect the environment are reflected in that design, including prohibitions against run-off to surface waters. The City, Port, and proponents of subsequent redevelopment activities should coordinate these efforts with the reclaimed water supplier, EBMUD.</p>	<p><b>Actions/schedule TBD by Horizontal Construction team.</b></p>	Prior to issuance of a building permit or other construction-related permit.	City/Port	X		X		

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>SCA UTL-1a: Compliance with the Green Building Ordinance, OMC Chapter 18.02: Prior to issuance of a demolition, grading, or building permit</b></p> <p>The applicant shall comply with the requirements of the California Green Building Standards (CALGreen) mandatory measures and the applicable requirements of the Green Building Ordinance, OMC Chapter 18.02.</p> <p>a) The following information shall be submitted to the Building Services Division for review and approval with the application for a building permit:</p> <ul style="list-style-type: none"> <li>i. Documentation showing compliance with Title 24 of the 2008 California Building Energy Efficiency Standards.</li> <li>ii. Completed copy of the final green building checklist approved during the review of the Planning and Zoning permit.</li> <li>iii. Copy of the Unreasonable Hardship Exemption, if granted, during the review of the Planning and Zoning permit.</li> <li>iv. Permit plans that show, in general notes, detailed design drawings, and specifications as necessary, compliance with the items listed in subsection (b) below.</li> <li>v. Copy of the signed statement by the Green Building Certifier approved during the review of the Planning and Zoning permit that the project complied with the requirements of the Green Building Ordinance.</li> <li>vi. Signed statement by the Green Building Certifier that the project still complies with the requirements of the Green Building Ordinance, unless an Unreasonable Hardship Exemption was granted during the review of the Planning and Zoning permit.</li> <li>vii. Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance.</li> </ul> <p>b) The set of plans in subsection (a) shall demonstrate compliance with the following:</p> <ul style="list-style-type: none"> <li>i. CALGreen mandatory measures.</li> <li>ii. All pre-requisites per the LEED / GreenPoint Rated checklist approved during the review of the Planning and Zoning permit, or, if applicable, all the green building measures approved as part of the Unreasonable Hardship Exemption granted during the review of the Planning and Zoning permit.</li> <li>iii. Insert green building point level/certification requirement: (See Green Building Summary Table) per the appropriate checklist approved during the Planning entitlement process.</li> <li>iv. All green building points identified on the checklist approved during review of the Planning and Zoning permit, unless a Request for Revision Plan-check application is submitted and approved by the Planning and Zoning Division that shows the previously approved points that will be eliminated or substituted.</li> <li>v. The required green building point minimums in the appropriate credit categories.</li> </ul> <p><b>During construction</b></p> <p>The applicant shall comply with the applicable requirements CALGreen and the Green Building Ordinance, Chapter 18.02.</p> <p>a) The following information shall be submitted to the Building Inspections Division of the Building Services Division for review and approval:</p> <ul style="list-style-type: none"> <li>i. Completed copies of the green building checklists approved during the review of the Planning and Zoning permit and during the review of the building permit.</li> </ul>	<p>Actions/schedule TBD by Vertical Construction/Lease team.</p>	<p>Prior to issuance of a demolition, grading, or building permit; or during construction or after construction as specified in SCA UTL-1a or UTL-1b.</p>	<p>City/Port</p>			<p>X</p>		

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
ii. Signed statement(s) by the Green Building Certifier during all relevant phases of construction that the project complies with the requirements of the Green Building Ordinance. iii. Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance. <b>After construction, as specified below</b> Within sixty (60) days of the final inspection of the building permit for the project, the Green Building Certifier shall submit the appropriate documentation to Build It Green/Green Building Certification Institute and attain the minimum certification/point level identified in subsection (a) above. Within one year of the final inspection of the building permit for the project, the applicant shall submit to the Planning and Zoning Division the Certificate from the organization listed above demonstrating certification and compliance with the minimum point/certification level noted above.								
<b>SCA UTL-1b: Compliance with the Green Building Ordinance, OMC Chapter 18.02, for Building and Landscape Projects Using the StopWaste.Org Small Commercial or Bay Friendly Basic Landscape Checklist</b> <b>Prior to issuance of a building permit</b> The applicant shall comply with the requirements of the California Green Building Standards (CALGreen) mandatory measures and the applicable requirements of the Green Building Ordinance, (OMC Chapter 18.02.) for projects using the StopWaste.Org Small Commercial or Bay Friendly Basic Landscape Checklist. a) The following information shall be submitted to the Building Services Division for review and approval with application for a Building permit: i. Documentation showing compliance with the 2008 Title 24, California Building Energy Efficiency Standards. ii. Completed copy of the green building checklist approved during the review of a Planning and Zoning permit. iii. Permit plans that show in general notes, detailed design drawings and specifications as necessary compliance with the items listed in subsection (b) below. iv. Other documentation to prove compliance. b) The set of plans in subsection (a) shall demonstrate compliance with the following: i. CALGreen mandatory measures. ii. All applicable green building measures identified on the StopWaste.Org checklist approved during the review of a Planning and Zoning permit, or submittal of a Request for Revision Plan-check application that shows the previously approved points that will be eliminated or substituted. <b>During construction</b> The applicant shall comply with the applicable requirements of CALGreen and Green Building Ordinance, Chapter 18.02 for projects using the StopWaste.Org Small Commercial or Bay Friendly Basic Landscape Checklist. a) The following information shall be submitted to the Building Inspections Division for review and approval: i. Completed copy of the green building checklists approved during review of the Planning and Zoning permit and during the review of the Building permit. ii. Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance.	<b>Actions/schedule TBD by Horizontal Construction/Vertical Construction/Lease team.</b> <b>See Project Manual, Section 4.2.</b> The Developer, its Contractor, or its consultant will: • Prepare a Landscape Plan incorporating the StopWaste.Org Small Commercial or Bay Friendly Basic Landscape Checklist.	Prior to issuance of a demolition, grading, or building permit; or during construction or after construction as specified in SCA UTL-1a or UTL-1b.	City/Port	X	X	X	X	

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Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/Monitoring		Design & Pre-Construction (horizontal)	Construction (horizontal)	Design & Pre-Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<p><b>SCA UTL-2: Waste Reduction and Recycling:</b> The project applicant will submit a Construction &amp; Demolition Waste Reduction and Recycling Plan (WRRP) and an Operational Diversion Plan (ODP) for review and approval by the Public Works Agency. <b>Prior to issuance of demolition, grading, or building permit</b></p> <p>Chapter 15.34 of the Oakland Municipal Code outlines requirements for reducing waste and optimizing construction and demolition (C&amp;D) recycling. Affected projects include all new construction, renovations/alterations/modifications with construction values of \$50,000 or more (except R-3), and all demolition (including soft demo). The WRRP must specify the methods by which the development will divert C&amp;D debris waste generated by the proposed project from landfill disposal in accordance with current City requirements. Current standards, FAQs, and forms are available at <a href="http://www2.oaklandnet.com/Government/o/PWA/o/FE/s/GAR/OAK024368">http://www2.oaklandnet.com/Government/o/PWA/o/FE/s/GAR/OAK024368</a> or in the Green Building Resource Center. After approval of the plan, the project applicant shall implement the plan.</p> <p><b>Ongoing</b></p> <p>The ODP will identify how the project complies with the Recycling Space Allocation Ordinance, (Chapter 17.118 of the Oakland Municipal Code), including capacity calculations, and specify the methods by which the development will meet the current diversion of solid waste generated by operation of the proposed project from landfill disposal in accordance with current City requirements. The proposed program shall be implemented and maintained for the duration of the proposed activity or facility. Changes to the plan may be re-submitted to the Environmental Services Division of the Public Works Agency for review and approval. Any incentive programs shall remain fully operational as long as residents and businesses exist at the project site.</p>	<p><b>See Project Manual, Section 13.1.</b> The Developer, its Contractor, or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare a Waste Reduction and Recycling Plan. Submit the plan to the City for review and approval.</li> <li>• Identify and track all waste for applicability of reuse or diversion.</li> </ul> <p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b></p> <p><b>See Project Manual, Section 13.2.</b> Will be documented in:</p> <ul style="list-style-type: none"> <li>• Operational Diversion Plan</li> </ul> <p><b>See Project Manual, Section 13.3.</b> Developer and/or its Contractor will confirm compliance with Deconstruction Program and the City's Recycling Space Allocation Ordinance.</p>	Prior to issuance of demolition, grading, or building permit; or ongoing as specified in SCA UTL-2.	City/Port		X		X	X
<p><b>Mitigation: 4.9-7:</b> To the maximum extent feasible, the City and Port shall jointly participate in a deconstruction program to capture materials and recycle them into the construction market.</p> <p>Substantial quantities of construction debris would be generated by the removal of structures at the OARB, in both the Gateway and Port development areas. Some of the buildings span both development areas, and coordination between the Port and City is critical in reducing the amount of solid waste disposal that occurs in this sub-district. The City and Port would jointly plan, implement, and operate a program whereby buildings would be deconstructed, rather than demolished, and the resulting material would be recycled to the construction market as practicable. Material for recycling may include, and is not limited to, timbers and siding, ceramic fixtures, metal, and copper wiring. The City and Port may elect to partner with local job-training bridge programs to provide construction training opportunities to Oakland residents through their deconstruction program.</p>	<p><b>See Project Manual, Sections 13.1 and 13.3.</b> Developer and/or its Contractor will perform periodic inspections to confirm the following actions:</p> <ul style="list-style-type: none"> <li>• All material that can be salvaged will be reused on site per CEQA Guidelines Section 15064.5.</li> <li>• Material that does not meet the requirements for new construction will be reused at other East Bay construction sites or sent to recycling facilities.</li> <li>• Landfill disposal of salvageable material is prohibited.</li> <li>• Local job training program members will be employed for salvage operations.</li> </ul> <p>Developer and/or its Contractor will submit a Waste Reduction and Recycling Plan to City for review and approval.</p>	Prior to issuance of a demolition permit	City/Port		X			
<p><b>Mitigation 4.9-8:</b> Concrete and asphalt removed during demolition/construction shall be crushed on site or at a near site location, and reused in redevelopment or recycled to the construction market.</p> <p>Foundation and paving removal would generate substantial debris, and the City and Port would ensure these materials are crushed and recycled. As a first preference, these materials should be re-used on-site; as a second preference, they would be sold to the construction market. The City and Port would make every effort practicable to avoid disposal to landfill of this material.</p> <p>This mitigation measure may itself result in impacts to the environment relative to noise and air quality. These impacts are discussed in Sections 4.4: Air Quality, and 4.15: Noise.</p>	<p><b>See Project Manual, Section 13.1.</b> The Developer, its Contractor, or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare a Waste Reduction and Recycling Plan. Submit the plan to the City for review and approval.</li> <li>• Identify and track all waste for applicability of reuse or diversion.</li> </ul> <p><b>See Project Manual, Section 13.3.</b> Developer and/or its Contractor will:</p> <ul style="list-style-type: none"> <li>• Provide an onsite or nearby area for concrete and asphalt crushing and stockpiling.</li> </ul> <p>Developer and/or its Contractor will confirm compliance with Deconstruction Program and the City's Recycling Space Allocation Ordinance.</p>	On-going, during construction	City/Port		X		X	

**TABLE 1**

Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
<b>EXHIBITS TO THE LDDA</b>								
<b>BRIDGING SCOPE OF SERVICES (PROPERTY MANAGEMENT AGREEMENT)</b>								
<b>Environmental Remediation and Air Quality Monitoring:</b> The Manager will work with the Owner to develop an air quality study to obtain baseline information, and models will be developed to track dispersion during construction, consistent with the requirements in the Community Benefit Matrix Item 10 (see Exhibit G to the Property Management Agreement).	<p><b>See Project Manual, Sections 3.2 and 3.2.2.</b> Developer and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare and implement a Construction Air Quality Monitoring Program Work Plan.</li> </ul> <p><b>Actions/schedule TBD by Vertical Construction team.</b> <b>See Project Manual, Sections 3.2 and 3.2.3.</b> Will be documented in:</p> <ul style="list-style-type: none"> <li>• Operations Air Quality Monitoring Program Work Plan.</li> </ul>	Ongoing throughout construction	Developer		X		X	
<b>LDDA COMMUNITY BENEFITS MATRIX</b>								
<b>Item 14:</b> City and Developer, in conjunction with both the Public Improvements and the Private City Improvements, shall comply with CEQA Standard Conditions of Approval and Mitigation Monitoring and Reporting Program, attached as Exhibit E. Such measures include those set forth in the City Council Areas of Agreement, including measures to address noise limits, dust control, hazardous materials removal, storm water plan, use of permeable pavers where feasible, use deconstruction rather than demolition where possible, and preparation and implementation of a demolition debris recycling plan, prepare a GHG Reduction Plan and maximize the use of green energy (solar, wind, other) where possible, further water conservation through use of rain barrels and gray water technology where possible, ensure that truck related construction routes are directed away from residents, provide public or private transit connection for construction workers (connecting to BART and at least two West Oakland locations), and provide public notification of project status (updated at least monthly and posted online and at the West Oakland Public Library). Responsibility for implementation of these measures will be allocated as between the City and the Developer through the DA/PUD process that will follow the LDDA. More feasible and/or cost effective measures may be considered by the Parties so long as those measures meet CEQA requirements and do not themselves cause any potentially significant effect on the environment, as determined by the City through the DA/PUD process.	<p><b>See this Table.</b> <b>Also see Project Manual, Sections 3.1, 7, 9.1, 10, 13.1, and 13.3.</b></p>	Pre-operations; Operations	City, Developer		X		X	X
<b>Item 15:</b> Developer shall make a good faith effort to show conformance with the applicable sections of the current draft of the City's Energy Climate Action Plan as presented to the City Council March 1, 2011. The same measures may be used to satisfy the applicable requirements of the Climate Action Plan, required per this item 15, and the Greenhouse Gas Reduction Plan, required per item 14, above.	<p><b>Actions/schedule TBD by Vertical Construction/Lease team.</b> <b>See Project Manual, Section 7.</b> Will be documented in:</p> <ul style="list-style-type: none"> <li>• Greenhouse Gas Reduction Plan</li> </ul>	Prior to approval of PUD.	Developer				X If applicable	X
<b>Item 16:</b> The City and Developer shall cooperate in an air quality monitoring program during construction of the Public Improvements and Private Improvements to install and maintain air monitoring equipment in locations determined in consultation with the Port, BAAQMD, Alameda County Public Health Department (ACPHD). The City and its Manager shall provide monitoring reports from that equipment to the BAAQMD, the City, and the Port on a quarterly basis during construction. The "fence-line" monitoring and quarterly reporting shall be funded by the City through the construction of the Public Improvements.	<p><b>See Project Manual, Sections 3.2 and 3.2.2.</b> Developer and/or its consultant will:</p> <ul style="list-style-type: none"> <li>• Prepare and implement a Construction Air Quality Monitoring Program Work Plan.</li> </ul> <p><b>Actions/schedule TBD by Vertical Construction team.</b> <b>See Project Manual, Sections 3.2 and 3.2.3.</b> Will be documented in:</p>	Ongoing throughout construction; Operations	City, Developer		X		X	X

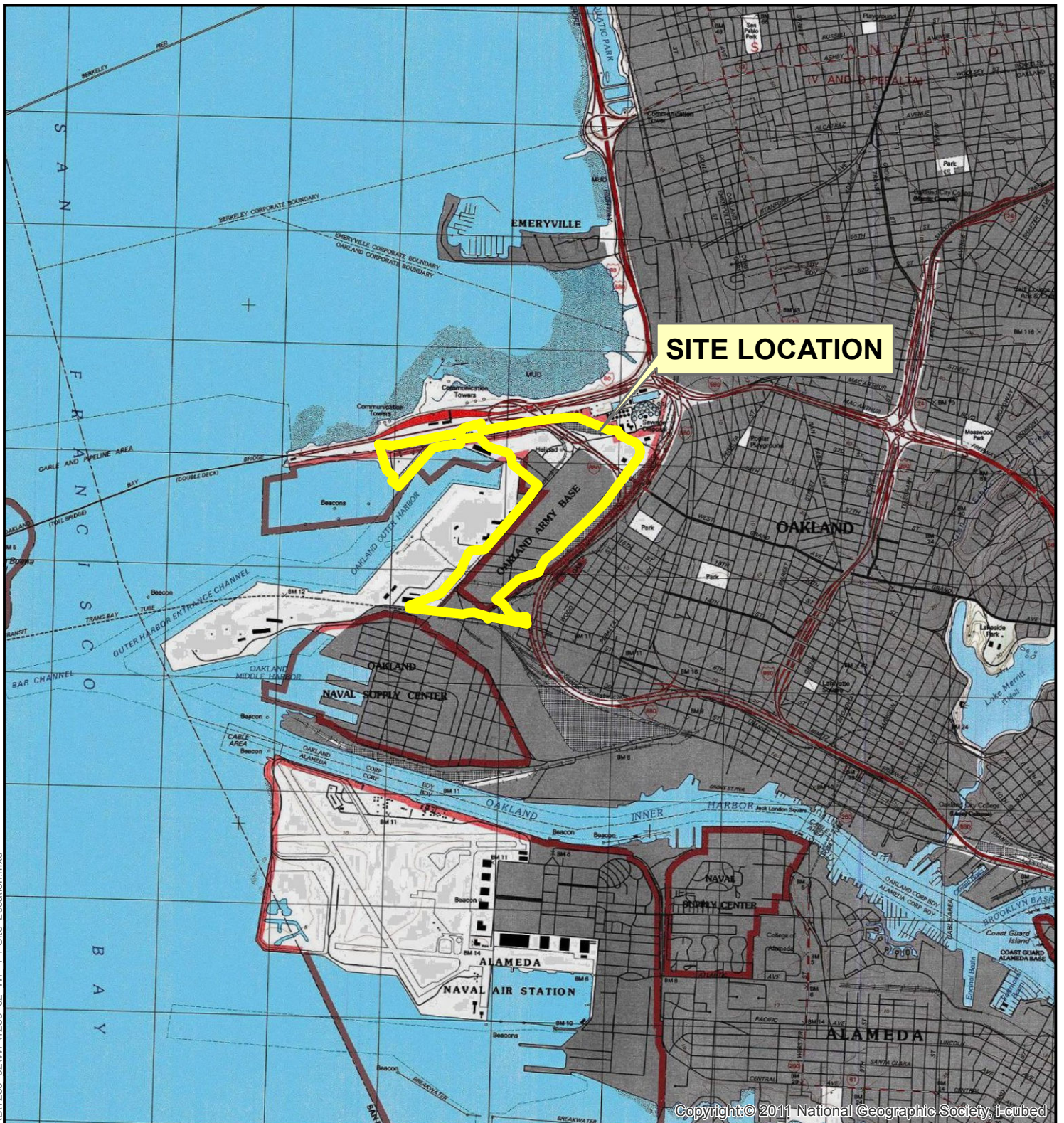


**TABLE 1**

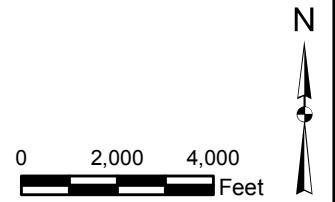
Standard Conditions of Approval/Mitigation Monitoring and Reporting Program

Standard Conditions of Approval/Mitigation Measures	Execution/Monitoring Action	Mitigation Implementation/ Monitoring		Design & Pre- Construction (horizontal)	Construction (horizontal)	Design & Pre- Construction (vertical)	Construction (vertical)	Operations
		Schedule	Responsibility					
Developer shall fund the ongoing "fence-line" monitoring and quarterly reporting during the Vertical Construction through the term of the Ground Lease. Air Quality monitoring and annual reporting for operations during the term of the Ground Lease will be required for the rail and maritime operations associated with the West Gateway Phase. The City and Developer will mutually agree upon the monitoring and reporting standards for, and the duration of, such operations monitoring.	<ul style="list-style-type: none"> <li>Operations Air Quality Monitoring Program Work Plan.</li> </ul>							
<b>PROPERTY MANAGEMENT AGREEMENT COMMUNITY BENEFITS MATRIX</b>								
<b>Item 9:</b> The City and its Manager, in conjunction with the Materials Handling Services and Project Construction Management Services for the Public Improvements, shall comply with CEQA Standard Conditions of Approval and Mitigation Monitoring and Reporting Program, attached as Exhibit C. Such measures include those set forth in the City Council Areas of Agreement, including measures to address noise limits, dust control, hazardous materials removal, storm water plan, use of permeable pavers where feasible, use deconstruction rather than demolition where possible, and preparation and implementation of a demolition debris recycling plan, prepare a GHG Reduction Plan and maximize the use of green energy (solar, wind, other) where possible, further water conservation through use of rain barrels and gray water technology where possible, ensure that truck related construction routes are directed away from residents, provide public or private transit connection for construction workers (connecting to BART and at least two West Oakland locations), and provide public notification of project status (updated at least monthly and posted online and at the West Oakland Public Library). Manager's obligation under this term is limited to inclusion of Exhibit C as a material term of all contracts under which construction of Public improvements may occur.	<p><b>See this Table.</b>  <b>Also see Project Manual, Sections 3.1, 7, 9.1, 10, 13.1, and 13.3.</b></p>	Ongoing throughout construction; Operations	City, Developer		X		X	X
<b>Item 10:</b> The City and its Manager shall cooperate in an air quality monitoring program to install and maintain air monitoring equipment through construction of the Public Improvements in locations determined in consultation with the Port, Bay Area Air Quality Management District (BAAQMD), Alameda County Public Health Department (ACPHD), and shall provide monitoring reports from that equipment to the BAAQMD, the City, the Port on a quarterly basis during such construction. The "fence-line" monitoring program shall be funded by the City through the construction of the Public Improvements. Manager's obligation under this term is limited to inclusion of the air quality monitoring requirements as a material term of all contracts under which construction of Public Improvements may occur.	<p><b>See Project Manual, Sections 3.2 and 3.2.2.</b>  Developer and/or its consultant will:</p> <ul style="list-style-type: none"> <li>Prepare and implement a Construction Air Quality Monitoring Program Work Plan.</li> </ul> <p><b>Actions/schedule TBD by Vertical Construction team.</b>  <b>See Project Manual, Sections 3.2 and 3.2.3.</b>  Will be documented in:</p> <ul style="list-style-type: none"> <li>Operations Air Quality Monitoring Program Work Plan.</li> </ul>	Ongoing throughout construction	Developer		X		X	

## **FIGURES**



Path: M:\01 - Projects\1239 - OAB\1239\_02\WP\F1-Site Location.mxd



**FIGURE 1**  
**Site Location Map**

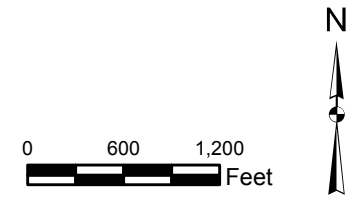
Oakland Army Base Redevelopment Project  
Oakland, California



Project No. 1239.02



- Legend**
- Project Boundary
  - Central Gateway
  - East Gateway
  - North Gateway
  - West Gateway



**FIGURE 2**  
**Site Plan and Existing Land Use**

Oakland Army Base Redevelopment Project  
 Oakland, California  
 Project No. 1239.02



Image courtesy of USGS © 2013 Microsoft Corporation © 2010 NAVTEQ © AND

M:\01 - Projects\1239 - OAB\1239 - 02\WP\F2 - Site Plan.mxd 3/27/2013 - Data Driven Pages



# Oakland Army Base Construction



**JV EXECUTIVE MGMT COMMITTEE**  
 TCCO - Kavinger Singh  
 TG - Brian Gates  
 FWI - Richard Grabinski

**SCOTT ERWIN**  
Project Executive

**TOM TRIPP**  
Project Executive

**CLIFF KUNKEL**  
Sr. Project Manager

**WALT QUINCY**  
Design Manager

**ELENA ANAYA**  
Community Affairs Director

**DAVE TENNISON**  
General Superintendent

<b>MOMINA JALIL</b> Civil Site Engineer	<b>ADMIN</b>
<b>TBD</b> Wharf Engineer	<b>CARLOS MENDOZA</b> Engineer
<b>TBD</b> CEQA Mitigation QA/QC Engineer	<b>TBD</b> Permit Coordinator Engineer
<b>TBD</b> Cost Engineer	<b>TBD</b> Document Control
<b>TBD</b> Accountant	

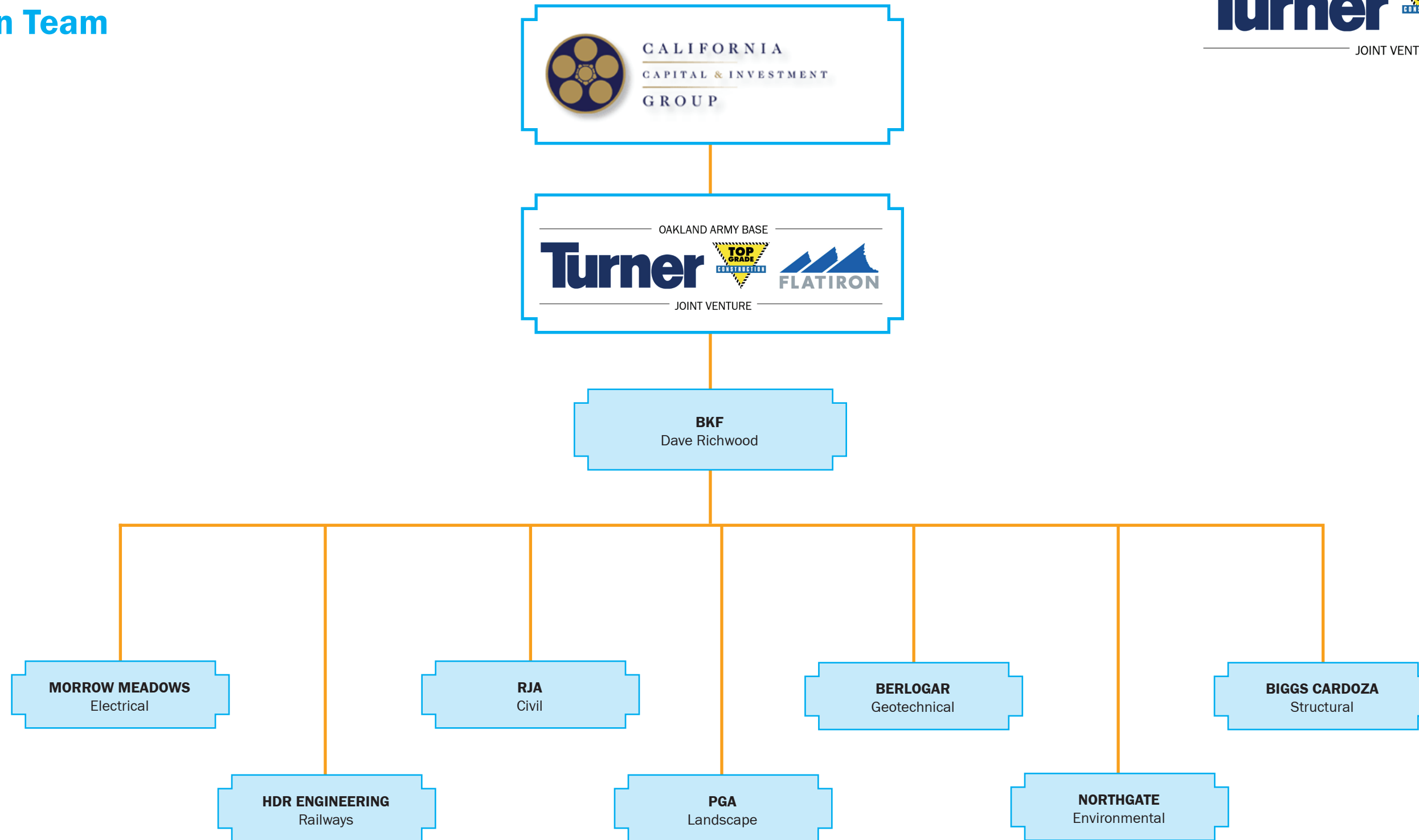
**BKF**  
Design Team  
(See Design Team Org Chart)

**TBD**  
LBE and Workforce  
Compliance Engineer

<b>DUSTIN KNOTT</b> Civil/Site Superintendent	<b>TBD</b> Wharf Superintendent
<b>TBD</b> Asst. Superintendent #1	<b>TBD</b> Safety
<b>TBD</b> Asst. Superintendent #2	<b>TBD</b> Scheduler

**FIGURE 3.**  
Construction Team  
Organization Chart

# Oakland Army Base Design Team



**FIGURE 3.**  
Construction Team  
Organization Chart

**APPENDIX B**  
**Project Signs**

## NOISE COMPLAINTS

Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Saturday, except that barging and unloading of soil shall be allowed 24 hours per day, 7 days per week for about 15 months. No construction activity shall take place on Sundays or Federal holidays, except as allowed with the prior written authorization of the Building Services Division.

CONSTRUCTION HOURS: MON THRU FRI 7AM-3PM

NOISE COMPLAINTS CALL:

PROVIDE NAME, CONTACT INFO, AND REASON FOR CALL. ALL COMPLAINTS WILL BE ADDRESSED WITHIN 48 HOURS.

**TURNER/TOPGRADE/FLATIRON**  
DUSTIN KNOTT 24HOUR (925) 580-2200

**CITY OF OAKLAND**  
CONTACT TBD 24HOUR TBD

**OAKLAND POLICE NON-EMERGENCY**  
24HOUR LINE (510) 777-3333

NOTE: TO BE PLACED AT ALL ENTRANCES/EXITS TO CONSTRUCTION SITE

24"

24"

## IDLING POLICY

IDLING TIMES ON ALL DIESEL-FUELED COMMERCIAL VEHICLES OVER 10,000 LBS AND DIESEL-FUELED OFF-ROAD VEHICLES OVER 25 HORSEPOWER SHALL BE MINIMIZED EITHER BY SHUTTING EQUIPMENT OFF WHEN NOT IN USE OR REDUCING THE MAXIMUM IDLING TIME TO FIVE MINUTES (AS REQUIRED BY TITLE 13, SECTION 2485 & 2449 OF THE CALIFORNIA CODE OF REGULATIONS.

NOTE: TO BE PLACED AT ALL ENTRANCES/EXITS TO CONSTRUCTION SITE

24"

24"

## DUST COMPLAINTS

DUST CONTROL MANAGEMENT IS IMPORTANT TO ALL CONTRACTORS WORKING ON THIS PROJECT. AT ANY TIME SHOULD YOU FEEL THIS IS NOT THE CASE, PLEASE CONTACT DJSTIN KNOTT WITH TURNER/TOP GRADE/FLAT IRON, WITH ANY ISSUES YOU NEED TO REPORT.

PROVIDE NAME, CONTACT INFO, AND REASON FOR CALL. ALL COMPLAINTS WILL BE ADDRESSED WITHIN 48 HOURS.

Dustin Knott  
(925) 580-2200



City of Oakland  
(510) 615-5566



BAAQMD  
24 hour - (800) 334-6367



NOTE: TO BE PLACED AT ALL ENTRANCES/EXITS TO CONSTRUCTION SITE

24"

24"

SPEED  
LIMIT  
15  
MPH

ON UNPAVED ROADS

36"

30"



**APPENDIX C**  
**Construction Schedule**

# CONSTRUCTION SEQUENCING Oakland Army Base

Activity ID	Activity Name	Org Dur	Remaining Duration	Start	Finish	Total Float	2013												2014				2015				2016				2017								
							Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
<b>OAB Construction Sequencing - May 2013</b>							1122	1122	28-Jun-13	16-Oct-17	-1	8-Jun-13 → 16-Oct-17																											
<b>OAB Construction Sequencing</b>							1122	1122	28-Jun-13	16-Oct-17	-1	8-Jun-13 → 16-Oct-17																											
<b>MS MARITIME</b>							579	579	28-Jun-13	16-Sep-15	542	8-Jun-13 → 16-Sep-15																											
<b>MS-1 MARITIME UTILITY RELOCATION</b>							107	107	28-Jun-13	24-Dec-13	808	8-Jun-13 → 24-Dec-13																											
A2990	TEMPORARY RELOCATE UTILITY CONNECTION/SERVICES FOR WAREHOUSES TO REMAIN	40	40	28-Jun-13*	23-Aug-13	0	08-Jun-13 → 23-Aug-13, TEMPORARY RELOCATE UTILITY CONNECTION/SERVICES FOR WAREHOUSES TO REMAIN																																
A3000	TEMPORARY RELOCATE POWER POLES	30	30	05-Sep-13*	22-Oct-13	0	05-Sep-13 → 22-Oct-13, TEMPORARY RELOCATE POWER POLES																																
A3010	TEMPORARY RELOCATE UTILITIES CONFLICTING WITH MARITIME TRAFFIC CONTROL	30	30	23-Oct-13	24-Dec-13	808	23-Oct-13 → 24-Dec-13, TEMPORARY RELOCATE UTILITIES CONFLICTING WITH MARITIME TRAFFIC CONTROL																																
<b>MS-2 MARITIME STREET</b>							508	508	07-Oct-13	16-Sep-15	542	07-Oct-13 → 16-Sep-15																											
A2440	INSTALL TEMP SIGNALS MARTIME DETOUR	16	16	07-Oct-13*	29-Oct-13	0	07-Oct-13 → 29-Oct-13, INSTALL TEMP SIGNALS MARTIME DETOUR																																
A2450	INSTALL KRAIL / STRIPING / SIGNS MARITIME BYPASS DETOUR	5	5	30-Oct-13	08-Nov-13	828	30-Oct-13 → 08-Nov-13, INSTALL KRAIL / STRIPING / SIGNS MARITIME BYPASS DETOUR																																
<b>MS-2.1 MARITIME STAGE 1</b>							53	53	08-Jan-14	21-Mar-14	0	08-Jan-14 → 21-Mar-14																											
A2320	DEMO CURB/GUTTER/SIDEWALK	3	3	08-Jan-14*	14-Jan-14	0	08-Jan-14 → 14-Jan-14, DEMO CURB/GUTTER/SIDEWALK																																
A2330	PULVERIZE EXISTING ASPHALT CONCRETE	1	1	09-Jan-14	09-Jan-14	1	09-Jan-14 → 09-Jan-14, PULVERIZE EXISTING ASPHALT CONCRETE																																
A2340	ROUGH GRADE TO SUBGRADE	1	1	10-Jan-14	10-Jan-14	1	10-Jan-14 → 10-Jan-14, ROUGH GRADE TO SUBGRADE																																
A2480	ROUGH IN STORM DRAIN	20	20	14-Jan-14	21-Feb-14	0	14-Jan-14 → 21-Feb-14, ROUGH IN STORM DRAIN																																
A2410	INSTALL LIGHTS / SIGNALS	10	10	21-Feb-14	11-Mar-14	1	21-Feb-14 → 11-Mar-14, INSTALL LIGHTS / SIGNALS																																
A2350	FINE GRADE MARITIME	2	2	24-Feb-14	25-Feb-14	0	24-Feb-14 → 25-Feb-14, FINE GRADE MARITIME																																
A2360	INSTALL BASE ROCK MARITIME	2	2	26-Feb-14	27-Feb-14	0	26-Feb-14 → 27-Feb-14, INSTALL BASE ROCK MARITIME																																
A2370	INSTALL CURB & GUTTER / SIDEWALK	5	5	28-Feb-14	07-Mar-14	0	28-Feb-14 → 07-Mar-14, INSTALL CURB & GUTTER / SIDEWALK																																
A2380	ASPHALT PAVE MARITIME	1	1	10-Mar-14	10-Mar-14	0	10-Mar-14 → 10-Mar-14, ASPHALT PAVE MARITIME																																
A2390	RAISE UTILITIES	2	2	11-Mar-14	12-Mar-14	0	11-Mar-14 → 12-Mar-14, RAISE UTILITIES																																
A2400	INSTALL STRIPING / SIGNAGE	1	1	13-Mar-14	13-Mar-14	0	13-Mar-14 → 13-Mar-14, INSTALL STRIPING / SIGNAGE																																
A2420	SWITCH TRAFFIC ONTO MARITIME STAGE 2	6	6	14-Mar-14	21-Mar-14	0	14-Mar-14 → 21-Mar-14, SWITCH TRAFFIC ONTO MARITIME STAGE 2																																
<b>MS-2.2 MARITIME STAGE 2</b>							480	480	14-Nov-13	16-Sep-15	542	14-Nov-13 → 16-Sep-15																											
A2220	INSTALL JOINT TRENCH MARITIME	60	60	14-Nov-13*	21-Mar-14	0	14-Nov-13 → 21-Mar-14, INSTALL JOINT TRENCH MARITIME																																
A2180	DEMO CURB/GUTTER/SIDEWALK	6	6	25-Mar-14	02-Apr-14	492	25-Mar-14 → 02-Apr-14, DEMO CURB/GUTTER/SIDEWALK																																
A2190	PULVERIZE EXISTING ASPHALT CONCRETE	3	3	01-Apr-14	03-Apr-14	583	01-Apr-14 → 03-Apr-14, PULVERIZE EXISTING ASPHALT CONCRETE																																
A2200	ROUGH GRADE TO SUBGRADE	5	5	04-Apr-14	11-Apr-14	493	04-Apr-14 → 11-Apr-14, ROUGH GRADE TO SUBGRADE																																
A2460	ROUGH IN SEWER	100	100	14-Apr-14	10-Sep-14	493	14-Apr-14 → 10-Sep-14, ROUGH IN SEWER																																
A2470	ROUGH IN STORM DRAIN	100	100	04-Aug-14	02-Feb-15	440	04-Aug-14 → 02-Feb-15, ROUGH IN STORM DRAIN																																
A2210	FINE GRADE MARITIME	10	10	03-Feb-15	20-Feb-15	440	03-Feb-15 → 20-Feb-15, FINE GRADE MARITIME																																
A2250	INSTALL EBMUD WATERLINE	40	40	24-Feb-15	04-May-15	439	24-Feb-15 → 04-May-15, INSTALL EBMUD WATERLINE																																
A2260	INSTALL LIGHT POLE / SIGNAL POLE FOUNDATIONS	20	20	24-Apr-15	21-May-15	543	24-Apr-15 → 21-May-15, INSTALL LIGHT POLE / SIGNAL POLE FOUNDATIONS																																
A2230	INSTALL BASE ROCK MARITIME	15	15	05-May-15	28-May-15	440	05-May-15 → 28-May-15, INSTALL BASE ROCK MARITIME																																
A2240	INSTALL CURB & GUTTER / SIDEWALK	20	20	29-May-15	25-Jun-15	440	29-May-15 → 25-Jun-15, INSTALL CURB & GUTTER / SIDEWALK																																
A2300	INSTALL LIGHTS / SIGNALS	55	55	19-Jun-15	03-Sep-15	440	19-Jun-15 → 03-Sep-15, INSTALL LIGHTS / SIGNALS																																
A2270	ASPHALT PAVE MARITIME	5	5	26-Jun-15	02-Jul-15	440	26-Jun-15 → 02-Jul-15, ASPHALT PAVE MARITIME																																
A2280	RAISE UTILITIES	15	15	03-Jul-15	23-Jul-15	470	03-Jul-15 → 23-Jul-15, RAISE UTILITIES																																
A2290	INSTALL STRIPING / SIGNAGE	5	5	04-Sep-15	14-Sep-15	440	04-Sep-15 → 14-Sep-15, INSTALL STRIPING / SIGNAGE																																
A2310	OPEN FINAL ALIGNMENT MARITIME	2	2	15-Sep-15	16-Sep-15	526	15-Sep-15 → 16-Sep-15, OPEN FINAL ALIGNMENT MARITIME																																
<b>MS-3 SD MARITIME OUTFALL</b>							80	80	01-Apr-14	01-Aug-14	440	01-Apr-14 → 01-Aug-14																											
A2430	BUILD STORM DRAIN OUTFALL	80	80	01-Apr-14*	01-Aug-14	440	01-Apr-14 → 01-Aug-14, BUILD STORM DRAIN OUTFALL																																
<b>WEST BURMA</b>							438	438	08-Oct-13	11-Jun-15	-1	08-Oct-13 → 11-Jun-15																											
<b>WB-1 WEST BURMA DETOUR</b>							18	18	08-Oct-13	31-Oct-13	45	08-Oct-13 → 31-Oct-13																											
A1000	INSTALL TEMPORARY DRAINAGE FOR W BURMA BYPASS DETOUR	2	2	08-Oct-13*	09-Oct-13	0	08-Oct-13 → 09-Oct-13, INSTALL TEMPORARY DRAINAGE FOR W BURMA BYPASS DETOUR																																
A1010	ROUGH/FINE GRADE W BURMA BYPASS DETOUR	2	2	10-Oct-13	11-Oct-13	27	10-Oct-13 → 11-Oct-13, ROUGH/FINE GRADE W BURMA BYPASS DETOUR																																
A1020	PLACE AGG BASE W BURMA BYPASS DETOUR	2	2	14-Oct-13	15-Oct-13	27	14-Oct-13 → 15-Oct-13, PLACE AGG BASE W BURMA BYPASS DETOUR																																
A1030	INSTALL TEMP LIGHTING/SIGNALS W BURMA BYPASS DETOUR	5	5	16-Oct-13	23-Oct-13	28	16-Oct-13 → 23-Oct-13, INSTALL TEMP LIGHTING/SIGNALS W BURMA BYPASS DETOUR																																
A1040	ASPHALT PAVE W BURMA BYPASS DETOUR	2	2	24-Oct-13	25-Oct-13	29	24-Oct-13 → 25-Oct-13, ASPHALT PAVE W BURMA BYPASS DETOUR																																
A1050	INSTALL KRAIL / STRIPING / SIGNS W BURMA BYPASS DETOUR	2	2	28-Oct-13	29-Oct-13	28	28-Oct-13 → 29-Oct-13, INSTALL KRAIL / STRIPING / SIGNS W BURMA BYPASS DETOUR																																
A1060	MOVE TRAFFIC ONTO W BURMA BYPASS DETOUR	2	2	30-Oct-13	31-Oct-13	38	30-Oct-13 → 31-Oct-13, MOVE TRAFFIC ONTO W BURMA BYPASS DETOUR																																
<b>WB-1 WEST BURMA RECONSTRUCT</b>							240	240	08-Jan-14	09-Dec-14	-4	08-Jan-14 → 09-Dec-14																											
A1070	ROUGH GRADE TO SUBGRADE	20	20	08-Jan-14*	20-Feb-14	-2	08-Jan-14 → 20-Feb-14, ROUGH GRADE TO SUBGRADE																																
A1190	INSTALL LIGHTWEIGHT CELLULAR CONCRETE FILL	40	40	21-Feb-14	01-May-14	-2	21-Feb-14 → 01-May-14, INSTALL LIGHTWEIGHT CELLULAR CONCRETE FILL																																
A2490	ROUGH IN SEWER	30	30	02-May-14	18-Jun-14	-2	02-May-14 → 18-Jun-14, ROUGH IN SEWER																																
A2500	ROUGH IN STORM DRAIN	30	30	20-May-14	02-Jul-14	-2	20-May-14 → 02-Jul-14, ROUGH IN STORM DRAIN																																
A1080	FINE GRADE WEST BURMA	10	10	03-Jul-14	17-Jul-14	-2	03-Jul-14 → 17-Jul-14, FINE GRADE WEST BURMA																																
A1090	INSTALL JOINT TRENCH WEST BURMA	40	40	18-Jul-14	12-Sep-14	-2	18-Jul-14 → 12-Sep-14, INSTALL JOINT TRENCH WEST BURMA																																
A1120	INSTALL EBMUD WATERLINE	20	20	18-Jul-14	14-Aug-14	18	18-Jul-14 → 14-Aug-14, INSTALL EBMUD WATERLINE																																

◆ Milestone  
◆ Critical Milestone  
▬ Remaining Work  
▬ Actual Work  
▬ Actual Level of Effort  
 Critical Remaining Work  
 Remaining Level of Effort  
 Summary

Updated on May 16, 2013

Date	Revisi...	Checked	Approved
16-May-13		Acumen/TCC/...	



## CONSTRUCTION SEQUENCING Oakland Army Base

Activity ID	Activity Name	Org Dur	Remaining Duration	Start	Finish	Total Float	2013												2014				2015				2016				2017			
							Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
A1630	SWITCH TRAFFIC ONTO WAKE	1	1	26-Aug-14	26-Aug-14	793	26-Aug-14   26-Aug-14, SWITCH TRAFFIC ONTO WAKE																											
<b>CC CENTRAL</b>							08-Jul-13																											
<b>MH 1 MATERIALS HANDLING EARLY</b>							08-Jul-13																											
A1640	START MATERIAL HANDLING CONTRACT	1	1	08-Jul-13*	08-Jul-13	94	08-Jul-13   08-Jul-13, START MATERIAL HANDLING CONTRACT																											
A1660	PREP MATERIAL HANDLING YARD TO ACCEPT IMPORT	20	20	09-Jul-13	05-Aug-13	210	05-Aug-13   05-Aug-13, PREP MATERIAL HANDLING YARD TO ACCEPT IMPORT																											
A1700	INSTALL WICK DRAIN TEST UNDER NEW OUTFALL	20	20	09-Jul-13	05-Aug-13	87	05-Aug-13   05-Aug-13, INSTALL WICK DRAIN TEST UNDER NEW OUTFALL																											
A1650	RELOCATE STORM DRAIN SYSTEM MH1	20	20	06-Aug-13	03-Sep-13	190	03-Sep-13   03-Sep-13, RELOCATE STORM DRAIN SYSTEM MH1																											
A1670	TRUCK IMPORT FILL BROKERED BY CCIG	60	60	04-Sep-13	20-Dec-13	190	04-Sep-13   20-Dec-13, TRUCK IMPORT FILL BROKERED BY CCIG																											
A1680	INSTALL EROSION CONTROL MEASURES MH YARD	10	10	23-Dec-13	13-Jan-14	190	23-Dec-13   13-Jan-14, INSTALL EROSION CONTROL MEASURES MH YARD																											
A1690	LOAD/TRUCK/HAUL MH YARD DIRT TO ONSITE FILLS	100	100	15-Jan-14	08-Jul-14	190	15-Jan-14   08-Jul-14, LOAD/TRUCK/HAUL MH YARD DIRT TO ONSITE FILLS																											
A1710	INSTALL NEW OUTFALL PIPE	20	20	03-Feb-15	12-Mar-15	227	03-Feb-15   12-Mar-15, INSTALL NEW OUTFALL PIPE																											
<b>MH 2 MATERIALS HANDLING PROJECT</b>							08-Jan-14																											
A1730	CUT/CAP/RELOCATE EXISTING UTILITIES	10	10	08-Jan-14*	28-Jan-14	0	08-Jan-14   28-Jan-14, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A1750	RELOCATE EXISTING DIRT ONSITE	5	5	29-Jan-14	07-Feb-14	430	29-Jan-14   07-Feb-14, RELOCATE EXISTING DIRT ONSITE																											
A1720	DEMO EXISTING PAVEMENT / FACILITIES	5	5	30-Jan-14	07-Feb-14	787	30-Jan-14   07-Feb-14, DEMO EXISTING PAVEMENT / FACILITIES																											
A1740	INSTALL WICK DRAINS	25	25	28-Apr-15*	05-Jun-15	178	28-Apr-15   05-Jun-15, INSTALL WICK DRAINS																											
A1760	IMPORT FILL INC SURCHARGE	100	100	13-Apr-16	12-Sep-16	-1	13-Apr-16   12-Sep-16, IMPORT FILL INC SURCHARGE																											
A1770	SURCHARGE SETTLEMENT PERIOD	365	365	12-Sep-16	12-Sep-17	-1	12-Sep-16   12-Sep-17, SURCHARGE SETTLEMENT PERIOD																											
A1780	REMOVE SURCHARGE	20	20	13-Sep-17	16-Oct-17	-1	13-Sep-17   16-Oct-17, REMOVE SURCHARGE																											
<b>CC 1 CENTRAL GATEWAY</b>							08-Jan-14																											
A1800	CUT/CAP/RELOCATE EXISTING UTILITIES	10	10	08-Jan-14*	28-Jan-14	0	08-Jan-14   28-Jan-14, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A1790	DEMO PAVEMENT / FACILITIES	10	10	30-Jan-14	19-Feb-14	15	30-Jan-14   19-Feb-14, DEMO PAVEMENT / FACILITIES																											
A1810	INSTALL WICK DRAINS	60	60	20-Feb-14	03-Jun-14	14	20-Feb-14   03-Jun-14, INSTALL WICK DRAINS																											
A1820	IMPORT FILL INC SURCHARGE	200	200	04-Jun-14	18-May-15	14	04-Jun-14   18-May-15, IMPORT FILL INC SURCHARGE																											
A1830	SURCHARGE SETTLEMENT PERIOD	365	365	18-May-15	17-May-16	22	18-May-15   17-May-16, SURCHARGE SETTLEMENT PERIOD																											
A1840	REMOVE SURCHARGE	65	65	18-May-16	19-Aug-16	14	18-May-16   19-Aug-16, REMOVE SURCHARGE																											
<b>CC 2 CENTRAL GATEWAY</b>							08-Jan-14																											
A1860	CUT/CAP/RELOCATE EXISTING UTILITIES	10	10	08-Jan-14*	28-Jan-14	0	08-Jan-14   28-Jan-14, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A1850	DEMO EXISTING PAVEMENT / FACILITIES	5	5	30-Jan-14	07-Feb-14	281	30-Jan-14   07-Feb-14, DEMO EXISTING PAVEMENT / FACILITIES																											
A1870	INSTALL WICK DRAINS	15	15	10-Feb-14	07-Mar-14	282	10-Feb-14   07-Mar-14, INSTALL WICK DRAINS																											
A1880	IMPORT FILL INC SURCHARGE	23	23	05-Jun-14	08-Jul-14	231	05-Jun-14   08-Jul-14, IMPORT FILL INC SURCHARGE																											
A1890	SURCHARGE SETTLEMENT PERIOD	365	365	08-Jul-14	08-Jul-15	393	08-Jul-14   08-Jul-15, SURCHARGE SETTLEMENT PERIOD																											
A1900	REMOVE SURCHARGE	25	25	09-Jul-15	12-Aug-15	230	09-Jul-15   12-Aug-15, REMOVE SURCHARGE																											
<b>CC 3 CENTRAL GATEWAY</b>							12-Jun-15																											
A2940	CUT/CAP/RELOCATE EXISTING UTILITIES	10	10	12-Jun-15*	25-Jun-15	-1	12-Jun-15   25-Jun-15, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A2930	DEMO EXISTING PAVEMENT / FACILITIES	5	5	26-Jun-15	02-Jul-15	-1	26-Jun-15   02-Jul-15, DEMO EXISTING PAVEMENT / FACILITIES																											
A2950	INSTALL WICK DRAINS	15	15	03-Jul-15	23-Jul-15	-1	03-Jul-15   23-Jul-15, INSTALL WICK DRAINS																											
A2960	IMPORT FILL INC SURCHARGE	10	10	24-Jul-15	06-Aug-15	-1	24-Jul-15   06-Aug-15, IMPORT FILL INC SURCHARGE																											
A2970	SURCHARGE SETTLEMENT PERIOD	365	365	06-Aug-15	05-Aug-16	-1	06-Aug-15   05-Aug-16, SURCHARGE SETTLEMENT PERIOD																											
A2980	REMOVE SURCHARGE	25	25	08-Aug-16	12-Sep-16	-1	08-Aug-16   12-Sep-16, REMOVE SURCHARGE																											
<b>CE EAST</b>							04-Oct-13																											
<b>CE1</b>							04-Oct-13																											
A1910	DECONSTRUCT BUILDINGS	100	100	04-Oct-13*	18-Apr-14	0	04-Oct-13   18-Apr-14, DECONSTRUCT BUILDINGS																											
A1930	CUT/CAP/RELOCATE EXISTING UTILITIES	5	5	08-Jan-14*	17-Jan-14	0	08-Jan-14   17-Jan-14, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A1940	DEMO EXISTING PAVEMENT / FACILITIES	5	5	21-Apr-14	29-Apr-14	25	21-Apr-14   29-Apr-14, DEMO EXISTING PAVEMENT / FACILITIES																											
A1920	BUILD WATER STORAGE POND FOR CE1 SITE	10	10	30-Apr-14	14-May-14	25	30-Apr-14   14-May-14, BUILD WATER STORAGE POND FOR CE1 SITE																											
A1950	INSTALL WICK DRAINS	25	25	15-May-14	23-Jun-14	191	15-May-14   23-Jun-14, INSTALL WICK DRAINS																											
A1960	IMPORT FILL INC SURCHARGE	45	45	10-Jun-14	12-Aug-14	191	10-Jun-14   12-Aug-14, IMPORT FILL INC SURCHARGE																											
A1970	SURCHARGE SETTLEMENT PERIOD	365	365	12-Aug-14	12-Aug-15	337	12-Aug-14   12-Aug-15, SURCHARGE SETTLEMENT PERIOD																											
A1980	REMOVE SURCHARGE	40	40	13-Aug-15	13-Oct-15	190	13-Aug-15   13-Oct-15, REMOVE SURCHARGE																											
<b>CE2</b>							04-Oct-13																											
A1990	DECONSTRUCT BUILDINGS	100	100	04-Oct-13*	18-Apr-14	0	04-Oct-13   18-Apr-14, DECONSTRUCT BUILDINGS																											
A2010	CUT/CAP/RELOCATE EXISTING UTILITIES	5	5	08-Jan-14*	17-Jan-14	0	08-Jan-14   17-Jan-14, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A2020	DEMO EXISTING PAVEMENT / FACILITIES	5	5	21-Apr-14	29-Apr-14	25	21-Apr-14   29-Apr-14, DEMO EXISTING PAVEMENT / FACILITIES																											
A2000	BUILD WATER STORAGE POND FOR CE1 SITE	10	10	30-Apr-14	14-May-14	25	30-Apr-14   14-May-14, BUILD WATER STORAGE POND FOR CE1 SITE																											
A2030	INSTALL WICK DRAINS	25	25	15-May-14	23-Jun-14	160	15-May-14   23-Jun-14, INSTALL WICK DRAINS																											
A2040	IMPORT FILL INC SURCHARGE	66	66	24-Jun-14	29-Sep-14	160	24-Jun-14   29-Sep-14, IMPORT FILL INC SURCHARGE																											
A2050	SURCHARGE SETTLEMENT PERIOD	365	365	29-Sep-14	29-Sep-15	289	29-Sep-14   29-Sep-15, SURCHARGE SETTLEMENT PERIOD																											
A2060	REMOVE SURCHARGE	40	40	30-Sep-15	16-Dec-15	159	30-Sep-15   16-Dec-15, REMOVE SURCHARGE																											
<b>CN NORTH</b>							08-Jan-14																											
<b>CN 1 NORTH GATEWAY</b>							08-Jan-14																											
A2080	CUT/CAP/RELOCATE EXISTING UTILITIES	10	10	08-Jan-14*	28-Jan-14	0	08-Jan-14   28-Jan-14, CUT/CAP/RELOCATE EXISTING UTILITIES																											
A2100	DECONSTRUCT BUILDINGS	10	10	30-Jan-14	19-Feb-14	731	30-Jan-14   19-Feb-14, DECONSTRUCT BUILDINGS																											

- ◆ Milestone
- ◆ Critical Milestone
- ▬ Remaining Work
- ▬ Actual Work
- ▬ Actual Level of Effort
- ▬ Critical Remaining Work
- ▬ Remaining Level of Effort
- ▬ Summary

Updated on May 16, 2013

Date	Revisi...	Checked	Approved
16-May-13		Acumen/TCC/...	



**APPENDIX D**  
**Traffic Control Plan**

**TRAFFIC CONTROL PLAN**  
**Former Oakland Army Base Redevelopment Project**  
**Oakland, California**

May 8, 2013

*Prepared For:*

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## ATTACHMENTS

1. Site Map, Work Areas
2. Primary and Alternate Truck Routes
3. CHP Facility List and Emergency Contacts
4. Logs
5. Site Map, Traffic Control Measures



## **1.0 INTRODUCTION**

### **1.1 Purpose**

This document outlines the Traffic Control Plan (TCP) prepared for California Capital Investment Group Oakland Global, LLC (CCIG) to identify and describe traffic and transportation control measures that Turner/Top Grade/Flatiron, A Joint Venture (TTGF) will implement, under contract with CCIG, during the redevelopment of the former Oakland Army Base (OAB; the Project).

This TCP represents the transportation plan for the construction phase of the Project. Construction work includes demolition of structures and segregation and hauling related to demolition debris, building abatement, replacement and installation of underground utilities, excavation, and soil import, stockpiling, grading, and hauling.

Site ingress and egress, stockpile, and onsite haul road locations are shown in Attachment 1.

### **1.2 Project and Site Description**

The Project site is located on the Oakland waterfront, on the eastern terminus of the San Francisco-Oakland Bay Bridge. The Oakland Outer Harbor borders the western boundary of the project site. The site is located in an industrial area sharing boundary lines with the Port of Oakland. There are approximately 366 acres that will be redeveloped with new utilities, warehouse buildings, and a new railyard.

The major Project activities include:

- Demolition of existing structures;
- Construction of a joint trench;
- Operation of a Materials Handling Yard;
- Installing wick drains and surcharging;
- Installation of wet and dry utilities; and
- Construction/repaving of new/old roads.

## **2.0 CHARACTERISTICS OF MATERIALS BEING TRANSPORTED**

Because the materials designated for offsite disposal or reuse may cover a range of conditions, this TCP provides procedures for the transport of uncontaminated materials, contaminated but non-hazardous materials, non-Resources Conservation and Recovery Act (RCRA) California hazardous materials, and RCRA hazardous waste. It is anticipated that the materials to be transported offsite will be composed primarily of demolition debris and recyclable materials. None of the wastes to be transported are anticipated to be reactive, corrosive, or ignitable (RCI).

### **2.1 Material Storage**

Initially, the Project site will be cleared of surface features including building structures, debris, pavement, concrete, and vegetation. Surface materials will be directly loaded into trucks and stockpiled at the Site for material segregation prior to transport to the designated disposal or recycling facility.

Debris that has been segregated from cut soils will be stockpiled according to visual classification of debris type. Potentially excess soil designated for onsite reuse or disposal will be stockpiled separately from debris stockpiles.

Segregated materials destined for offsite disposal, recycling, or reuse will be characterized as: (1) uncontaminated material for offsite reuse or landfill disposal; (2) contaminated but non-hazardous materials; (3) non-RCRA California hazardous materials; (4) RCRA hazardous waste; or (5) recyclable materials.

### **2.2 Material Classification**

Material to be transported and disposed, recycled or reused will be tested and profiled in accordance with the proposed disposal facility requirements. Materials will be classified in accordance with RCRA regulations, the California Code of Regulations (CCR) hazardous waste regulations, and/or Department of Transportation (DOT) regulations.

### **2.3 Material Transportation Quantities**

Demolition debris is the primary source of waste to be hauled from the Site. Additional materials to be transported will include construction debris and other solid waste. Based on available information, estimated quantities of the different waste streams and material types are shown in the table below. Material types and quantities to be off hauled could vary significantly depending on field conditions and characterization results.

<b>ESTIMATED QUANTITY OF MATERIAL TRANSPORTATION</b>	
<b>Material Classification</b>	<b>Quantity</b>
Asphalt and Concrete Debris of Onsite Recycling	157,000 cubic yards
Building Demolition Debris	6,000 loads
Utility Demolition Debris	7 loads
Soil for Offsite Use	NA

## **2.4 Transportation Regulations and Requirements**

Materials designated for off-site disposition will be transported from the site in accordance with applicable regulations, including 49 Code of Federal Regulations (CFR) Parts 100-199 and 350-399 ( 42 U.S. Code 6901, et seq.); 40 CFR Parts 260-268; California Vehicle Code; California Hazardous Waste Control laws; and Health and Safety Code, Division 20 (22 CCR, Division 4.5).

Based on waste profiling, materials classified as RCRA or non-RCRA California Hazardous Waste will be handled and transported in accordance with CCR Title 22, which includes waste generator requirements (e.g., manifests) and hazardous waste transporter requirements (e.g., valid registration, proof of insurance, and inspection of vehicles by the California Highway Patrol [CHP]).

### 3.0 DESTINATION OF MATERIAL

Materials will not be transported out of the work area until they have been appropriately classified and a landfill and transporter have been designated. Analytical data, waste profile information, and waste classification details prior to off-hauling wastes from the Site will be provided to the Inspector of Record.

Materials identified for offsite disposition will be stockpiled at designated onsite areas until they have been appropriately characterized and approved for disposition at the selected receiving facility.

The following is a list of operating disposal and recycling facilities that have been identified for possible use.

<b>California Class I Landfill, Non-RCRA California Hazardous Waste</b>	
Kettleman Hills Landfill Facility Point of Contact: Elizabeth Navarro (559) 834-2966	Facility Address: Chemical Waste Management 35251 Old Skyline Road Kettleman City, California 93239
Buttonwillow Landfill Facility Point of Contact: Chet Liebold (916) 416-5038	Facility Address: Clean Harbors Buttonwillow, LLC 2500 West Lokern Road Buttonwillow, California 93206
<b>California Class II Landfills</b>	
Altamont Landfill and Resource Recovery Facility Point of Contact: Peggie Friddle (925) 455-7301	Facility Address: Waste Management, Inc. 10840 Altamont Pass Road Livermore, California 94551
Forward Landfill Facility Point of Contact: Kevin Basso (800) 204-4242	Facility Address: Allied Waste 9999 South Austin Road Manteca, California 95336
<b>California Class III Landfills</b>	
Keller Canyon Landfill Facility Point of Contact: Kevin Chiapello (800) 204-4242	Facility Address: Allied Waste 901 Bailey Road Pittsburg, California 94565

## **4.0 MODE OF TRANSPORTATION**

### **4.1 Transportation Company**

The companies transporting segregated debris will be licensed transportation companies designated by the subcontractor in charge of the demolition activities. For any loads classified as hazardous waste, the transporter will be required to provide proof of valid registration as a hazardous waste hauler.

### **4.2 Transportation Vehicles/Containers**

Materials will be transported in DOT approved bins, placarded trucks and/or steel containers. The type of vehicles used to transport material from the work area will depend on the material characterization and profiling results and may include end dump trucks, truck tractors that transport bins, and/or pin trailers pulled by a tractor. Vehicles transporting waste materials that have been classified as RCRA waste will be placarded with Placard #3077. Materials will be loaded in accordance with procedures discussed in Section 6 of this TCP.

Vehicles will be decontaminated and inspected by TTGF's field personnel or designated subcontractor, prior to leaving the area to verify they have been properly decontaminated, placarded in compliance with DOT requirements, and that the driver has all required documentation (e.g., manifest and truck route, as appropriate).

## **5.0 TRANSPORTATION ROUTE, SCHEDULING, AND EMERGENCY CONTACTS**

### **5.1 Transportation Routes**

TTGF has selected probable primary routes to be used during transport from the Site to the designated receiving facilities. Maps of these routes are provided in Attachment 2.

Drivers may call the California DOT (Caltrans: 800-427-7623) to check road conditions before leaving the Site. If the primary routes become unavailable, alternative routes will be used. Possible alternative routes have identified. The actual routes utilized will depend on local conditions at the time wastes are transported. Maps illustrating alternative routes are also provided in Attachment 2.

### **5.2 Scheduling**

Unless otherwise approved, trucks will be scheduled to enter and exit the Site between 7:00 AM and 4:00 PM, Monday through Friday. Should the need arise for after-hour scheduling, prior approval will be obtained from the City of Oakland.

### **5.3 Emergency Contacts**

Before beginning transport activities, the subcontractor will provide the transporter company with a copy of this TCP and the [Project Health and Safety Plan](#) for review. Section 10 of this TCP provides emergency response procedures and other information required in a transportation emergency.

In the event of an emergency on roadways outside of the Site work area, the transporter will contact the CHP, in addition to other contacts included in the TCP. CHP facility addresses are provided in Attachment 3. These facilities are along both primary and alternative transportation routes provided in Attachment 2.

The CHP may contact Caltrans to mobilize road crews and/or emergency response contractors, if needed, to clean up and contain spilled materials. A list of key contacts and emergency telephone numbers are provided in Attachment 3.

## **6.0 ONSITE TRAFFIC CONTROL AND LOADING PROCEDURES**

### **6.1 Location of Work Areas**

Materials will be handled and loaded within designated areas identified by TTGF. Segregated debris and recyclable materials will be stored in designated stockpile areas. Traffic routes, stockpile areas, work areas, staging areas, and the decontamination area are identified on the drawing(s) included in Attachment 1.

### **6.2 Safe Loading Procedures**

While loading materials into trucks, the area around the trucks will be kept clear. If needed, the material will be wetted with water before and during loading to reduce the potential of dust/particulate emissions and to eliminate visible dust.

Foam or other odor suppressants may be applied if material generates nuisance odors. Personnel observing the loading will wear personal protective equipment (PPE) as specified in the [Project HSP](#), and as directed by TTGF's designated Site Safety Officer (SSO).

Materials will only be loaded into trucks with tarpaulin covers or containers with sliding steel covers. Trucks will be maintained such that no spillage can occur from holes or other openings in cargo compartments. Trucks will be loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.

If material is spilled during loading, it will be immediately contained and subsequently loaded and hauled from the work area in accordance with the procedures outlined herein.

### **6.3 Cleaning Procedures**

The exterior of vehicles and equipment will be cleaned, as necessary, before leaving the Site. Any visible loose material will be brushed cleaned and removed from the vessels prior to exit. Exit inspections will be performed by the Compliance Manager to enforce this requirement.

### **6.4 Inspection Procedures**

TTGF will identify onsite areas where trucks will be inspected for proper loading, covering/sealing, decontamination, and manifesting (should manifesting of material be required). TTGF-designated inspector will use an information form for departing vehicles to guide and document the inspections. The departing vehicle transportation form is provided in Attachment 4.

## **7.0 SITE-SPECIFIC TRAFFIC MANAGEMENT AND CONTROL**

This section of the TCP identifies traffic control measures, appropriate signage and traffic control devices that will be implemented by the Contractor prior to and during the work to be conducted at the Site. The purpose of the traffic management and control measures is to regulate, warn, and direct onsite and offsite vehicular traffic. These measures shall be in accordance with the current Caltrans Traffic Manual and the Work Area Traffic Control Handbook (“WATCH”), and the State's Manual of Traffic Controls for Construction and Maintenance Work Areas.

TTGF has provided a plan as Attachment 5 that illustrates the locations and types of traffic management control measures, including specific traffic control signs discussed or referenced in this section of the TCP.

### **7.1 Inspection Procedures**

All contractor and subcontractor vehicles, including but not limited to personal vehicles of workers, construction vehicles, maintenance vehicles, and hauling and transport vehicles, will enter and exit the Site at the designated construction area entrances.

Personal vehicles of workers and authorized Site visitors will park in the Contractor's designated personally-owned vehicle (POV) area providing for approximately 20 POVs.

The Contractor will identify onsite staging areas for all hauling trucks. The Contractor will determine the number of staging areas and maximum number of hauling trucks which can be staged at the designated staging areas. The Contractor will manage inbound and outbound truck flow so no construction vehicles will be parked or staged on public streets and will only park in the designated staging areas.

Hauling and transport vehicles waiting to be loaded will be staged or stacked in the designated truck staging areas. Trucks waiting in the staging area will be permitted to idle for no more than two minutes, after which time they will turn off their engines. The Contractor will use a motorized street sweeper and/or water truck to sweep and maintain all paved access roads, parking areas, staging areas, and public streets adjacent to the Site. Excavation equipment, including but not limited to steel-tracked excavators and bulldozers, rubber tire front end loaders, and compactors, will remain onsite for the duration of the work.



## **7.2 Signage and Traffic Control Devices**

Prior to commencement of field activities at the Site, the Contractor will install temporary signs and traffic control devices that may include, but are not limited to, road striping, flashing beacons, and traffic barricades (K-rails).

Temporary traffic signs will be installed for the duration of the Project. Traffic signs to be installed include, but are not limited to:

- Arrow Signs to Site Access/All Other Traffic;
- Site Visitor/POV Parking Only;
- Detour Ahead;
- Multi-Directional Arrow Signs;
- No Stopping Any Time; and
- 15 mph Speed Limit (onsite).

“No Stopping Any Time” signs will be installed at a maximum interval of 100 feet apart.

Upon completion of field activities, all temporary signage and traffic control devices will be removed, and traffic control measures will be restored to conditions prior to commencement of the work.

## **8.0 RECORD KEEPING**

### **8.1 Transportation Records**

Records will be maintained for each load of material that leaves the Site. A Contractor's designated representative will be stationed at the inspection area during transportation activities to complete the information form, provided in Attachment 4, which includes:

- Date and time each truck departs the Site;
- Vehicle type and license number;
- Transport company and driver's name;
- Approximate volume or weight of material being removed;
- Material destination; and
- Type of material.

All records will be maintained at the Site construction office for the duration of the Project and thereafter archived by the Contractor for a minimum of 5 years. Copies will be maintained of all certified tare and gross weight slips for each load received at the designated disposal facility. The slips will be attached to each returned manifest and/or bill of lading.

### **8.2 Required Transporter Records**

Documentation carried by the driver will include:

- Bills of lading or non-hazardous or hazardous waste manifests;
- Proof of insurance, valid registration, and current driver's license;
- Material profile information (reflecting chemical analysis results);
- Material weight records; and
- A copy of this TCP, including travel routes, emergency procedures, and contacts.

## 9.0 HEALTH AND SAFETY

Should any material test positive for hazardous content, TTGF and subcontractor personnel will be trained in hazardous materials operations in accordance with 29 CFR 1910.120 and CCR Title 8, Section 5192.

Health and safety requirements for workers are described in the **HSP** that will be provided by the Contractor.

As stated in Section 8.2, TTGF will provide the transporters with a copy of the TCP. The transport company is responsible for the health and safety of its workers, and for instructing workers on health and safety procedures as they apply to the transport of non-hazardous and hazardous materials. During loading of materials into trucks, the area around the trucks will be kept clear. Personnel observing loading operations will wear PPE, as specified in the **HSP** and as directed by the SSO. Drivers will not be directly involved with loading, and will be instructed to remain in the cab of the truck during loading activities.

If the material to be transported from the Site is determined to be hazardous waste, the transporter will be required to show proof of valid registration for transport of hazardous waste. Before leaving the site, each driver will be briefed on the nature of the material to be transported. Drivers hauling hazardous waste will be trained in Hazardous Waste Operations and Emergency Response (HAZWOPER).

Section 10 of this TCP provides notification procedures and contingency plans for accidents or breakdowns enroute to and from the designated receiving facilities.

## **10.0 CONTINGENCY PLAN**

The purpose of the contingency plan is to facilitate a quick and effective response in the unlikely event of a transportation emergency. This TCP describes response procedures to be implemented if an emergency occurs while materials are being transported.

### **10.1 Emergency Response Procedures**

In the event of an emergency after the transporter exits the Site, the transporter will first contact the CHP. Afterwards, the driver will notify the appropriate emergency contact for its company. A list of critical contacts and emergency telephone numbers is included in Attachment 3.

The CHP will respond to the call and contact Caltrans. Caltrans will then contact road crews and/or emergency response contractors who are trained to respond to such emergencies with the appropriate methods of containing and cleaning up of spills. As stated in Section 2.1 of this TCP, waste materials may be classified as one or the following: (1) uncontaminated material for offsite reuse or landfill disposal; (2) contaminated but non-hazardous material (3) non-RCRA California hazardous materials; (4) RCRA hazardous materials; or (5) recyclable materials.

The emergency contact within the transporter company will advise the driver concerning other emergency response procedures that may be necessary, and the location of the nearest repair facility, as appropriate.

After the CHP and the emergency contact within the transporter company have been notified of an emergency, the driver will notify TTGF's Project Manager, who will be responsible for informing the City of Oakland.

### **10.2 Personal Protective and Emergency Equipment**

The following PPE and emergency equipment will be kept on each transporter truck for use in case of an emergency:

- Gloves;
- Tyvek™ coveralls;
- Hard hat;
- Steel-toed boots or shoes;
- Fire extinguisher;
- Safety Glasses; First Aid Kit; and

- N95 Particulate Mask.

**ATTACHMENT 1**

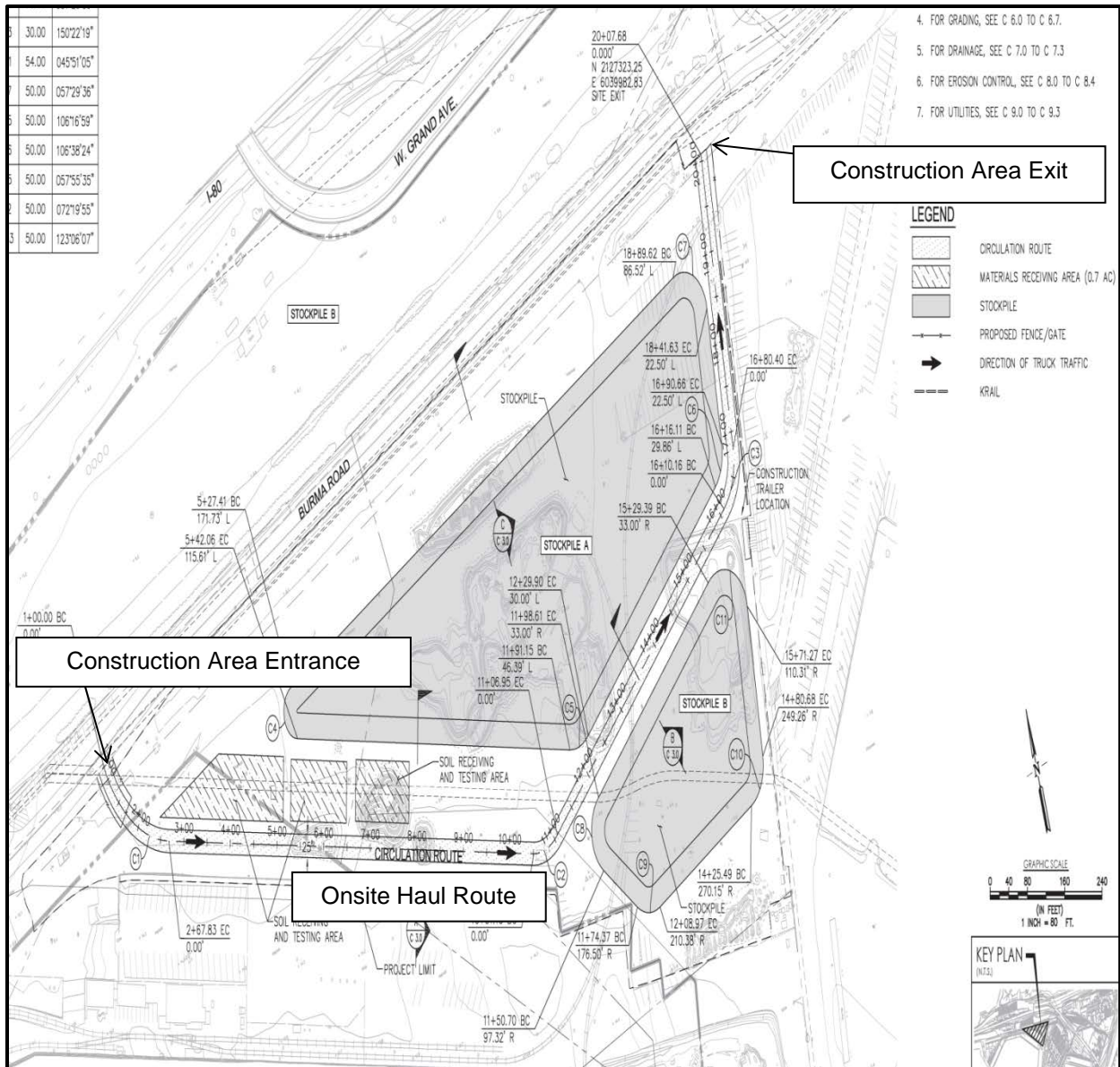
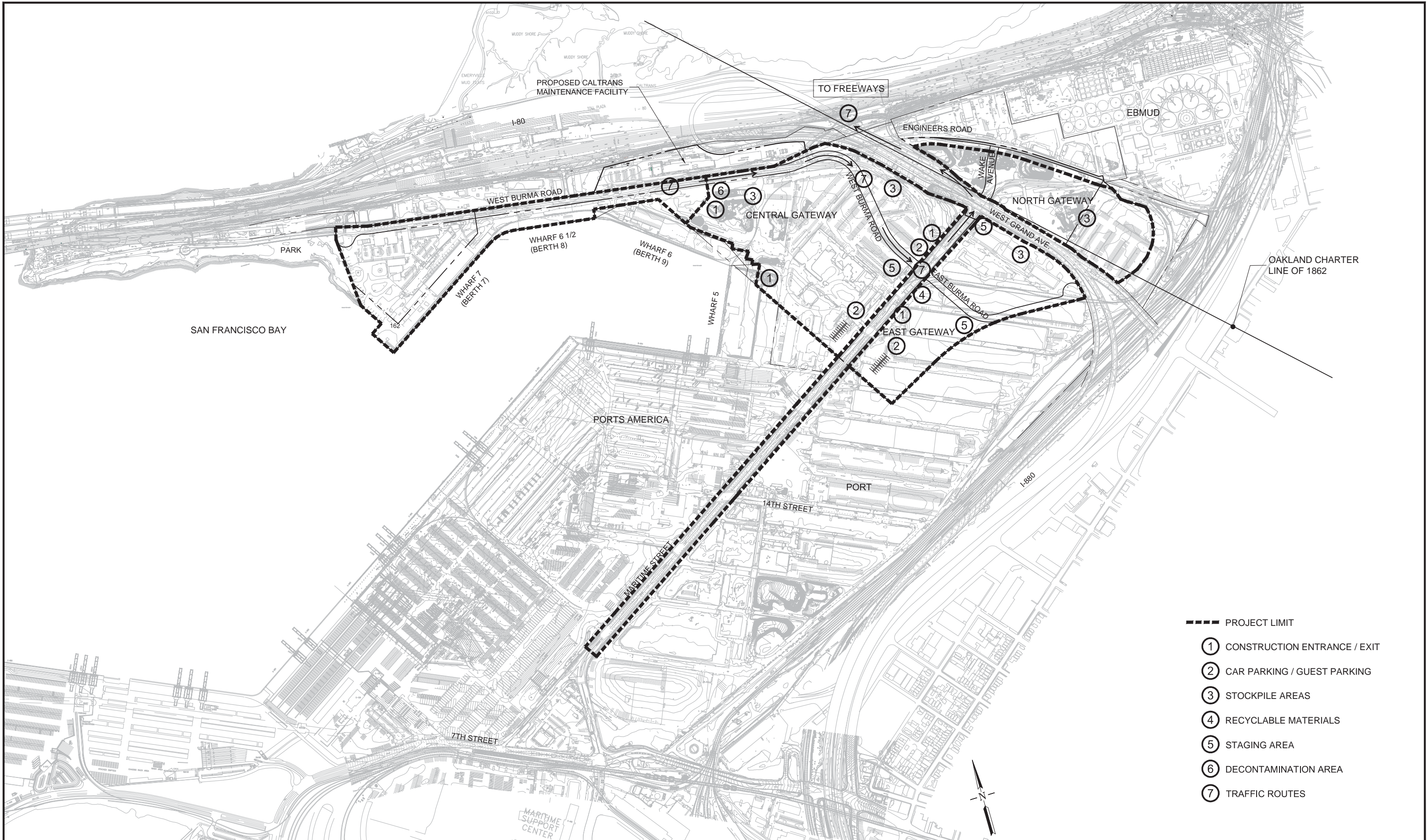


Figure 1. Site Access and Onsite Haul Routes



- PROJECT LIMIT
- ① CONSTRUCTION ENTRANCE / EXIT
- ② CAR PARKING / GUEST PARKING
- ③ STOCKPILE AREAS
- ④ RECYCLABLE MATERIALS
- ⑤ STAGING AREA
- ⑥ DECONTAMINATION AREA
- ⑦ TRAFFIC ROUTES

CAT. NO.	20938
INV. NO.	AD-0244.01

REV	DATE	COMMENT

JOB NO.	OAB02
SCALE:	1" = 400'
DATE:	3/25/2013
DRAWN BY:	J. ARMADA
CHECKED BY:	K. ROSSO

Mar 26, 2013 - 11:36am. Plotted By: jacqueline...  
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**ATTACHMENT 2**



Figure 1. Kettleman Hills Landfill Primary Truck Route

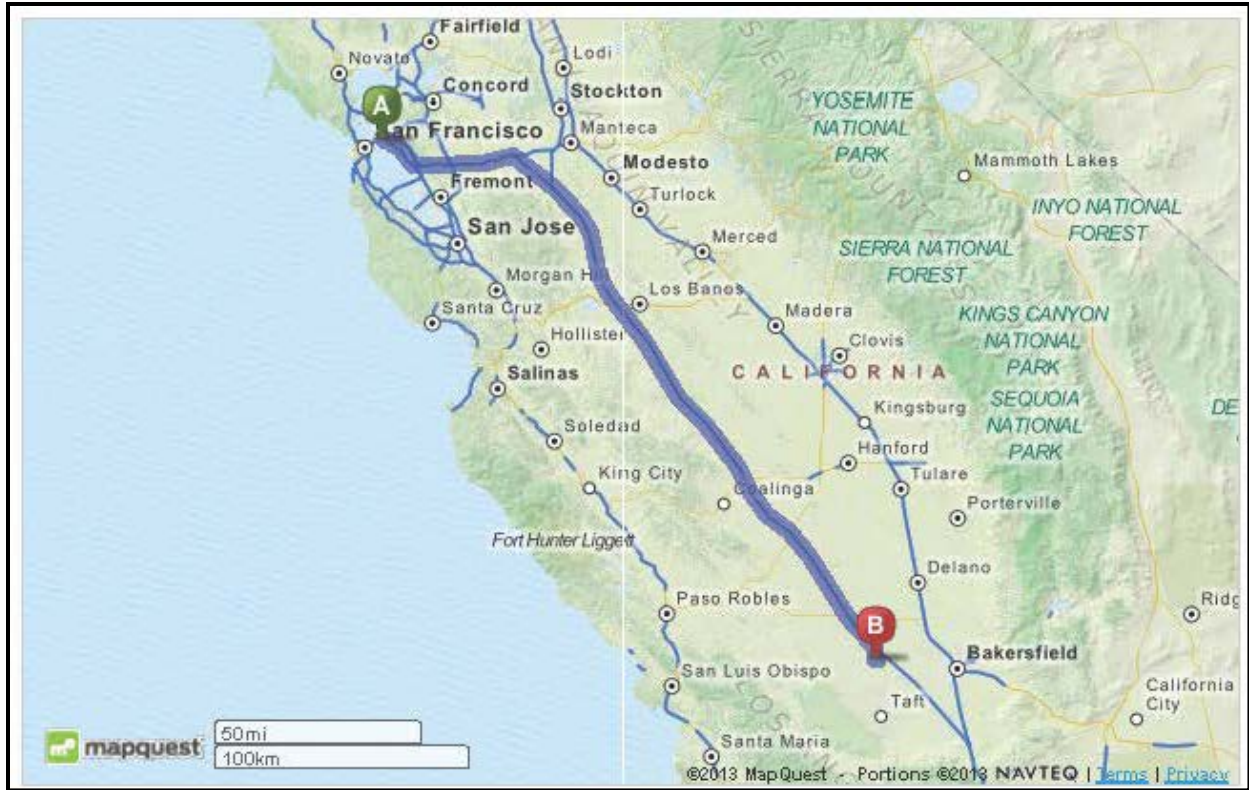


Figure 2. Buttonwillow Landfill Primary Truck Route

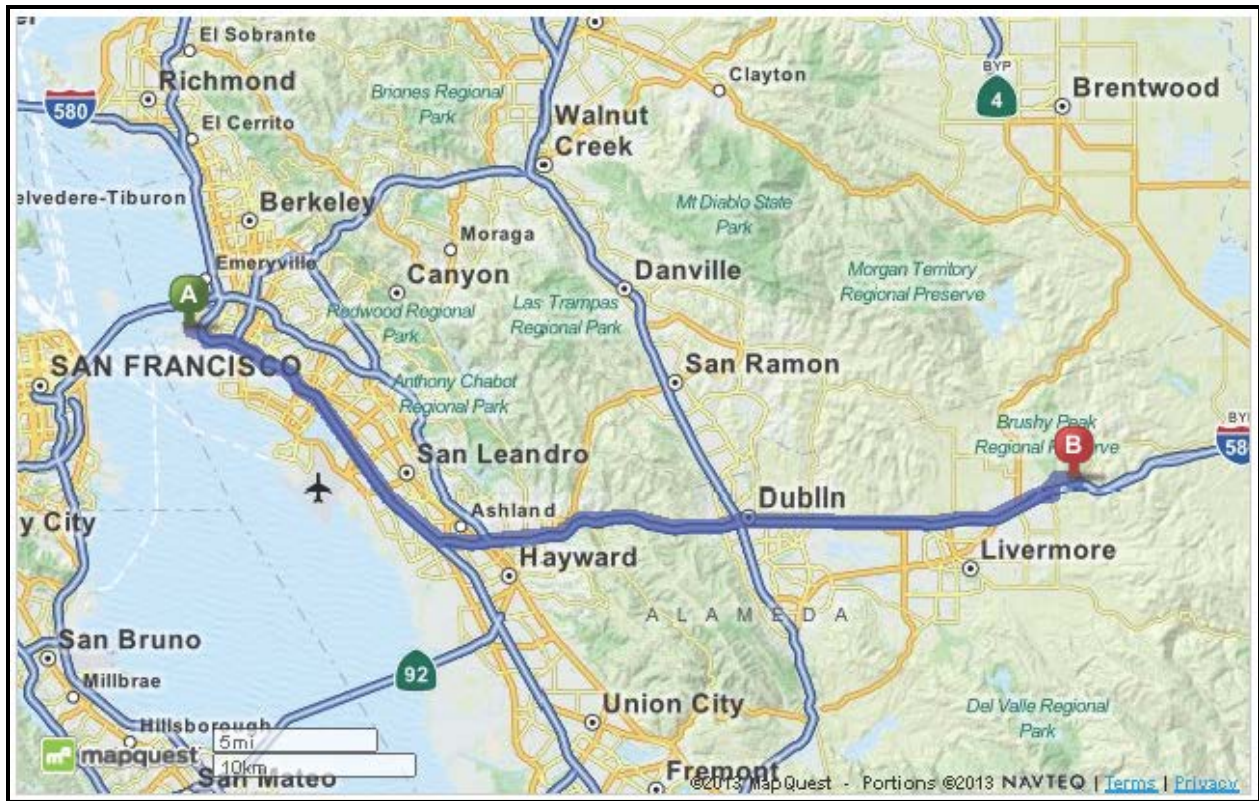


Figure 3. Altamont Landfill Primary Truck Route

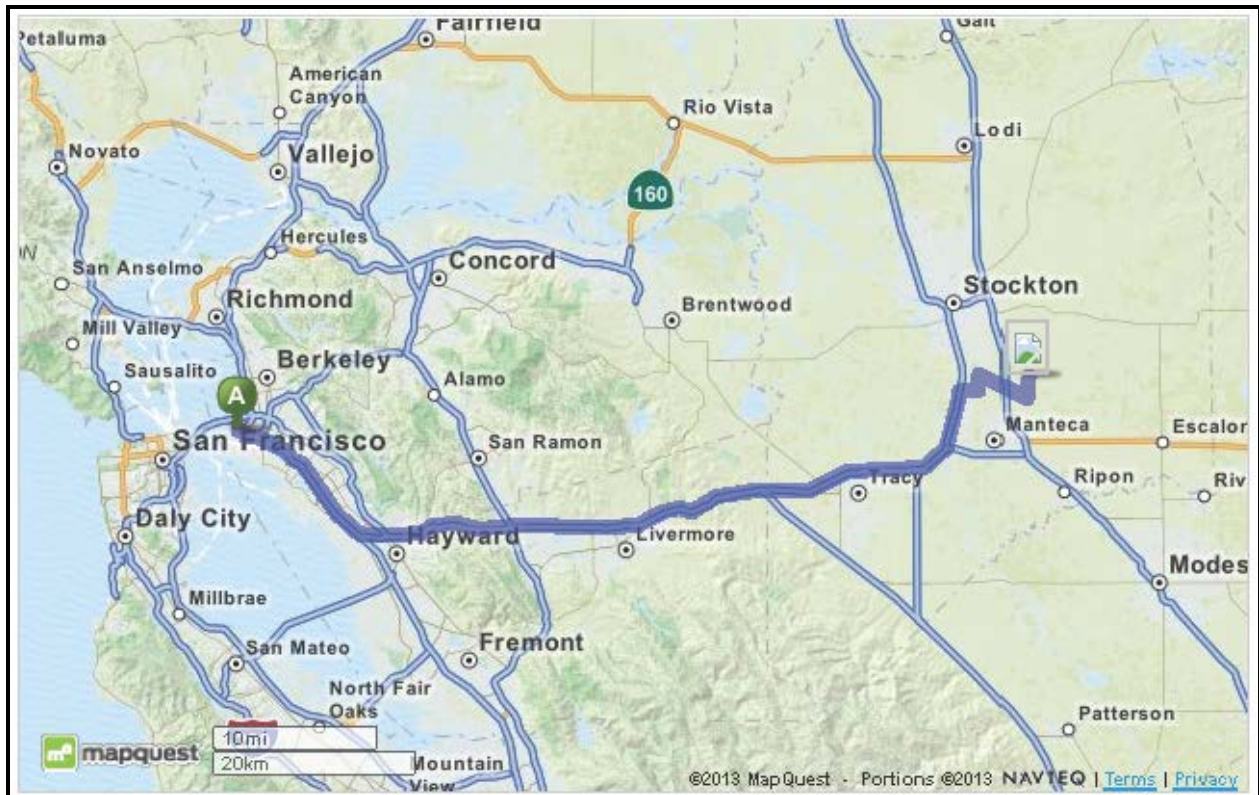


Figure 4. Forward Landfill Primary Truck Route



Figure 5. Keller Canyon Landfill Primary Truck Route

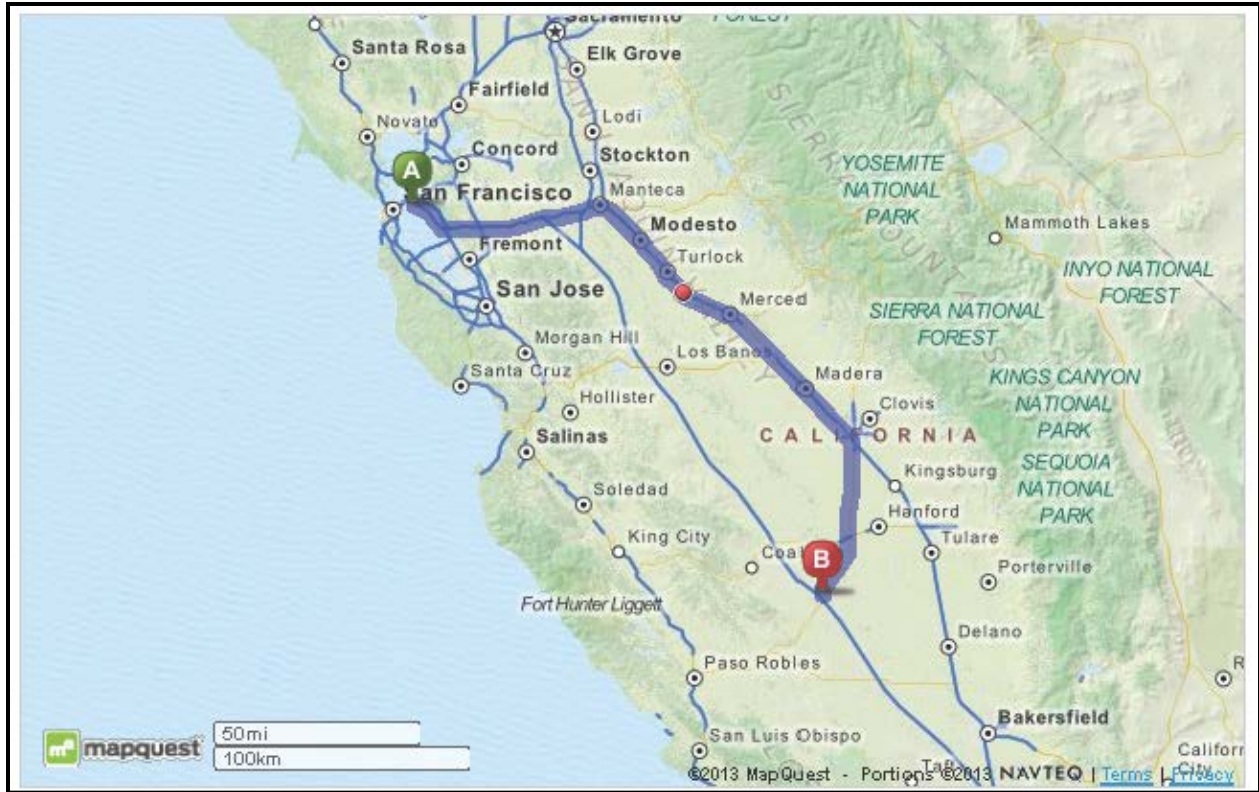


Figure 6. Kettleman Hills Landfill Alternate Truck Route

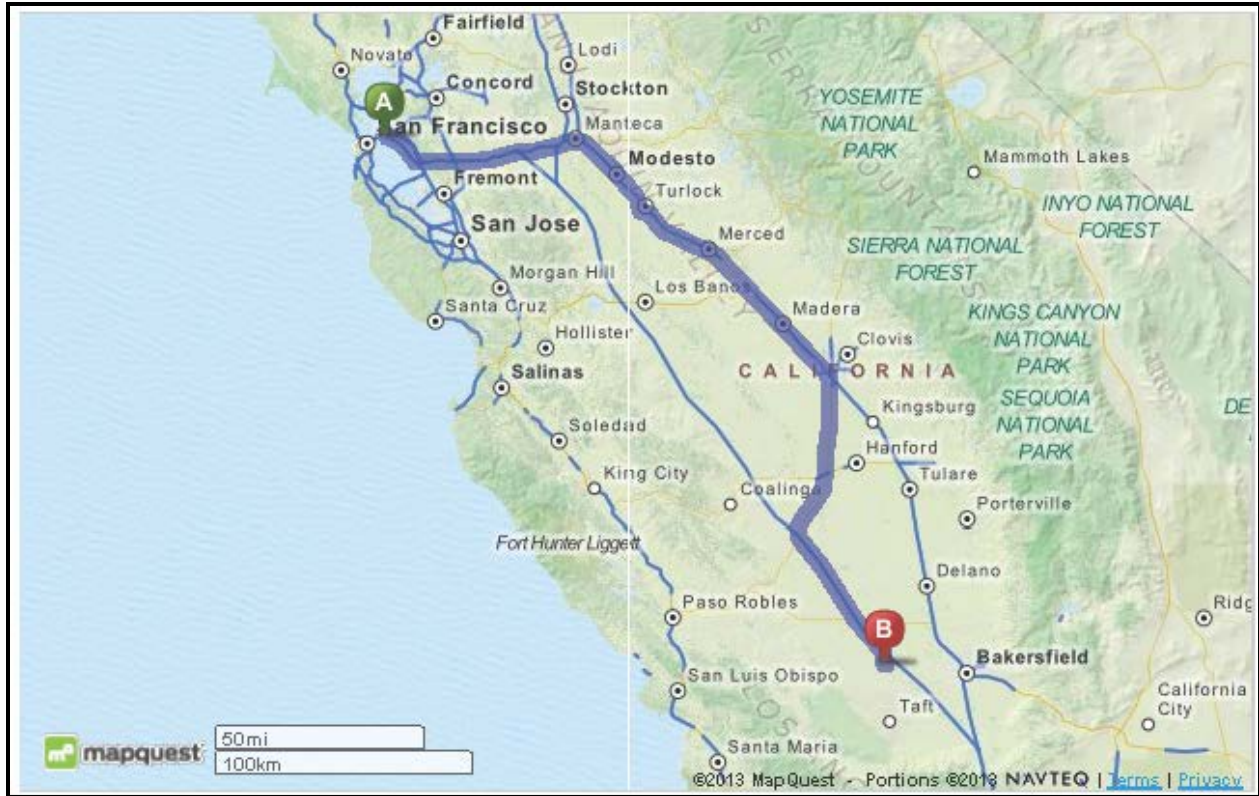


Figure 7. Buttonwillow Landfill Alternate Truck Route



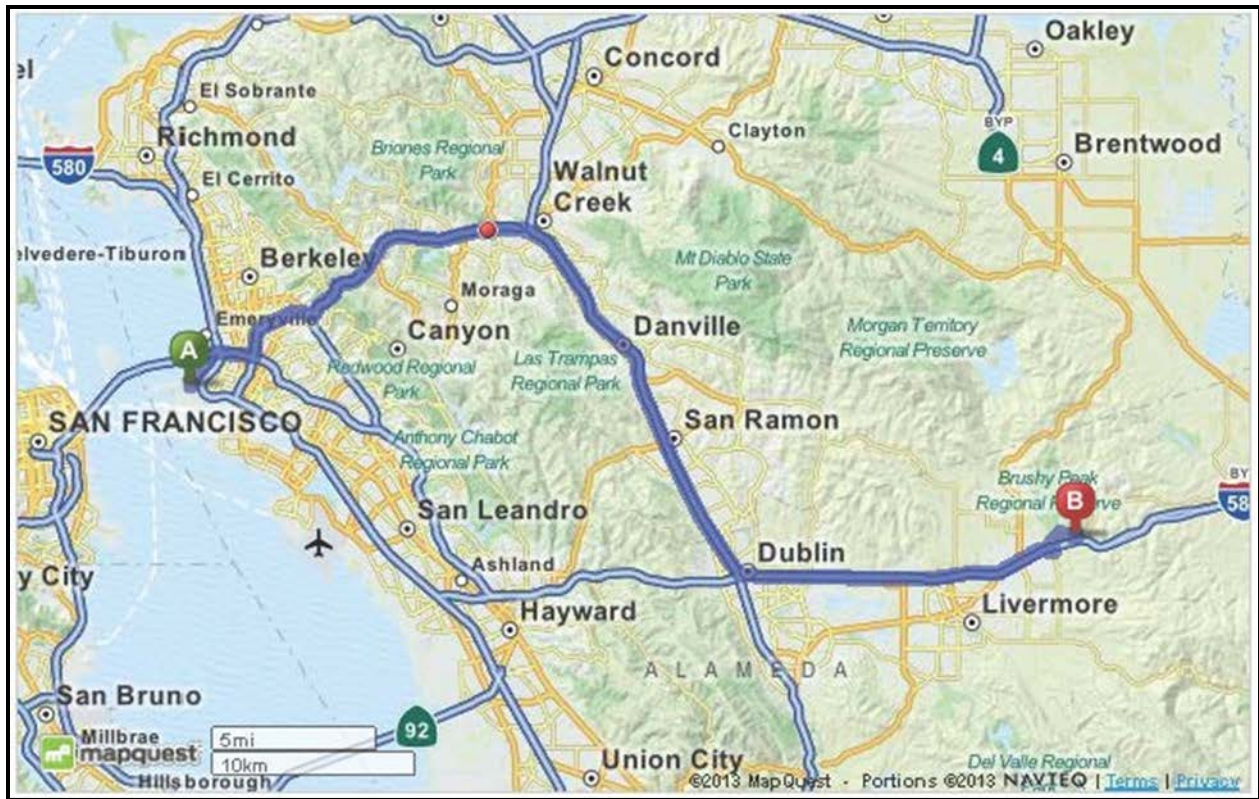


Figure 8. Altamont Landfill P Alternate Truck Route

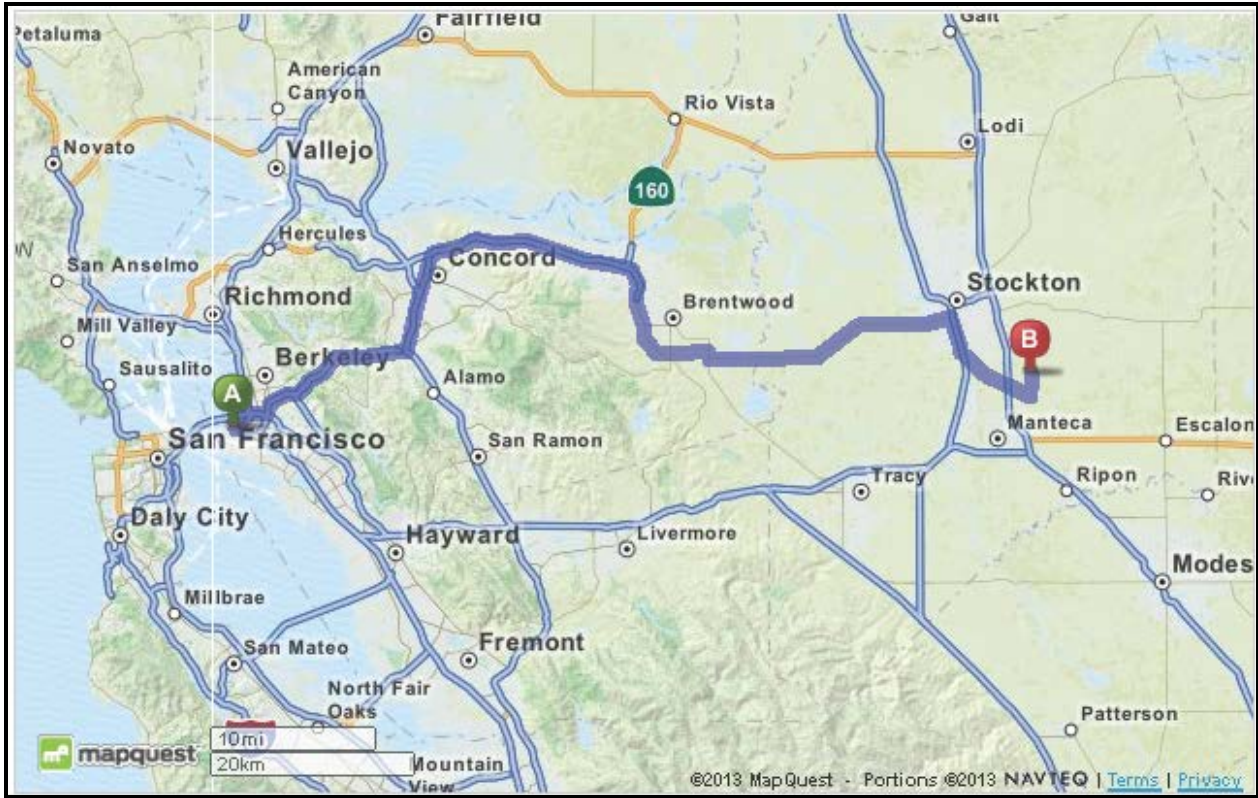


Figure 9. Forward Landfill Alternate Truck Route

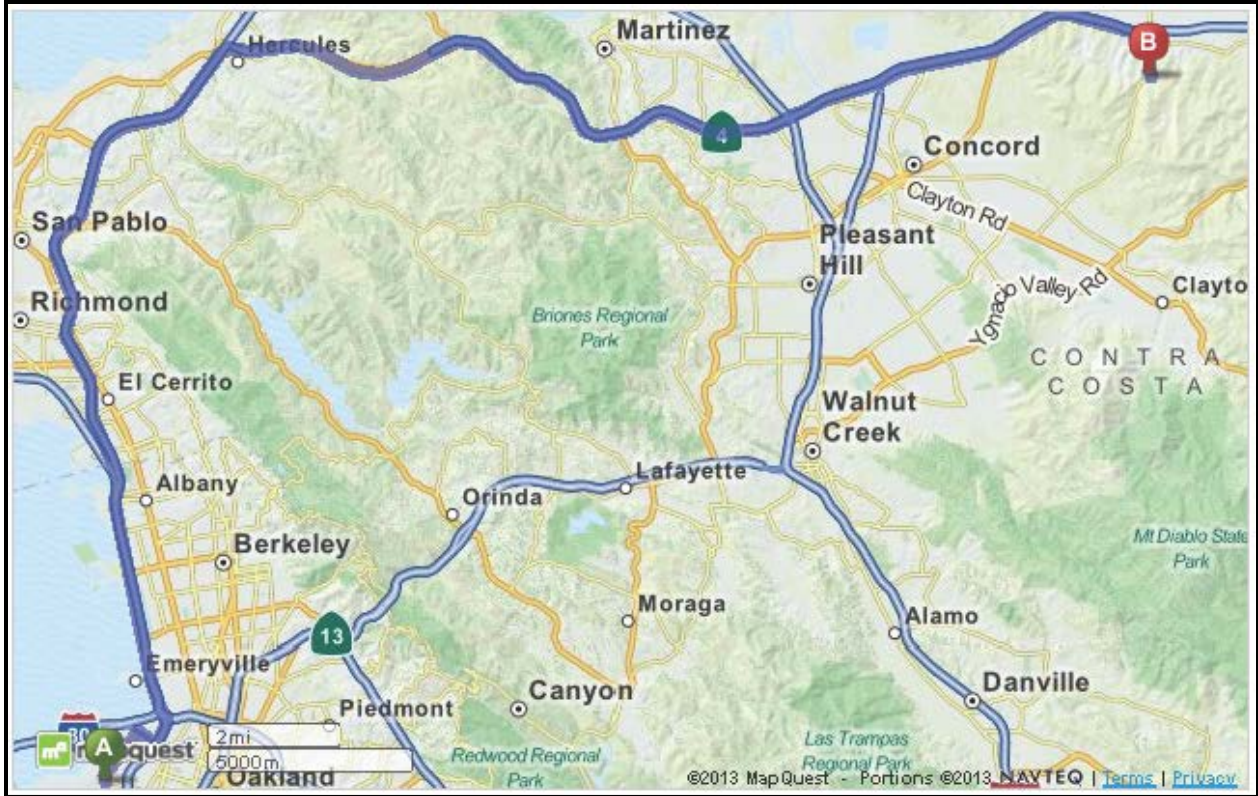


Figure 10. Keller Canyon Landfill Alternate Truck Route

**ATTACHMENT 3**

**TABLE 1 – CHP FACILITY ADDRESSES**

<b>FACILITY NAME</b>	<b>AREA NAME</b>	<b>PHONE NUMBER</b>	<b>ADDRESS</b>
CORDELIA INSPECTION FACILITY (366)	Golden Gate	707-864-5552	3895 Interstate 80 Suisun 94585
MISSION GRADE INSPECTION FACILITY (391)	Golden Gate	925-862-2223	4751 Highway 680 Sunol 94586
NIMITZ INSPECTION FACILITY (347)	Golden Gate	510-794-3658	4416 I-880 Fremont 94538
CHOWCHILLA RIVER INSPECTION FACILITY (464)	Central	559-665-2904	8820 S. Highway 99 Le Grand 95333
GRAPEVINE INSPECTION FACILITY (424)	Central	661-858-2540	32829 Interstate 5 Lebec 93243
GILROY INSPECTION FACILITY (726)	Coastal	408-683-9086	12000 South Valley Fwy. San Martin 95046
CONEJO INSPECTION FACILITY (766)	Coastal	805-498-3853	4001 U.S. Hwy 101 Thousand Oaks 91360

**TABLE 2 – EMERGENCY CONTACT LIST**

<b>COMPANY NAME</b>	<b>CONTACT NAME</b>	<b>PHONE NUMBER</b>	<b>ADDRESS</b>
Goodfellow Top Grade Construction	Dustin Knott	(925) 580-2200	50 Contractors St., Livermore, CA 94551
Turner Construction	Cliff Kunkel	(916) 208-5428	1111 Broadway, Suite 2100 Oakland, California 94607
Flat Iron	Walt Quincy	(925) 570-4796	675 Hegenberger Road, Suite 300 Oakland, California 94621

**ATTACHMENT 4**

## Complaint Log

Name and Address of Notifier	Telephone Number and/or Email	Date and Time of Call/Email	Nature of Complaint (Traffic/Noise/Dust/Etc.)
	Received By	Directed To	
	Received By	Directed To	
	Received By	Directed To	

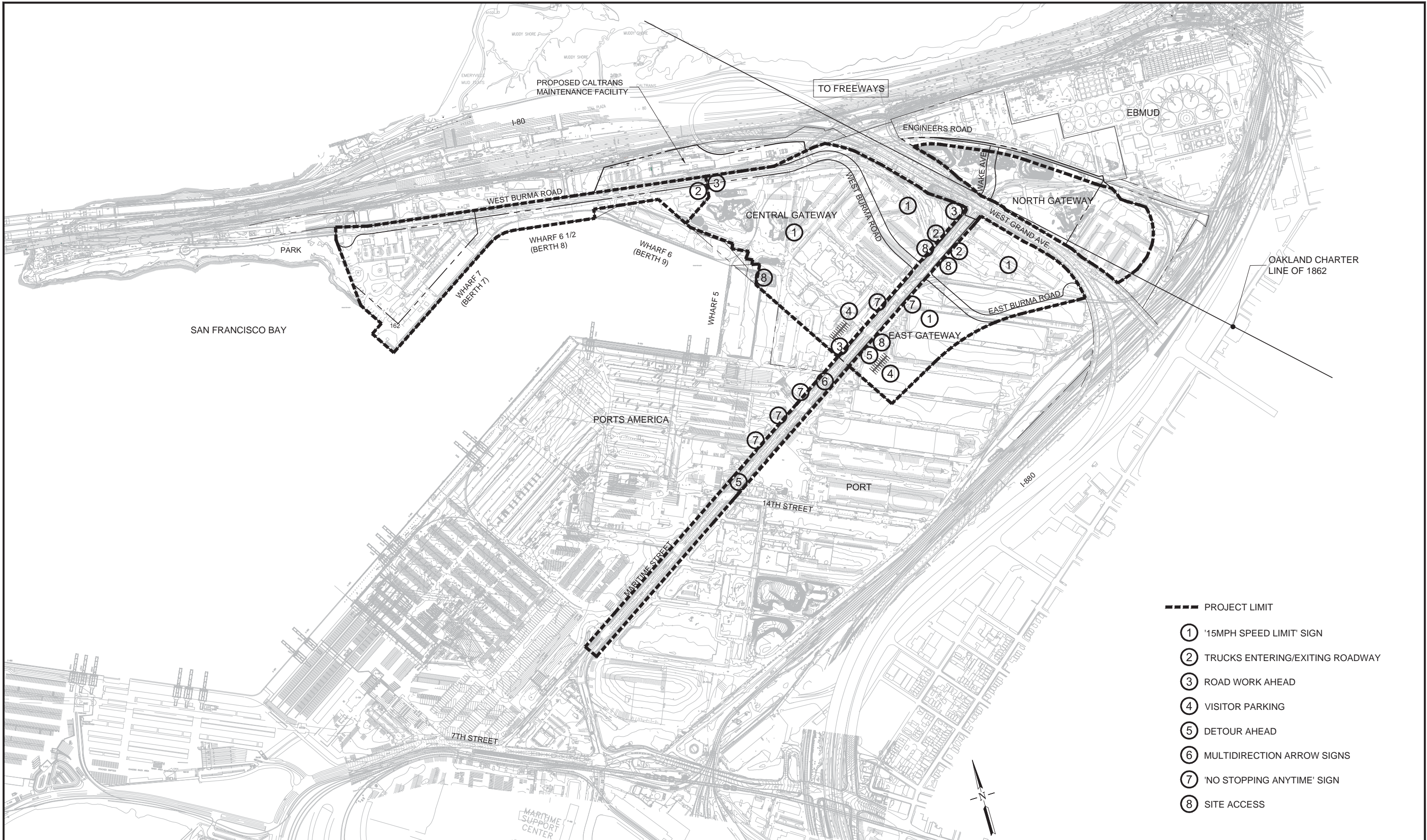








**ATTACHMENT 5**



- PROJECT LIMIT
- ① '15MPH SPEED LIMIT' SIGN
- ② TRUCKS ENTERING/EXITING ROADWAY
- ③ ROAD WORK AHEAD
- ④ VISITOR PARKING
- ⑤ DETOUR AHEAD
- ⑥ MULTIDIRECTION ARROW SIGNS
- ⑦ 'NO STOPPING ANYTIME' SIGN
- ⑧ SITE ACCESS



CAT. NO.	20955
INV. NO.	AD-0244.03

REV	DATE	COMMENT

JOB NO.	OAB02
SCALE:	1" = 400'
DATE:	3/25/2013
DRAWN BY:	J. ARMADA
CHECKED BY:	K. ROSSO

Mar 28, 2013 - 11:51am, Plotted By: jacqueline  
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**APPENDIX E**  
**Dust Control Plan**

## Dust Control Plan

**Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities** requires the owner or operator of a construction project to submit a Dust Control Plan to the Developer if at anytime the project involves:

- Residential developments of ten or more acres of disturbed surface area,
- Non-residential developments of five or more acres of disturbed surface area, or
- Moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project.

A Dust Control Plan identifies the fugitive dust sources at the construction site and describes all of the dust control measures to be implemented before, during, and after any dust generating activity for the duration of the project. The Dust Control Plan shall comply with the regulations of the Bay Area Air Quality Management District (BAAQMD) and the State Water Resources Control Board (SWRCB). The Developer will review and approve, conditionally approve, or disapprove the Dust Control Plan within 30 days of submittal. **Construction activities shall not commence until the Dust Control Plan has been approved or conditionally approved.** An owner or operator must also provide written notification to the Developer fax or mail within 10 days prior to the commencement of earthmoving activities. A copy of the approved Dust Control Plan must be retained at the project site and made available upon request by a Developer's inspector.

At least one key individual representing the owner, subcontractor, operator, or any person who prepares a Dust Control Plan will be required to acknowledge and report any issues regarding dust control measures.

Regardless of whether an approved Dust Control Plan is in place or not, the owner, subcontractor, or operator is required to comply with all requirements of the applicable rules under BAAQMD and the SWRCB at all times.

Submit the Dust Control Plan to the Developer's Representative:

**Turner/TopGrade/Flatiron, A Joint Venture**  
1111 Broadway Street, Ste 2100  
Oakland, CA 94607  
(510) 267-8100



**Dust Control Plan**  
**Section 1 – General Information – Page 1**

<b>1-A Project Name and Location</b>	
Project Name:	<u>Oakland Army Base Redevelopment Project</u>
Project Address:	<u>Oakland Army Base</u>
Major X-Streets:	<u>Maritime and West Burma Road</u>
City:	<u>Oakland</u>
County:	<u></u>
Section(s):	<u></u>
Township:	<u></u>
Range:	<u></u>
Expected Construction Start Date:	<u>June 1, 2013</u>
End Date:	<u>September 1, 2017</u>

<b>1-B Contacts</b>	
Report the names, addresses, and phone numbers of persons and owners or operators responsible for the preparation, submittal, and implementation of the Dust Control Plan and responsible for the dust generating operation and dust control applications.	
<b>Property Owner:</b>	<u>City of Oakland</u>
Address:	<u>250 Frank H. Ogawa Plaza</u>
City / State / Zip:	<u>Oakland, CA 94612</u>
Phone:	<u>510.238.3015</u>
Fax:	<u></u>
<b>Developer:</b>	<u>California Capitol Investment Group</u>
Address:	<u>300 Frank H. Ogawa Plaza, Ste 340</u>
City / State / Zip:	<u>Oakland, CA 94612</u>
Contact Person:	<u>Phil Tagami</u>
Phone:	<u>510.463.6363</u>
Fax:	<u></u>
<b>General Contractor:</b>	<u>Turner/TopGrade/Flatiron, A Joint Venture</u>
Address:	<u>1111 Broadway, Suite 2100</u>
City / State / Zip:	<u>Oakland, CA 94607</u>
Contact Person:	<u></u>
Phone:	<u>510.267.8100</u>
Fax:	<u>510.555.1212</u>
<b>This Dust Control Plan was prepared by:</b>	
Name:	<u>Momina Jalil</u>
Company Name:	<u>Turner/TopGrade/Flatiron, A Joint Venture</u>
Address:	<u>1111 Broadway, Suite 2100</u>
City / State / Zip:	<u>Oakland, CA 94607</u>
Phone:	<u>510.267.8100</u>
Fax:	<u>510.555.1212</u>



## Section 1 – General Information – Page 2

Project Name: OAB Redevelopment Project

### 1-C Contractors

Provide the names, addresses, and phone numbers of the contractors involved in dust generating activities or performing dust control as part of this project. A supplemental list may be attached.

1. Turner/TopGrade/Flatiron Joint Venture

1111 Broadway, Ste 2100, Oakland, CA 94607

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

### 1-D Who will have the primary responsibility for implementing this Dust Control Plan?

Property Owner       Developer       General / Prime Contractor

Sub-Contractor(s)       Other: \_\_\_\_\_

Primary Project Contact: Dustin Knott

Title: General Superintendent

Company Name: Goodfellow Top Grade Construction

Address: 50 Contractors Circle

City / State / Zip: Livermore, CA

On-Site Phone: 925.580.2200

Fax: \_\_\_\_\_

Mobile Phone: same

Pager: \_\_\_\_\_

### 1-F Provide a brief description of the project's operations.

Building demolition, import fill, installation of utilities are the main operations on this project. Import fill will be brought to the MH Yard and stockpiled on site. Dirt moving activities from this operation will be the main cause of dust.

**Dust Control Plan**  
**Section 2 – Plot Plan – Page 1**

**Project Name:**   OAB Redevelopment  

**2-A Plot Plan**

A plot plan identifies the type and location of each project. Attach appropriately sized maps with the project boundaries outlined or use the space in sections 2-B or 2-C to draw a plot plan. Attached maps may include tract maps, site maps, and topographic maps. Use the checklist below to make sure all areas have been identified on the plot plan.

**Identify the relative locations of actual and potential sources of fugitive dust emissions.**

- Bulk material handling and storage areas.
- Paved and unpaved access roads, haul roads, traffic areas, and equipment storage yards.
- Exit points where carryout and trackout onto paved public roads may occur.
- Water supply locations if water application will be used for controlling visible dust emissions.

**Identify the relative locations of sensitive receptors within ¼ mile of the project.**

- No sensitive receptors within ¼ mile of the project.
- Residential areas, schools, day care, churches, hospitals, nursing facilities, commercial, retail, etc.
- Freeways, roads, or traffic areas that may be affected by the dust generating activities.
- Other: \_\_\_\_\_

**2-B Draw Plot Plan** (if one is not attached)

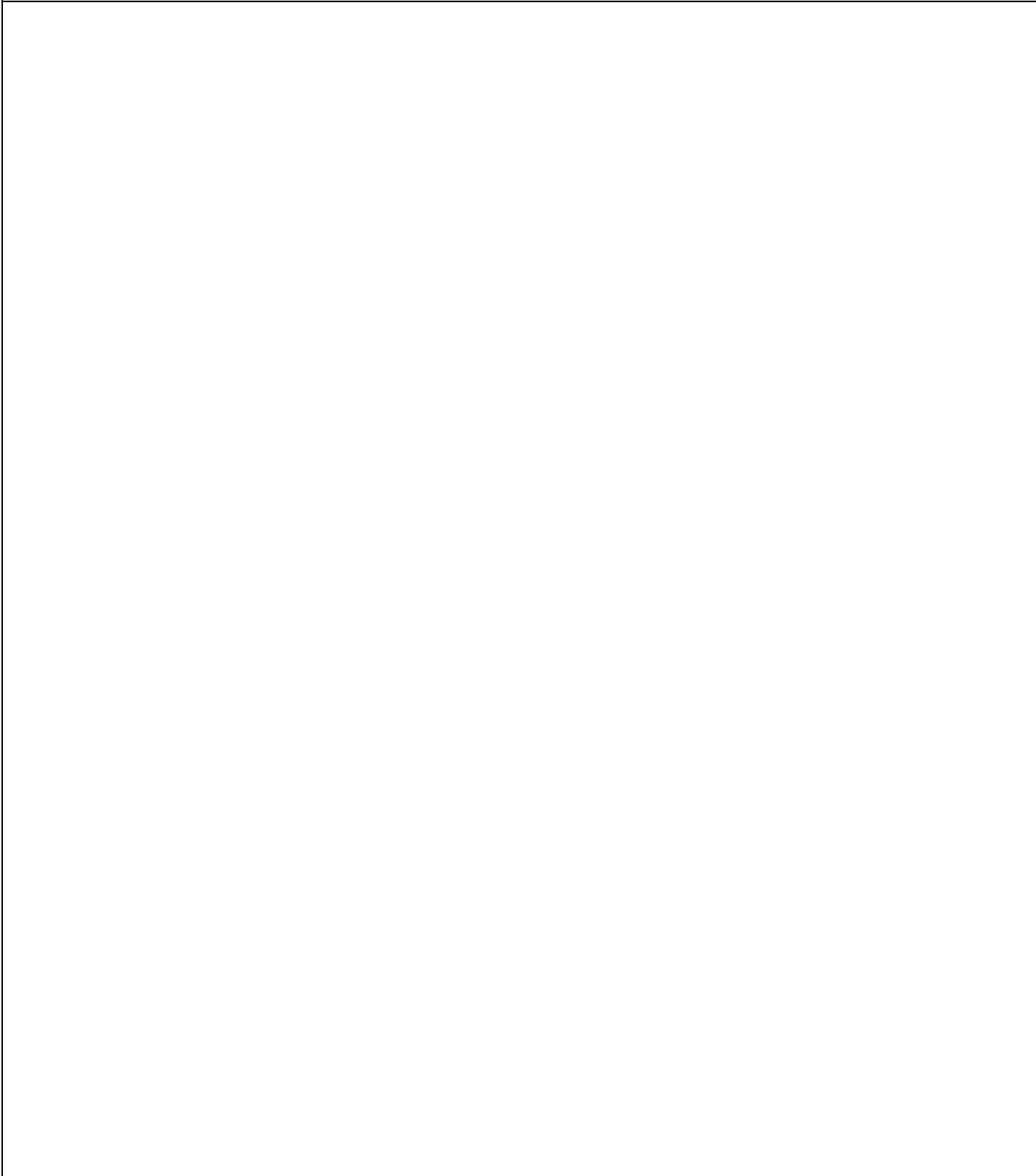
May use the back of this form  
Include a North Arrow

- Plot plan is attached (Skip to 3-A).

**Section 2 – Plot Plan – Page 2**

**Project Name:** OAB Redevelopment

**2-C Draw Plot Plan** (if one is not attached) Include a North Arrow



## Dust Control Plan

### Section 3 – Fugitive PM10 Sources – Page 1

**Project Name:** OAB Redevelopment

#### 3-A Disturbed Surface Area

Report the total area of land surface to be disturbed, the daily throughput volume of earthmoving in cubic yards, and the total area in acres of the entire project site.

Total area of land surface to be disturbed:	<u>65</u>	Acres
Daily maximum throughput volume of earthmoving:	<u>10,000</u>	Cubic Yards
Daily average throughput volume of earthmoving:	<u>7,000</u>	Cubic Yards
Total area of entire project site:	<u>150</u>	Acres
Total disturbed areas that will be left inactive for more than seven days:	<u>100</u>	Acres

#### 3-B Dust Generating Activity Dates

The expected start and completion dates of **dust generating activities and soil disturbance activities** to be performed on site. For phased projects, it may be necessary to report expected start and completion dates separately.

<b>Expected start date:</b>	<u>6/2013</u>	<b>Completion Date:</b>	<u>9/2017</u>
Phase Project Start – A:	_____	Completion – A:	_____
Phase Project Start – B:	_____	Completion – B:	_____
Phase Project Start – C:	_____	Completion – C:	_____

#### 3-C Other Locations

Identify whether any other locations should be included with this plan that are involved with this project. An example may include listing any site where materials will be imported from or exported to.

No other locations are included with this project. (Skip to 3-D)

**Location 1:** \_\_\_\_\_

No Dust Control Plan Required     
 Included with this plan     
 Included with another plan

**Location 2:** \_\_\_\_\_

No Dust Control Plan Required     
 Included with this plan     
 Included with another plan

**Location 3:** \_\_\_\_\_

No Dust Control Plan Required     
 Included with this plan     
 Included with another plan

## Section 3 – Fugitive PM10 Sources – Page 2

Project Name: OAB Redevelopment

### 3-D Sources of Fugitive Dust

This section describes the minimum requirements for limiting visible dust emissions from activities that cause fugitive dust emissions. **Check at least one box under each category.**

#### Structural Demolition.

- No demolitions are planned for this project.
- Asbestos NESHAP notification and fees have been submitted to the City.
- Water will be applied to the following areas for the duration of the demolition activities:
  - Building exterior surfaces;
  - Unpaved surface areas where equipment will operate;
  - Razed building materials; and
  - Water or dust suppressants will be applied to unpaved surface areas within 100 feet of structure during demolition.

#### Pre-Activity.

- Not applicable for this project (Please explain why in Section 3-F).
- The site will be pre-watered and work will be phased to reduce the amount of disturbed surface area at any one time (Complete Section 4-A).

#### Active Operations.

- Water will be applied to dry areas during leveling, grading, trenching, and earthmoving activities (Complete Section 4-A).
- Wind barriers will be constructed and maintained, and water or dust suppressants will be applied to the disturbed surface areas (Complete Sections 4-A or 4-B, and 4-C).

#### Inactive Operations, including after work hours, weekends, and holidays.

- Not applicable for this project (Please explain why in Section 3-F).
- Water or dust suppressants will be applied on disturbed surface areas to form a visible crust, and vehicle access will be restricted to maintain the visible crust. (Complete Section 4-A or 4-B, and 4-C)

#### Temporary stabilization of areas that remain unused for seven or more days.

- Not applicable for this project (Please explain why in Section 3-F)
- Vehicular access will be restricted and water or dust suppressants will be applied and maintained at all un-vegetated areas (Complete Section 4-A or 4-B, and 4-C).
- Vegetation will be established on all previously disturbed areas (Complete Section 4-C).
- Gravel will be applied and maintained at all previously disturbed areas (Complete Section 4-C).
- Previously disturbed areas will be paved (Complete Section 4-C).

#### Unpaved Access and Haul Roads, Traffic and Equipment Storage Areas.

- Not applicable for this project (Please explain why in Section 3-F)
- Apply water or dust suppressants to unpaved haul and access roads (Complete Section 4-A or 4-B)
- Post speed limit signs of not more than 15 miles per hour at each entrance, and again every 500 feet. (Complete Section 4-C)
- Water or dust suppressants will be applied to vehicle traffic and equipment storage areas (Complete Section 4-A or 4-B).

#### Wind Events.

- Water application equipment will apply water to control fugitive dust during wind events, unless unsafe to do so. Outdoor construction activities that disturb the soil will cease whenever visible dust emissions cannot be effectively controlled.

## Section 3 – Fugitive PM10 Sources – Page 3

### 3-E Bulk Materials

#### Outdoor Handling of Bulk Materials.

- No bulk materials will be handled during this project.
- Water or dust suppressants will be applied when handling bulk materials.
- Wind barriers with less than 50 percent porosity will be installed and maintained, and water or dust suppressants will be applied.

#### Outdoor Storage of Bulk Materials.

- No bulk materials will be stored during this project.
- Water or dust suppressants will be applied to storage piles.
- Storage piles will be covered with tarps, plastic, or other suitable material and anchored in such a manner that prevents the cover from being removed by wind action.
- Wind barriers with less than 50 percent porosity will be installed and maintained around the storage piles, and water or dust suppressants will be applied.
- A three-sided structure (< 50% porosity) will be used that is at least as high as the storage piles.

#### On-Site Transporting of Bulk Materials.

- No bulk materials will be transported on the project site.
- Vehicle speed will be limited to 15 mph on the work site.
- All haul trucks will be loaded such that the freeboard is not less than 2 feet when transported across any paved public access road.
- A sufficient amount of water will be applied to the top of the load to limit visible dust emissions.
- Haul trucks will be covered with a tarp or other suitable cover.

#### Off-Site Transporting of Bulk Materials.

- No bulk materials will be transported to or from the project site.
- The following practices will be performed: (complete Section 5-B)
  - The interior of emptied truck cargo compartments will be cleaned or covered before leaving the site.
  - Spillage or loss of bulk materials from holes or other openings in the cargo compartment's floor, sides, and tailgates will be prevented.
  - Haul trucks will be covered with a tarp or other suitable cover or will be loaded such that the freeboard is not less than 2 feet when transported on any paved public access road to or from the project site and a sufficient amount of water will be applied to the top of the load to limit visible dust emissions.

#### Outdoor Transport using a Chute or Conveyor.

- No chutes or conveyors will be used.
- Chute or conveyor will be fully enclosed.
- Water spray equipment will be used to sufficiently wet the materials.
- Transported materials will be washed or screened to remove fines (PM10 or smaller).

### 3-F Comments

## Dust Control Plan

### Section 4 – Dust Control Methods – Page 1

<b>Project Name:</b> <u>  OAB Redevelopment  </u>
<b>4-A Water Application</b>
Complete this section if water application will be used as a control method for limiting visible dust emissions and stabilizing surface areas. Check and answer everything that applies to this project.
<b>Water Application Equipment:</b> <input type="checkbox"/> Sprinklers: Describe the activities that will utilize sprinklers: <hr/> Minimum treated area: _____ <input type="checkbox"/> Square Feet <input type="checkbox"/> Acres Maximum treated area: _____ <input type="checkbox"/> Square Feet <input type="checkbox"/> Acres Minimum water flow rate: _____ Gallons/minute    Duration: _____ <input checked="" type="checkbox"/> Water Truck, <input checked="" type="checkbox"/> Water Trailer, <input type="checkbox"/> Water Wagon, <input type="checkbox"/> Other: _____ Describe the activities that will utilize this equipment: <b><u>Building Demo, site grading, import fill</u></b> <hr/> Number of application equipment available: <u>  1-5  </u> Application equipment capacity: <u>  2000-4000 Gallons  </u> Application frequency: <u>  As needed to maintain dust control  </u> Application rate: <u>  370  </u> Gallons per acre per application Hours of operation: <u>  7:00 am to 4:00 pm  </u> Water application equipment is available to operate after normal working hours, on weekends, and holidays. After-hours contact: <u>  Dustin Knott  </u> Phone No.: <u>  (925) 580-2200  </u> After-hours contact: <u>  David Tennison  </u> Phone No.: <u>  (510) 267-8100  </u>
<b>Water Supply:</b> <i>Include the relative locations of these sources on the plot plan in Section 2.</i> <input checked="" type="checkbox"/> Fire hydrants Number of hydrants available                      On-Site: <u>  3  </u> Off-Site: <u>  3  </u> Approval granted by the owner or public agency to use their fire hydrants for this project. Owner or Agency: <u>  Eat Bay Municipal District  </u> Contact: <u>  Ivy Agular  </u> Phone No.: <u>  (510) 287-7023  </u> <input type="checkbox"/> Storage tanks    Number and capacity: _____ <input type="checkbox"/> Wells                      Number and flow rate: _____ <input type="checkbox"/> Canal, River, Pond, Lake, etc. Describe: _____ Approval granted by the owner or public agency to use their water source for this project. Owner or Agency: _____ Contact: _____ Phone No.: _____ <input type="checkbox"/> Other: _____

## Section 4 – Dust Control Methods – Page 2

<b>Project Name:</b> <u>OAB Redevelopment</u>
<b>4-B Dust Suppressant Products</b>
<b>Complete this section if a dust suppressant product will be used.</b> These materials include, but are not limited to: hygroscopic suppressants (road salts), adhesives, petroleum emulsions, polymer emulsions, and bituminous materials (road oils).
<b>Copy this page if more than one dust suppressant product will be used.</b>
<input checked="" type="checkbox"/> <b>Not Applicable.</b> Only water application will be the control method used. <b>Skip to 4-C.</b>
Application Area: _____
Product Name: _____
Contractor's Name: _____ Phone No: _____
Application Rate: _____ Gallons of undiluted material per <input type="checkbox"/> mile or <input type="checkbox"/> acre treated.
Application Frequency: _____ Applications per <input type="checkbox"/> week, <input type="checkbox"/> month, <input type="checkbox"/> year
Application Equipment: _____
Number of Application Equipment Available: _____
Application Equipment Capacity: _____
Attach each of the following information that fully describes this product. Use the checklist below to make sure all information is submitted with this plan.
<input type="checkbox"/> Product Specifications (MSDS, Product Safety Data Sheet, etc.)
<input type="checkbox"/> Manufacturer's Usage Instructions (method, frequency, and intensity of application)
<input type="checkbox"/> Environmental impacts and approvals or certifications related to the appropriate and safe use for ground application.



## Section 4 – Dust Control Methods – Page 3

<b>Project Name:</b> <u>OAB Redevelopment</u>
<b>4-C Other Dust Control Methods</b>
Check below the other types of dust control methods that will be employed at the construction site.
<input checked="" type="checkbox"/> Physical barriers for restricting unauthorized vehicle access: <input checked="" type="checkbox"/> Fences <input type="checkbox"/> Gates <input type="checkbox"/> Posts <input type="checkbox"/> Berms <input type="checkbox"/> Concrete Barriers <input type="checkbox"/> Other: _____
<input checked="" type="checkbox"/> Wind barriers Describe: <u>Wind breaks with maximum 50% porosity on fences.</u>
<input checked="" type="checkbox"/> Posted speed limit signs meet State and Federal Department of Transportation standards. <input checked="" type="checkbox"/> Posted at 15 miles per hour, <input type="checkbox"/> Posted at _____ miles per hour (less than 15 MPH)
<input type="checkbox"/> Re-establish vegetation for temporarily stabilizing previously disturbed surfaces. Explain: _____
<input type="checkbox"/> Apply and maintain gravel: <input type="checkbox"/> On haul roads <input type="checkbox"/> On access roads <input type="checkbox"/> At equipment storage yards <input type="checkbox"/> At vehicle traffic areas <input type="checkbox"/> For temporarily stabilizing previously disturbed areas. Explain: _____
<input type="checkbox"/> Apply pavement: Explain: _____
<input type="checkbox"/> Other: _____
<b>4-D Contingencies</b>
Contingencies to be implemented if application equipment becomes inoperable, more equipment is needed to effectively control fugitive dust emissions during active and inactive periods, accessibility limitations occur at the water sources, or staff is not available to operate the application equipment. Describe the contingencies that will be in place and when they will be implemented. Attach any additional information if needed.
The Turner/TopGrade/Flatiron will have enough trucks available on stanby as well as having water truck companies on stand by in the event a truck becomes inoperable.  _____
<b>4-E Record keeping</b>
<b>Records and any other supporting documents for demonstrating compliance must be maintained, but only for those days when a control measure is implemented. Daily inspection checklist provided for use.</b>
<input checked="" type="checkbox"/> Records will be maintained

**Dust Control Plan**  
**Section 5 – Carryout and Trackout – Page 1**

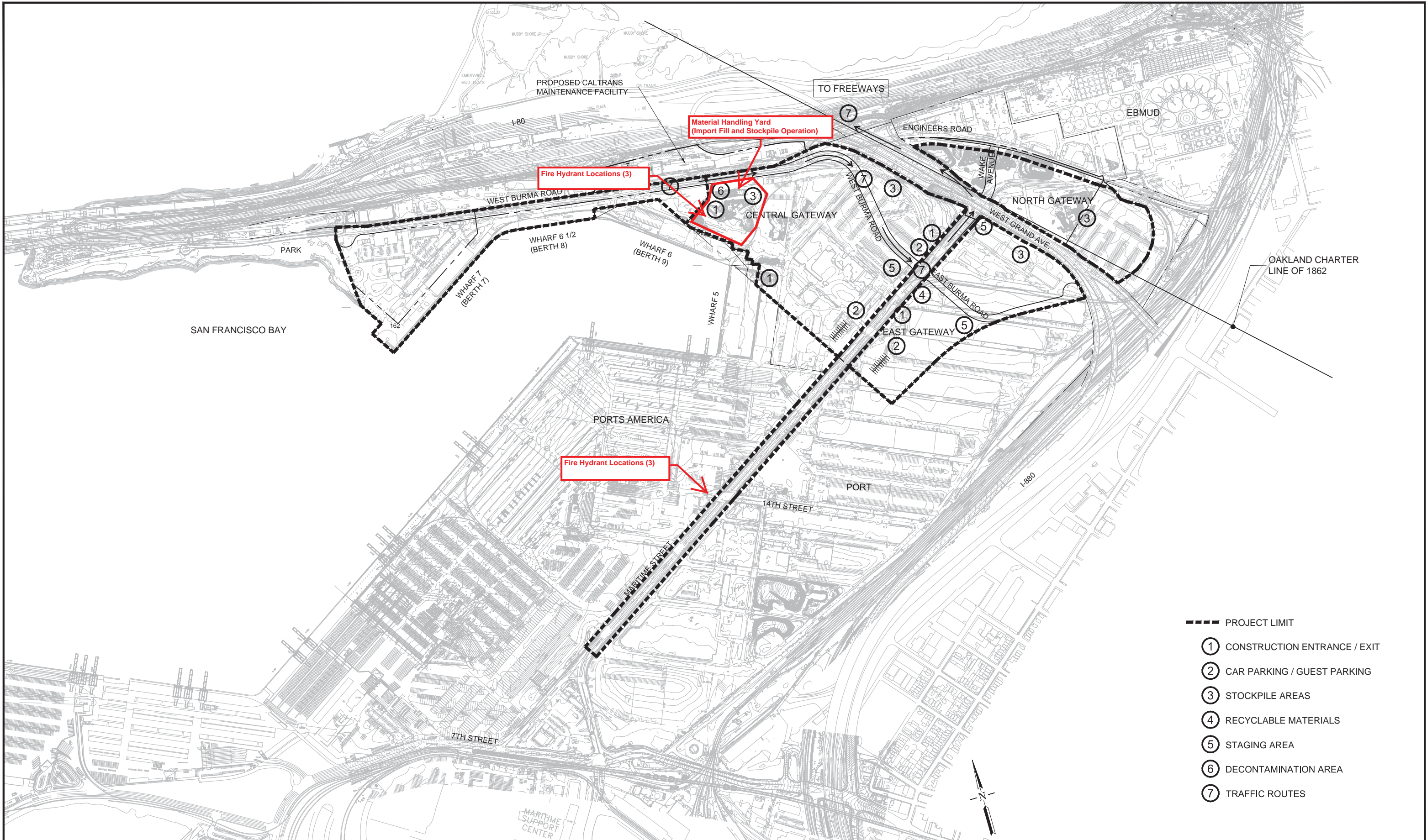
<b>Project Name:</b> <u>OAB Redevelopment</u>
<b>5-A Treatments for Preventing Trackout</b>
Select the control devices that will be used for preventing trackout from occurring onto paved public roads. Trackout is any material that adheres to vehicle tires and is deposited onto a paved public road or the paved shoulder of a paved public road. Check one or a combination that will apply to this project.
<input type="checkbox"/> <b>Grizzly:</b> Rails, pipes, or grates used to dislodge debris off of vehicles before exiting the site. Extends from the intersection with the paved public road surface for the full width of the unpaved exit surface for a distance of at least 25 feet. Describe: _____
<input checked="" type="checkbox"/> <b>Gravel Pad:</b> A layer of washed gravel at least one (1) inch or larger in diameter, three (3) inches deep, and extends from the intersection with the public paved road surface for the full width of the unpaved exit surface for a distance of at least 50 feet. Gravel Size: <u>4.00</u> Inches Pad Width: <u>35.00</u> Feet      Length: <u>50.00</u> Feet      Depth: <u>12.00</u> Inches
<input type="checkbox"/> <b>Paved Surface:</b> Extends from the intersection with the paved public road surface for the full width of the unpaved access road for at least 100 feet to allow mud and dirt to drop off of vehicles before exiting the site. Width: _____ Feet      Length: _____ Feet Mud and dirt deposits accumulating on paved interior roads will be removed with sufficient frequency, but not less frequently than once per workday. Cleanup will commence within ½ hour of generating any carryout and trackout. Clean-up Frequency: _____
<input type="checkbox"/> <b>Wheel Washer:</b> Uses water to dislodge debris from tires and vehicle undercarriage. (Rule 8011 Sec. 3.73) Describe: _____
<input checked="" type="checkbox"/> <b>Other:</b> <u>Street sweeper</u>

<b>5-B Treatments for Preventing Carryout</b>
Report the required treatments that will be used for preventing carryout from occurring on paved public roads. Carryout occurs when materials from emptied or loaded haul trucks, vehicles, or trailers falls onto a paved public road or paved shoulder of a paved public road.
<input type="checkbox"/> No haul trucks will be routinely entering or leaving the project site.
<b>Emptied Haul Trucks:</b> <input type="checkbox"/> Interior cargo compartments will be cleaned before leaving the project site. <input type="checkbox"/> Cargo compartment will be covered with a tarp or suitable cover before leaving the project site.
<b>Loaded Haul Trucks:</b> Spillage or loss of materials from holes or other opening in the cargo compartment will be prevented when material is transported onto any paved public access road. <b>Select one or both of the required applications:</b> <input checked="" type="checkbox"/> Haul trucks will be loaded such that the freeboard is not less 2 feet with water applied to the top of the load before leaving the project site. <input type="checkbox"/> Cargo compartment and load will be covered with a tarp or suitable cover before leaving the project site.
<input type="checkbox"/> <b>Other:</b> _____

## Section 5 – Carryout and Trackout – Page 2

<b>Project Name:</b> <u>OAB Redevelopment</u>
<b>5-C Cleaning up Carryout and Trackout</b>
Check and report below the methods and frequency for cleaning up carryout and trackout from the surface and paved shoulders of paved public roads. <b>The use of blower devices, or dry rotary brushers or brooms, for removal of carryout and trackout from paved public roads is prohibited.</b> In the event the control device becomes ineffective due to an accumulation of mud and dirt, material must be removed within ½ hour of the generation of carryout and trackout.
<b>The project is located in:</b> <input checked="" type="checkbox"/> An <b>Urban Area</b> , within an incorporated city boundary or an unincorporated area surrounded by a city. Minimum cleanup frequency will be at the end of the workday and removed immediately if carryout and trackout extends beyond 50 feet. <input type="checkbox"/> A <b>Rural Area</b> , located within an unincorporated area and not surrounded by an incorporated city. <input type="checkbox"/> The construction project is less than 10 acres in size: minimum cleanup frequency is at the end of the workday. <input type="checkbox"/> Construction projects 10 or more acres in size: minimum cleanup frequency is end of the workday and immediately if carryout and trackout extends beyond 50 feet. <b>Clean up Method:</b> Check the method below that will be used for cleaning carryout and trackout. <input checked="" type="checkbox"/> Manually sweeping and picking up. <input checked="" type="checkbox"/> Mechanical sweeping with a rotary brush or broom accompanied or preceded by water. Describe the types of equipment that will used: <u>Street Sweeper (Rotary Broom)</u> <input type="checkbox"/> Operating a PM10-efficient street sweeper. Make and Model: _____ <input type="checkbox"/> Flushing with water: allowed if: <ul style="list-style-type: none"><li>• No curbs or gutters are present.</li><li>• Using water will not result as a source of trackout and carryout.</li><li>• Using water will not result in adverse impacts on storm water drainage systems.</li><li>• Using water will not violate any National Pollutant Discharge Elimination System permit program.</li></ul>
<b>5-D Record keeping for Cleanup of Carryout and Trackout</b>
<b>Records and any other supporting documents for demonstrating compliance must be maintained, but only for those days when a control measure is implemented. Daily inspection checklist provided for use.</b>
<input checked="" type="checkbox"/> Records will be maintained





- PROJECT LIMIT
- ① CONSTRUCTION ENTRANCE / EXIT
- ② CAR PARKING / GUEST PARKING
- ③ STOCKPILE AREAS
- ④ RECYCLABLE MATERIALS
- ⑤ STAGING AREA
- ⑥ DECONTAMINATION AREA
- ⑦ TRAFFIC ROUTES

CAT. NO.	20938
INV. NO.	AD-0244.01

REV	DATE	COMMENT

JOB NO.	OAB02
SCALE:	1" = 400'
DATE:	3/25/2013
DRAWN BY:	J. ARMADA
CHECKED BY:	K. ROSSO

DRAWING NO.	DC-1
SHEET	_1_ OF _1_

Mar 26, 2013 - 11:36am: Plotted By: jacoblinea  
 G:\cad\_files\OAB\OAB02\_ARCHITECTURAL\_DIMENSIONS\X-dwg\X-464.dwg

## Daily Inspection Checklist

Date: \_\_\_\_\_

Inspected By: \_\_\_\_\_

### Site Information:

Project Name \_\_\_\_\_

Project Location \_\_\_\_\_

### Weather Information:

Wind (mph) \_\_\_\_\_

Weather Condition/Description \_\_\_\_\_

**Activities Occurring:**  Backfilling  Clear & Grubbing  Cut/Fill  Landscaping  Paving Sub/grade Prep  Staging Areas  
 Stockpiling  Track-out Prevention & Cleanup  Traffic on unpaved areas  Trenching  Truck Loading

**Water Source:**  Hydrant  Stand Tank  Reservoir  None Observed  N/A  Other \_\_\_\_\_

**Water Equipment:**  Hose  Pulls  Trucks  None Observed  N/A  Other

**Trackout Gravel Pad:** Present:  Yes  No Functional:  Yes  No Needed:  Yes  No  N/A

Corrective Action: \_\_\_\_\_

**Loaded Haul Trucks (Onsite/Offsite):** 2ft. below freeboard:  Yes  No Covered:  Yes  No Tires Clean:  Yes  No

Corrective Action: \_\_\_\_\_

**Tracking:**  Yes  No Street Sweeper:  Yes  No Corrective Action: \_\_\_\_\_

**Stockpiles:**  Inactive  Active Covered:  Yes  No Maintained:  Yes  No

Corrective Action: \_\_\_\_\_

**Unpaved Roads/Soil Disturbed Areas:** 15 mph Speed Limit Maintained:  Yes  No Sign Posted:  Yes  No

Dust Visible:  Yes  No Corrective Action: \_\_\_\_\_

**Other Methods/Recommendations:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**APPENDIX F**  
**Equipment Emissions Reduction Program**

## **EQUIPMENT EMISSIONS REDUCTION PROGRAM**

The Equipment Emissions Reduction Program (EERP) of the Construction Management Plan (CMP) addresses the relationship between the equipment that will be used during construction and California Air Resources Board (CARB) regulations, and the Contractor's, Developer's, and/or City's role in helping construction equipment owners comply with these regulations to ensure that air emissions are reduced as quickly as possible. Trucks must be compliant with all laws and regulations, notably the CARB Off-Road Diesel Regulations. All emission standards and related requirements set forth in the CARB Regulations apply on the schedules set forth in the Regulations.

The Off-Road Regulation applies to all self-propelled off-road diesel vehicles over 25 horsepower (hp) used in California, and most two-engine vehicles (except on-road two-engine sweepers) are subject to the Regulation for In-Use Off-Road Diesel Fueled Fleets (Off-Road regulation). This includes vehicles that are rented or leased (rental or leased fleets).

Personal use vehicles, vehicles used solely for agriculture, vehicles that are awaiting sale, and vehicles already covered by the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards (Cargo Handling regulation), are exempt from the Off-Road regulation. Emergency operations vehicles, low-use vehicles (used under 200 hours per year, as confirmed by a non-resettable hour meter), and vehicles used a majority of the time (but not solely) for agricultural operations, must be reported to CARB and labeled, but are exempt from the performance requirements of the Off-Road regulation.

The overall purpose of the Off-Road regulation is to reduce emissions of oxides of nitrogen (NO<sub>x</sub>) and particulate matter (PM) from off-road diesel vehicles operating within California. The primary components of the regulation are:

- Limits on idling, a written idling policy, and a disclosure when selling vehicles;
- Labeling and reporting all vehicles to CARB (using the Diesel Off-Road Online Reporting System, DOORS);
- Restrictions on adding older vehicles into fleets; and
- Reductions in fleet emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies, VDECS (i.e., exhaust retrofits).

The requirements and compliance dates of the Off-Road regulation vary by fleet size. For a fleet to determine their size, it must add up all of the off-road horsepower under common ownership or control in the fleet, as outlined in the following table.



## Fleet Size Categories and Performance Requirement Deadlines

Fleet Size	Description	Compliance Deadline
Small	Fleet or municipality, $\leq$ 2,500 hp, or municipality fleet in low population county, captive attainment area fleet, or non-profit training center, regardless of total hp	January 1, 2019
Medium	Fleet with 2,501 to 5,000 hp	January 1, 2017
Large	Fleet with more than 5,000 hp, or all state and federal government fleets, regardless of total hp	January 1, 2014

### CURRENT REQUIREMENTS

The following equipment emissions reduction actions are required by the SCA/MMRP:

- All construction equipment will be properly tuned in accordance with manufacturer's specifications. Maintenance on vehicles will be regularly performed by a certified mechanic. Only properly working equipment will be deployed onsite.
- Written documentation of equipment maintenance and emissions report will be provided by the Compliance Manager to the Bay Area Air Quality Management District (BAAQMD) for all equipment to be used onsite.
- Late model heavy-duty diesel-powered equipment will be used at the Project Site to the extent that it is readily available in the San Francisco Bay Area.
- Diesel-powered equipment that has been retrofitted with after-treatment products (e.g., engine catalyts) will be used to the extent that it is readily available in the San Francisco Bay Area.
- Low-emission diesel fuel will be used for all heavy-duty diesel-powered equipment operating and refueling at the Project Site to the extent that it is readily available and cost effective in the San Francisco Bay Area.
- Alternative fuel construction equipment (e.g., compressed natural gas, liquid petroleum gas, unleaded gasoline) will be used to the extent that the equipment is readily available and cost effective in the San Francisco Bay Area.
- Electricity infrastructure surrounding the construction sites will be used rather than electrical generators powered by internal combustion engines to the extent feasible.
- Signage will be posted with requirements of CCR Title 13, Section 2449 (CARB Off-Road Diesel Regulations) and enforced with inspection and reporting.

- Signage will be posted with requirements of construction equipment maintenance and enforced with inspection and reporting.

The requirements outlined below are currently in effect and being enforced by CARB.

### **Idling and Disclosure**

Fleets must limit their unnecessary idling to 5 minutes. There are exceptions for vehicles that need to idle to perform work (such as a crane providing hydraulic power to the boom), vehicles being serviced, or in a queue waiting for work. See Appendix G of the Project Manual for the Project Idling Policy.

Sellers must provide disclosure of the Off-Road regulation (exact language provided in the regulation) on the bill of sale or invoice, and must keep records that the disclosure was provided for three years after the sale. The seller must also report the vehicle sale to CARB via DOORS within 30 days of the sale.

### **Reporting and Labeling**

Reporting can be completed using DOORS, which is CARB's free online reporting tool for the Off-Road regulation. Additionally, hard copy reporting forms are also available. All fleet owners must review and update their information by March 1 of each year that annual reporting is required. Large fleets must report annually from 2012 to 2023, medium fleets from 2016 to 2023, and small fleets from 2018 to 2028. For each annual reporting date, a fleet must report any changes to the fleet, hour meter readings (for low-use vehicles and vehicles used a majority of the time, but not solely, for agricultural operations), and also must submit the Responsible Official Affirmation of Reporting (ROAR) form. All of these items should be submitted using DOORS.

After a fleet reports their vehicles to CARB, each vehicle is assigned a unique Equipment Identification Number (EIN). The fleet must label its vehicles within 30 days of receiving EINs. Labeling provisions of the Off-Road regulation were amended in December 2010 to require labels on both sides of each vehicle. Additionally, fleets reported as 'captive attainment area fleets' must have labels with a green background instead of red.

## **FUTURE REQUIREMENTS**

### **Restrictions on Adding Vehicles**

CARB is not currently enforcing the Off-Road regulation's restrictions on fleets adding vehicles with older tier engines, but will enforce this provision once authorization is received from the United States Environmental Protection Agency (EPA). Specific restrictions include:

- Effective upon the EPA issuing authorization for the Off-Road regulation, a fleet may not add a vehicle with a Tier 0 engine to its fleet. The engine tier must be Tier 1 or higher.
- Also effective upon EPA authorization, large and medium fleets may add a vehicle with a Tier 1 engine if and only if the vehicle has an EIN that CARB assigned to the vehicle prior to January 1, 2012, and both the fleet selling and the fleet purchasing the vehicle have reported to CARB by January 1, 2012, or have entered California for the first time after January 1, 2012. Beginning on January 1, 2013, for large and medium fleets, and January 1, 2016, for small fleets, a fleet may not add any vehicle with a Tier 1 engine. The engine tier must be Tier 2 or higher.
- Beginning January 1, 2018, for large and medium fleets, and January 1, 2023, for small fleets, a fleet may not add a vehicle with a Tier 2 engine to its fleet. The engine tier must be Tier 3 or higher.

### **Performance Requirements**

By each compliance deadline (see table above), a fleet must demonstrate that it has either met the fleet average target for that year, or has completed the Best Available Control Technology requirements (BACT). Large fleets have compliance deadlines each year from 2014 through 2023, medium fleets each year from 2017 through 2023, and small fleets each year from 2019 through 2028. Fleets have the option of meeting 'fleet average targets' for a given year, or complying with the BACT requirements by turning over or installing VDECS on a certain percentage of its total fleet horsepower. There are special provisions for fleets with 500 hp or less.

Additional information on the Off-Road regulation is available on CARB's website ([www.arb.ca.gov/msprog/ordiesel/knowcenter.htm](http://www.arb.ca.gov/msprog/ordiesel/knowcenter.htm)).

**APPENDIX G**  
**Idling Policy**

## **IDLING POLICY**

This idling policy is intended to reduce public exposure to diesel particulate matter, greenhouse gas emissions and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles.

### **Applicability**

This policy applies to diesel-fueled commercial motor vehicles that operate in the State of California with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways. This specifically includes:

1. California-based vehicles; and
2. Non-California-based vehicles.

### **Requirements**

Stated in the California Code of Regulations, Title 13, Section 2485, a driver of a diesel-fueled vehicle with a Gross Vehicle Weight Rating of more than 10,000 pounds is not permitted to idle the vehicle's primary engine for more than five minutes at any location, and is not allowed to operate a diesel-fueled auxiliary power system (APS) on the vehicle for more than five minutes when located within 100 feet of a restricted area. Exceptions do apply in certain situations and for certain vehicles. Any internal combustion APS used in California must comply with applicable state off-road and/or federal non-road emission standards and test procedures for its fuel type and power category to ensure that emissions are not exceeding the emissions of a truck engine operating at idle.

Model Year 2008 and newer heavy-duty diesel engines must be equipped with non-programmable engine shutdown systems that automatically shuts down the engine after five minutes of idling or optionally meets a stringent nitrogen oxide idling emission standard. Operators of trucks equipped with sleeper berths are required to manually shut down the engine when idling more than five minutes at any location within California and are subject to fines for violation. The California Department of Motor Vehicles will not register, renew, or transfer registration for any vehicle operator who has received a violation until the violation is cleared.

### **Enforcement**

This policy may be enforced by the California Air Resources Board (CARB), peace officers (as defined in California Penal Code, Title 3, Chapter 4.5, Sections 830 et seq.) and their respective

law enforcement agencies' authorized representatives, and air pollution control or air quality management districts (e.g., Bay Area Air Quality Management District [BAAQMD]).

Violators of this policy will be subject to penalties as specified in the Health and Safety Code and the Vehicle Code.

# **OAKLAND ARMY BASE**

## **AIR QUALITY**

### **2012 EIR ADDENDUM APPENDIX A – AIR QUALITY 5/31/2012**



**APPENDIX A**

**AIR QUALITY AND GREENHOUSE GAS EMISSIONS  
MODEL OUTPUTS**



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## **2002 Project Emission Calculations**

**TRUCK AND PASSENGER CAR EMISSIONS - OARB PROJECT**

Distance traveled within the SF Air Basin 80 miles one-way to Gilroy  
 by Over-the-Road Trucks: 45 miles one-way to Tracy

**2002 PROJECT**

	Daily One- Way Trips	One- Way Trip (mi)	Emission Factors (g/mi)				Emissions (lb/day)				Emissions (tons/year)				Fuel mi/gal	Emissions (lb/day)				Emissions (tons/yr)				Emissions Metric Tons
			ROG	CO	NOx	PM10	ROG	CO	NOx	PM10	ROG	CO	NOx	PM10		CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	
<b>Port Area</b>																								
Intermodal Trucks	3180	0.5	1.27	11.91	7.66	0.37	8.9	83.5	53.7	2.6	1	11	7	0	19.77	5,000	0.36	2.3	5,700	650	0.0	0.3	740	671.18
Over-the-Road Trucks	1438	3.9	1.27	11.91	7.66	0.37	31.4	294.5	189.4	9.1	4	38	25	1	19.77	18,000	1	8	20,000	2,300	0.2	1.1	2,600	2358.2
Passenger Light Duty Autos	2662	18	0.37	2.24	0.22	0.04	78.2	473.3	46.5	8.5	10	62	6	1	28.36	150,000	3.2	70	171,000	19,500	0.4	9.1	22,200	20135.4
Passenger Light Duty Trucks	1036	18	0.68	3.51	0.33	0.04	55.9	288.6	27.1	3.3	7	38	4	0	17.56	58,000	2.3	27	66,000	7,500	0.3	3.5	8,600	7800.2
<b>Gateway Development Area</b>																								
Passenger Light Duty Autos	14874	18	0.37	2.24	0.22	0.04	436.8	2644	259.7	47.2	57	344	34	6	28.36	839,000	18	391	956,000	109,100	2.3	50.9	124,300	112740.1
Passenger Light Duty Trucks	4958	18	0.68	3.51	0.33	0.04	267.6	1381	129.9	15.7	35	180	17	2	28.36	280,000	11	130	319,000	36,400	1.4	17	41,500	37640.5
Intermodal Trucks	198	1.8	1.27	11.91	7.66	0.37	2	18.7	12	0.6	0	2	2	0.08	0	1,000	0	1	1,160	130	0.0	0.1	160	145.12
<b>16th and Wood Area</b>																								
Passenger Light Duty Autos	0	18	0.37	2.24	0.22	0.04	0	0	0	0	0	0	0	0	28.36	0	0	0	0	0	0.0	0	0	0
Passenger Light Duty Trucks	0	18	0.68	3.51	0.33	0.04	0	0	0	0	0	0	0	0	17.56	0	0.0	0	0	0	0.0	0	0	0
TOTAL TRUCKS:	28346						40.3	378	243.1	11.7	5	49	32	1	39.55	23000	1.64	10.52	25700	2950	0.2	1.4	3340	3029.38
TOTAL CARS:							572.9	3425	345.3	59.6	74	446	46	7.08	120.2	1048000	23.37	489.3	1194160	136230	3	63.6	155260	140820.82
Total Vehicles							613.2	3803	588.4	71.3	79	495	78	8.08	159.7	1071000	25.01	499.8	1219860	139180	3.2	65	158600	143850.2

1. assumption for vehicle mix for passenger cars: 75% Light Duty Auto, 25% Light Duty Truck

2. assumption for days operating per year: 260

3. assumption for fuel usage: average vehicle speed is 40 mph

liter= ##### gallon

**JIT Line Haul and Switch Engine Emissions Associated with the OARB Project  
PROJECT**

Number of Trains per Day: a 2  
 Daily fuel use per train (gal): b 347.1  
 Annual fuel use per train (gal): b 1E+05

	Emission Factors (g/gal) <sup>c</sup>					Emissions (lb/day)					Emissions (tons/year)					CO2	CH4	N2O	CO2e					
	ROG	CO	NOx	SO2 <sup>d</sup>	PM10	ROG	CO	NOx	SO2 <sup>d</sup>	PM10	ROG	CO	NOx	SO2 <sup>d</sup>	PM10					CO2	CH4	N2O	CO2e	
Line-Haul	5.4	26.6	103	16.33	3.6	8	41	158	25	6	2	7	29	5	1.00	1,088	0.33	0.51	1,000	199	0.08	0.09	182.000	165.074

a Source: Traffic analysis for the OARB EIR (Dowling Associates 2002).

b Source: JIT EIR (GAIA Consulting 1999).

c EPA 1997: Emission Factors for Locomotives (EPA420-F-97-051)- for engines manufactured after 2004 (Tier 2).

d From Berths 55-58 EIR (URS Greiner Woodward-Clyde 1998).

liter= 2.64E-01 gallon

**Railyard Equipment Emissions Estimates**

Container Throughput in 2010 (metric tons per year) 21.8

Container Throughput in 2020 (metric tons per year) 25.5

	Year 2010 Emissions (lbs/day) from the JIT EIR					Year 2010 Emissions (tons/year) from the JIT EIR				
	CO	ROG	NOx	SO2	PM	CO	ROG	NOx	SO2	PM
Rubber-Tired Gantry Crane	24.2	8.3	104.1	2.6	5	4	2	19	0	1
Side-Lift Piggy Packer	1.9	0.6	7.9	0.2	0.4	0	0	1	0	0
Hostling Tractor	25.2	7.9	80.8	2.2	5	5	1	15	0	1
IBC Tractor Lift	3.6	0.7	5.3	0.4	0.6	1	0	1	0	0
Mobile Car-Repair Crane	2.2	0.7	5.4	0.5	0.8	0	0	1	0	0
Mobile Car-Repair Truck	1	0	0	0	0	0	0	0	0	0
Supervisor Vehicle	0.8	0	0.1	0	0	0.14	0	0.01	0	0
Yard Van	1.7	0.1	0.2	0.1	0	0.3	0.01	0.03	0.01	0
Security Vehicle	2	0.1	0.1	0	0	0.36	0.01	0.02	0	0
Switch Engines	5	10	54	4	1.5	1	2	10	1	0.27
<b>TOTAL:</b>	<b>68</b>	<b>28</b>	<b>258</b>	<b>10</b>	<b>13</b>	<b>12</b>	<b>5</b>	<b>47</b>	<b>1</b>	<b>2</b>

	Year 2020 Emissions (lbs/day)*					Year 2020 Emissions (tons/year)*				
	CO	ROG	NOx	SO2	PM	CO	ROG	NOx	SO2	PM
Rubber-Tired Gantry Crane	28	10	122	3	6	5	2	22	0	1.17
Side-Lift Piggy Packer	2	1	9	0	0	0	0	1	0	0.00
Hostling Tractor	29	9	95	3	6	6	1	18	0	1.17
IBC Tractor Lift	4	1	6	0	1	1	0	1	0	0.00
Mobile Car-Repair Crane	3	1	6	1	1	0	0	1	0	0.00
Mobile Car-Repair Truck	1	0	0	0	0	0	0	0	0	0.00
Supervisor Vehicle	1	0	0	0	0	0	0	0	0	0.00
Yard Van	2	0	0	0	0	0	0	0	0	0.00
Security Vehicle	2	0	0	0	0	0	0	0	0	0.00
Switch Engines	6	12	63	5	2	1	2	12	1	0.32
<b>TOTAL:</b>	<b>79</b>	<b>33</b>	<b>302</b>	<b>12</b>	<b>16</b>	<b>14</b>	<b>6</b>	<b>55</b>	<b>1</b>	<b>3</b>

\* JIT EIR emissions x yr 2020/yr 2010 container throughput ratio

	Year 2020 Project Emissions (Year 2020 - JIT yr 2010) - lbs/day					Year 2020 Project Emissions (Year 2020 - JIT yr 2010) - tons/year				
	CO	ROG	NOx	SO2	PM	CO	ROG	NOx	SO2	PM
Rubber-Tired Gantry Crane	4	1	18	0	1	1	0	3	0	0
Side-Lift Piggy Packer	0	0	1	0	0	0	0	0	0	0
Hostling Tractor	4	1	14	0	1	1	0	3	0	0
IBC Tractor Lift	1	0	1	0	0	0	0	0	0	0
Mobile Car-Repair Crane	0	0	1	0	0	0	0	0	0	0
Mobile Car-Repair Truck	0	0	0	0	0	0	0	0	0	0
Supervisor Vehicle	0	0	0	0	0	0	0	0	0	0
Yard Van	0	0	0	0	0	0	0	0	0	0
Security Vehicle	0	0	0	0	0	0	0	0	0	0
Switch Engines	1	2	9	1	0	0	0	2	0	0
<b>TOTAL:</b>	<b>11</b>	<b>5</b>	<b>44</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>

EF for all construction equipment (gm/mile)		
CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
3,090	0.2012	0.0048

Emissions (lb/day)				Emissions (tons/yr)			
CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
5,200	0.34	0.0081	5,210	950	0.062	0.0015	950
310	0.02	0.0005	310	60	0.004	0.0001	60
4,900	0.32	0.0076	4,910	890	0.058	0.0014	890
460	0.03	0.0007	460	80	0.005	0.0001	80
460	0.03	0.0007	460	80	0.005	0.0001	80
614	0.04	0.0010	620	110	0.007	0.0002	110
614	0.04	0.0010	620	110	0.007	0.0002	110
614	0.04	0.0010	620	110	0.007	0.0002	110
614	0.04	0.0010	620	110	0.007	0.0002	110
<b>6,300</b>	<b>0.41</b>	<b>0.0098</b>	<b>6,310</b>	<b>1,150</b>	<b>0.075</b>	<b>0.0018</b>	<b>1,150</b>

Emissions (lb/day)				Emissions (tons/yr)				MT
CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	
6083	0.398	0.0095	6,100	1,110	0.072	0.0017	1,110	1006.77
363	0.023	0.0006	360	70	0.004	0.0001	70	63.49
5732	0.374	0.0089	5,740	1,040	0.068	0.0016	1,040	943.28
538	0.035	0.0008	540	100	0.006	0.0002	100	90.7
538	0.035	0.0008	540	100	0.006	0.0002	100	90.7
718	0.047	0.0011	720	130	0.009	0.0002	130	117.91
718	0.047	0.0011	720	130	0.009	0.0002	130	117.91
718	0.047	0.0011	720	130	0.009	0.0002	130	117.91
718	0.047	0.0011	720	130	0.009	0.0002	130	117.91
<b>7369</b>	<b>0.480</b>	<b>0.0114</b>	<b>7,380</b>	<b>1,340</b>	<b>0.087</b>	<b>0.0021</b>	<b>1,340</b>	<b>1215.38</b>
				<b>4,280</b>	<b>0.279</b>	<b>0.0067</b>	<b>4280</b>	<b>3881.96</b>

Emissions (lb/day)				Emissions (tons/yr)			
CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
883	0.058	0.0014	880	161	0.011	0.00025	160
53	0.003	0.0001	53	10	0.0006	0.00001	10
832	0.054	0.0013	830	151	0.01	0.00024	150
78	0.005	0.0001	78	14	0.0009	0.00002	14
78	0.005	0.0001	78	14	0.0009	0.00002	14
104	0.007	0.0002	104	19	0.0012	0.00003	19
104	0.007	0.0002	104	19	0.0012	0.00003	19
104	0.007	0.0002	104	19	0.0012	0.00003	19
104	0.007	0.0002	104	19	0.0012	0.00003	19
<b>1069</b>	<b>0.070</b>	<b>0.0017</b>	<b>1,070</b>	<b>195</b>	<b>0.013</b>	<b>0.0003</b>	<b>195</b>

approximated from CH4 emissions using construction equipment emissions factors listed to lower left.

Title : Bay Area AQMD Avg Annual CYr 2002  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2012/04/20 15:31:09  
 Scen Year: 2002 -- All model years in the range 1965 to 2002 selected  
 Season : Annual  
 Area : Bay Area AQMD

\*\*\*\*\*

Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                  District Average                  Bay Area AQMD

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases      Temperature: 50F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	2.737	10.763	0	0	0.549
5	1.312	1.456	1.407	7.097	3.674	6.42	1.594
10	0.887	0.996	0.935	4.32	2.557	5.042	1.069
15	0.63	0.714	0.651	2.479	1.852	4.145	0.744
20	0.469	0.536	0.473	1.525	1.395	3.568	0.547
25	0.366	0.422	0.362	1.193	1.093	3.218	0.43
30	0.3	0.348	0.29	0.956	0.889	3.04	0.354
35	0.258	0.301	0.244	0.79	0.752	3.011	0.306
40	0.233	0.272	0.215	0.68	0.66	3.124	0.277
45	0.222	0.259	0.199	0.618	0.602	3.397	0.265
50	0.221	0.259	0.193	0.598	0.57	3.87	0.266
55	0.232	0.271	0.197	0.617	0.56	4.617	0.281
60	0.255	0.298	0.212	0.673	0.572	5.765	0.312
65	0.296	0.345	0.24	0.766	0.605	7.533	0.365

Pollutant Name: Carbon Monoxide      Temperature: 50F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	17.154	47.841	0	0	2.794
5	13.057	17.335	15.969	45.086	31.32	51.836	16.019
10	10.732	14.085	12.214	31.102	20.239	42.552	12.833

15	9.1	11.828	9.796	22.445	13.864	36.774	10.666
20	7.919	10.217	8.18	16.96	10.065	33.453	9.149
25	7.05	9.049	7.071	13.535	7.742	32.034	8.071
30	6.407	8.202	6.301	11.248	6.31	32.291	7.3
35	5.94	7.604	5.776	9.741	5.448	34.268	6.763
40	5.623	7.215	5.443	8.816	4.983	38.291	6.424
45	5.444	7.021	5.281	8.375	4.826	45.057	6.271
50	5.41	7.03	5.29	8.388	4.951	55.839	6.317
55	5.547	7.281	5.496	8.891	5.378	72.888	6.605
60	5.909	7.85	5.96	9.99	6.186	100.214	7.219
65	6.596	8.881	6.795	11.893	7.535	145.133	8.32

Pollutant Name: Oxides of Nitrogen      Temperature: 50F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	3.125	63.323	0	0	2.314
5	1.244	1.999	2.359	29.12	45.189	1.199	2.642
10	1.078	1.711	2.041	21.465	34.695	1.249	2.144
15	0.958	1.504	1.816	16.826	28.016	1.301	1.817
20	0.871	1.357	1.658	15.02	23.784	1.355	1.635
25	0.81	1.254	1.551	14.439	21.218	1.411	1.532
30	0.769	1.185	1.484	14.121	19.882	1.468	1.467
35	0.744	1.145	1.451	14.039	19.561	1.526	1.434
40	0.733	1.13	1.447	14.19	20.201	1.585	1.43
45	0.736	1.137	1.472	14.587	21.897	1.645	1.455
50	0.751	1.168	1.528	15.266	24.92	1.706	1.511
55	0.781	1.224	1.62	16.291	29.785	1.767	1.603
60	0.828	1.312	1.757	17.769	37.407	1.829	1.742
65	0.895	1.438	1.952	19.867	49.385	1.891	1.945

Pollutant Name: Carbon Dioxide      Temperature: 50F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	695.271	4516.17	0	0	198.412
5	987.665	1166.82	1675.95	2555.58	2778.3	216.993	1149.36
10	746.799	883.483	1247.04	2123.91	2708.68	185.361	876.528

15	586.121	694.474	968.131	1810.29	2667.56	160.945	694.189
20	477.468	566.663	783.27	1596.25	2642.52	142.038	571.083
25	403.695	479.882	659.699	1503.79	2626.96	127.41	489.377
30	354.231	421.697	577.846	1435.38	2617.27	116.173	434.447
35	322.567	384.449	525.95	1385.42	2611.44	107.687	399.11
40	304.809	363.56	497.118	1350.86	2608.37	101.498	379.088
45	298.879	356.585	487.73	1330.2	2607.52	97.302	372.106
50	304.1	362.727	496.651	1323.02	2608.75	94.914	377.429
55	321.068	382.686	524.991	1329.91	2612.27	94.263	395.718
60	351.764	418.795	576.352	1352.63	2618.7	95.393	429.163
65	399.948	475.475	657.62	1394.58	2629.28	98.482	481.924

Pollutant Name: Sulfur Dioxide      Temperature: 50F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0.022	0.363	0	0	0.014
5	0.014	0.017	0.026	0.185	0.232	0.004	0.023
10	0.011	0.013	0.02	0.161	0.231	0.004	0.018
15	0.009	0.011	0.016	0.141	0.231	0.003	0.015
20	0.007	0.009	0.013	0.127	0.23	0.003	0.013
25	0.006	0.008	0.011	0.122	0.23	0.003	0.011
30	0.005	0.007	0.01	0.118	0.23	0.002	0.011
35	0.005	0.006	0.009	0.115	0.23	0.002	0.01
40	0.005	0.006	0.009	0.113	0.23	0.002	0.01
45	0.004	0.006	0.009	0.111	0.23	0.003	0.009
50	0.005	0.006	0.009	0.11	0.23	0.003	0.01
55	0.005	0.006	0.009	0.11	0.23	0.003	0.01
60	0.005	0.007	0.01	0.111	0.23	0.004	0.01
65	0.006	0.007	0.011	0.112	0.23	0.005	0.011

Pollutant Name: PM10      Temperature: 50F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0.06	1.828	0	0	0.065
5	0.045	0.068	0.073	1.953	1.097	0.068	0.121
10	0.03	0.046	0.049	1.379	0.795	0.053	0.084



15	0.021	0.033	0.035	0.96	0.597	0.044	0.059
20	0.016	0.024	0.026	0.709	0.464	0.038	0.044
25	0.012	0.019	0.021	0.597	0.374	0.035	0.036
30	0.01	0.016	0.017	0.51	0.312	0.033	0.03
35	0.009	0.013	0.014	0.446	0.269	0.032	0.026
40	0.008	0.012	0.013	0.403	0.241	0.034	0.023
45	0.007	0.011	0.012	0.38	0.223	0.037	0.022
50	0.007	0.011	0.012	0.376	0.214	0.041	0.022
55	0.007	0.011	0.012	0.391	0.213	0.049	0.022
60	0.008	0.012	0.012	0.424	0.219	0.061	0.024
65	0.009	0.014	0.014	0.476	0.234	0.08	0.027

Pollutant Name: PM10 - Tire Wear      Temperature: 50F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0	0	0	0	0
5	0.008	0.008	0.009	0.02	0.008	0.004	0.008
10	0.008	0.008	0.009	0.02	0.008	0.004	0.008
15	0.008	0.008	0.009	0.02	0.008	0.004	0.008
20	0.008	0.008	0.009	0.02	0.008	0.004	0.008
25	0.008	0.008	0.009	0.02	0.008	0.004	0.008
30	0.008	0.008	0.009	0.02	0.008	0.004	0.008
35	0.008	0.008	0.009	0.02	0.008	0.004	0.008
40	0.008	0.008	0.009	0.02	0.008	0.004	0.008
45	0.008	0.008	0.009	0.02	0.008	0.004	0.008
50	0.008	0.008	0.009	0.02	0.008	0.004	0.008
55	0.008	0.008	0.009	0.02	0.008	0.004	0.008
60	0.008	0.008	0.009	0.02	0.008	0.004	0.008
65	0.008	0.008	0.009	0.02	0.008	0.004	0.008

Pollutant Name: PM10 - Brake Wear      Temperature: 50F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0	0	0	0	0
5	0.013	0.013	0.013	0.019	0.013	0.006	0.013
10	0.013	0.013	0.013	0.019	0.013	0.006	0.013

15	0.013	0.013	0.013	0.019	0.013	0.006	0.013
20	0.013	0.013	0.013	0.019	0.013	0.006	0.013
25	0.013	0.013	0.013	0.019	0.013	0.006	0.013
30	0.013	0.013	0.013	0.019	0.013	0.006	0.013
35	0.013	0.013	0.013	0.019	0.013	0.006	0.013
40	0.013	0.013	0.013	0.019	0.013	0.006	0.013
45	0.013	0.013	0.013	0.019	0.013	0.006	0.013
50	0.013	0.013	0.013	0.019	0.013	0.006	0.013
55	0.013	0.013	0.013	0.019	0.013	0.006	0.013
60	0.013	0.013	0.013	0.019	0.013	0.006	0.013
65	0.013	0.013	0.013	0.019	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal      Temperature: 50F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0	0	0	0	0
5	8.773	7.302	5.141	3.237	3.152	27.862	8.084
10	11.591	9.648	6.87	4.866	4.738	33.107	10.67
15	14.755	12.282	8.841	6.924	6.745	38.288	13.572
20	18.099	15.067	10.954	9.327	9.088	43.112	16.641
25	21.397	17.812	13.063	11.891	11.593	47.24	19.666
30	24.382	20.297	14.988	14.351	13.999	50.307	22.403
35	26.783	22.293	16.542	16.394	16.002	51.951	24.6
40	28.361	23.603	17.559	17.726	17.314	51.859	26.036
45	28.949	24.087	17.922	18.141	17.732	49.829	26.556
50	28.481	23.69	17.588	17.572	17.188	45.848	26.1
55	27.004	22.454	16.597	16.11	15.768	40.157	24.715
60	24.672	20.506	15.061	13.978	13.691	33.278	22.544
65	21.716	18.039	13.146	11.479	11.25	25.945	19.806

Pollutant Name: Diesel - mi/gal      Temperature: 50F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0	0	0	0	0
5	27.468	28.908	19.774	4.846	3.597	0	11.5
10	27.468	28.908	19.774	5.102	3.597	0	11.657

15	27.468	28.908	19.774	5.419	3.597	0	11.851
20	27.468	28.908	19.774	5.752	3.597	0	12.055
25	27.468	28.908	19.774	5.897	3.597	0	12.143
30	27.468	28.908	19.774	6.035	3.597	0	12.227
35	27.468	28.908	19.774	6.16	3.597	0	12.304
40	27.468	28.908	19.774	6.266	3.597	0	12.369
45	27.468	28.908	19.774	6.347	3.597	0	12.418
50	27.468	28.908	19.774	6.396	3.597	0	12.448
55	27.468	28.908	19.774	6.41	3.597	0	12.456
60	27.468	28.908	19.774	6.387	3.597	0	12.442
65	27.468	28.908	19.774	6.33	3.597	0	12.408

Title : Bay Area AQMD Avg Annual CYr 2002  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2012/04/20 15:31:09  
Scen Year: 2002 -- All model years in the range 1965 to 2002 selected  
Season : Annual  
Area : Bay Area AQMD

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Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                  District Average                  Bay Area AQMD

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases      Temperature: 50F    Relative Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.363	0.369	0.641	2.152	0.282	2.979	0.509
10	0.571	0.583	0.983	2.540	0.369	3.033	0.739
20	0.959	0.983	1.621	3.297	0.533	3.208	1.171
30	1.309	1.343	2.198	4.029	0.686	3.467	1.565
40	1.621	1.665	2.712	4.737	0.826	3.813	1.919
50	1.894	1.947	3.165	5.419	0.954	4.244	2.234
60	2.114	2.176	3.528	5.901	1.050	4.465	2.484

120	2.168	2.100	2.833	3.918	0.657	2.776	2.307
180	1.513	1.549	2.538	4.197	0.702	2.970	1.773
240	1.601	1.640	2.688	4.472	0.745	3.203	1.879
300	1.688	1.728	2.833	4.742	0.788	3.436	1.983
360	1.772	1.815	2.975	5.007	0.829	3.669	2.083
420	1.853	1.899	3.113	5.267	0.870	3.900	2.182
480	1.933	1.980	3.247	5.523	0.909	4.132	2.278
540	2.010	2.060	3.377	5.773	0.948	4.362	2.371
600	2.084	2.137	3.503	6.019	0.986	4.593	2.461
660	2.157	2.211	3.625	6.260	1.023	4.822	2.549
720	2.227	2.284	3.744	6.497	1.058	5.051	2.635

Pollutant Name: Carbon Monoxide      Temperature: 50F Relative Humidity: ALL

Time

min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	2.881	3.310	6.907	18.134	2.555	6.648	4.239
10	4.990	5.808	12.110	24.985	4.174	6.530	6.979
20	8.959	10.510	21.881	37.940	7.215	6.385	12.139
30	12.595	14.818	30.806	49.897	9.995	6.360	16.870
40	15.899	18.733	38.884	60.857	12.513	6.455	21.172
50	18.872	22.255	46.117	70.819	14.770	6.671	25.046
60	21.512	25.385	52.503	79.783	16.766	7.008	28.492
120	24.682	27.035	35.705	48.335	8.817	7.737	27.520
180	16.393	19.207	31.836	54.318	9.436	10.154	20.636
240	17.230	20.171	33.398	59.829	10.022	12.865	21.849
300	18.028	21.091	34.900	64.869	10.576	15.264	22.994
360	18.787	21.965	36.342	69.437	11.097	17.351	24.070
420	19.507	22.796	37.724	73.534	11.586	19.125	25.076
480	20.188	23.581	39.046	77.160	12.042	20.587	26.014
540	20.830	24.322	40.308	80.314	12.467	21.737	26.884
600	21.432	25.019	41.510	82.997	12.858	22.575	27.684
660	21.995	25.671	42.651	85.208	13.218	23.101	28.415
720	22.520	26.278	43.733	86.948	13.545	23.314	29.078

Pollutant Name: Oxides of Nitrogen      Temperature: 50F Relative Humidity: ALL

Time

min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
-----	-----	-----	-----	-----	------	-----	-----

5	0.335	0.471	0.827	1.078	0.239	0.272	0.459
10	0.435	0.600	1.160	1.556	0.354	0.299	0.608
20	0.611	0.827	1.747	2.396	0.557	0.349	0.871
30	0.755	1.013	2.225	3.081	0.722	0.391	1.087
40	0.868	1.159	2.597	3.613	0.850	0.426	1.254
50	0.949	1.263	2.860	3.990	0.940	0.455	1.374
60	0.998	1.327	3.016	4.213	0.994	0.476	1.446
120	1.032	1.388	3.106	4.315	1.017	0.494	1.497
180	1.093	1.460	3.147	4.293	1.013	0.483	1.554
240	1.085	1.450	3.128	4.262	1.006	0.468	1.543
300	1.074	1.435	3.101	4.220	0.998	0.450	1.528
360	1.060	1.417	3.067	4.169	0.987	0.428	1.509
420	1.042	1.393	3.025	4.107	0.975	0.403	1.485
480	1.022	1.366	2.977	4.035	0.960	0.374	1.457
540	0.999	1.335	2.921	3.954	0.943	0.341	1.425
600	0.972	1.299	2.858	3.862	0.924	0.305	1.389
660	0.943	1.259	2.788	3.760	0.903	0.265	1.349
720	0.911	1.215	2.711	3.649	0.880	0.221	1.305

Pollutant Name: Carbon Dioxide      Temperature: 50F Relative Humidity: ALL

Time

min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	10.230	12.269	15.872	20.565	2.537	28.606	12.039
10	13.941	16.327	22.759	25.349	3.381	31.244	16.178
20	21.479	24.633	36.626	34.775	5.048	36.374	24.577
30	29.175	33.195	50.615	44.011	6.688	41.308	33.136
40	37.028	42.013	64.727	53.058	8.300	46.047	41.857
50	45.038	51.085	78.961	61.915	9.884	50.590	50.739
60	53.204	60.413	93.318	70.583	11.440	54.937	59.782
120	97.274	113.102	165.820	109.003	18.274	75.239	108.357
180	112.149	130.196	192.002	121.011	20.757	76.093	124.596
240	126.393	146.633	216.930	132.312	23.094	76.899	140.143
300	140.008	162.413	240.606	142.906	25.284	77.658	154.999
360	152.993	177.535	263.030	152.794	27.328	78.371	169.163
420	165.348	192.001	284.201	161.975	29.226	79.036	182.636
480	177.073	205.810	304.119	170.449	30.977	79.654	195.417
540	188.168	218.961	322.785	178.217	32.582	80.225	207.507
600	198.633	231.455	340.198	185.278	34.041	80.749	218.905
660	208.469	243.292	356.359	191.632	35.353	81.225	229.612

720 217.674 254.472 371.267 197.279 36.519 81.655 239.628

Pollutant Name: Sulfur Dioxide      Temperature: 50F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.001	0.000	0.001	0.000
10	0.000	0.000	0.001	0.001	0.000	0.001	0.000
20	0.001	0.001	0.001	0.001	0.000	0.001	0.001
30	0.001	0.001	0.001	0.002	0.000	0.001	0.001
40	0.001	0.001	0.002	0.002	0.000	0.001	0.001
50	0.001	0.001	0.002	0.003	0.001	0.001	0.001
60	0.001	0.002	0.003	0.003	0.001	0.001	0.002
120	0.002	0.002	0.003	0.003	0.000	0.001	0.002
180	0.002	0.002	0.004	0.003	0.001	0.001	0.002
240	0.002	0.003	0.004	0.003	0.001	0.002	0.003
300	0.002	0.003	0.004	0.004	0.001	0.002	0.003
360	0.003	0.003	0.005	0.004	0.001	0.002	0.003
420	0.003	0.003	0.005	0.004	0.001	0.002	0.003
480	0.003	0.004	0.005	0.004	0.001	0.002	0.003
540	0.003	0.004	0.006	0.005	0.001	0.002	0.004
600	0.003	0.004	0.006	0.005	0.001	0.002	0.004
660	0.004	0.004	0.006	0.005	0.001	0.002	0.004
720	0.004	0.004	0.006	0.005	0.001	0.002	0.004

Pollutant Name: PM10      Temperature: 50F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.002	0.000	0.017	0.001
10	0.001	0.002	0.002	0.002	0.000	0.015	0.002
20	0.002	0.004	0.004	0.002	0.000	0.012	0.003
30	0.003	0.005	0.005	0.003	0.001	0.009	0.004
40	0.004	0.006	0.006	0.003	0.001	0.007	0.005
50	0.005	0.008	0.008	0.004	0.001	0.005	0.006
60	0.006	0.009	0.009	0.004	0.001	0.004	0.007
120	0.008	0.012	0.012	0.006	0.001	0.011	0.010
180	0.008	0.013	0.013	0.007	0.002	0.018	0.010

240	0.009	0.014	0.013	0.007	0.002	0.023	0.011
300	0.009	0.014	0.014	0.008	0.002	0.029	0.011
360	0.009	0.015	0.014	0.008	0.002	0.033	0.012
420	0.010	0.015	0.015	0.009	0.002	0.037	0.012
480	0.010	0.016	0.015	0.009	0.002	0.040	0.012
540	0.010	0.016	0.016	0.010	0.002	0.042	0.013
600	0.011	0.017	0.016	0.010	0.002	0.044	0.013
660	0.011	0.017	0.017	0.010	0.002	0.045	0.014
720	0.011	0.017	0.017	0.010	0.002	0.045	0.014

Title : Bay Area AQMD Avg Annual CYr 2002  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2012/04/20 15:31:09  
Scen Year: 2002 -- All model years in the range 1965 to 2002 selected  
Season : Annual  
Area : Bay Area AQMD

\*\*\*\*\*

Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                      District Average                      Bay Area AQMD

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases      Temperature: 50F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.077	0.068	0.042	0.025	0.021	0.257	0.070
10	0.142	0.126	0.078	0.046	0.039	0.474	0.129
20	0.242	0.215	0.134	0.078	0.067	0.807	0.220
30	0.311	0.278	0.174	0.101	0.086	1.035	0.283
40	0.336	0.301	0.189	0.109	0.092	1.118	0.306

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-us

Title : Bay Area AQMD Avg Annual CYr 2002  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2012/04/20 15:31:09  
 Scen Year: 2002 -- All model years in the range 1965 to 2002 selected  
 Season : Annual  
 Area : Bay Area AQMD

\*\*\*\*\*

Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                  District Average                  Bay Area AQMD

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases      Temperature: ALL    Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
50	0.013	0.012	0.006	0.001	0.000	0.022	0.012

Title : Bay Area AQMD Avg Annual CYr 2002  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2012/04/20 15:31:09  
 Scen Year: 2002 -- All model years in the range 1965 to 2002 selected  
 Season : Annual  
 Area : Bay Area AQMD

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Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                  District Average                  Bay Area AQMD



Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases      Temperature: ALL    Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
50	0.001	0.001	0.000	0.000	0.000	0.001	0.001

Title : Bay Area AQMD Avg Annual CYr 2002

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2012/04/20 15:31:09

Scen Year: 2002 -- All model years in the range 1965 to 2002 selected

Season : Annual

Area : Bay Area AQMD

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Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average	District Average	Bay Area AQMD
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Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases      Temperature: ALL    Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
50	0.011	0.010	0.004	0.001	0.000	0.017	0.010

Title : Bay Area AQMD Avg Annual CYr 2002

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2012/04/20 15:31:09

Scen Year: 2002 -- All model years in the range 1965 to 2002 selected

Season : Annual

Area : Bay Area AQMD

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Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                  District Average                  Bay Area AQMD

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases      Temperature: ALL    Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
50	0.001	0.001	0.000	0.000	0.000	0.001	0.001

Title : Bay Area AQMD Avg Annual CYr 2002

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2012/04/20 15:31:09

Scen Year: 2002 -- All model years in the range 1965 to 2002 selected

Season : Annual

Area : Bay Area AQMD

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Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                  District Average                  Bay Area AQMD

Table 7: Estimated Travel Fractions

Pollutant Name:                          Temperature: ALL    Relative Humidity: ALL

LDA	LDT	MDT	HDT	UBUS	MCY	ALL
-----	-----	-----	-----	------	-----	-----

%VMT	0.555	0.332	0.071	0.033	0.003	0.006	1.000
%TRIP	0.552	0.297	0.087	0.056	0.001	0.008	1.000
%VEH	0.583	0.313	0.057	0.021	0.001	0.025	1.000

Title : Bay Area AQMD Avg Annual CYr 2002  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2012/04/20 15:31:09  
 Scen Year: 2002 -- All model years in the range 1965 to 2002 selected  
 Season : Annual  
 Area : Bay Area AQMD

\*\*\*\*\*

Year: 2002 -- Model Years 1965 to 2002 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average                      District Average                      Bay Area AQMD

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases      Temperature: 50F Relative Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
1	0.059	0.345	0.175	0.137	0.092	0.384	0.167
2	0.073	0.194	0.101	0.087	0.055	0.414	0.118
3	0.082	0.147	0.078	0.072	0.043	0.431	0.104
4	0.087	0.124	0.067	0.064	0.038	0.441	0.099
5	0.091	0.111	0.062	0.060	0.034	0.450	0.097
10	0.102	0.092	0.055	0.052	0.027	0.483	0.096
15	0.108	0.093	0.059	0.050	0.026	0.506	0.099
20	0.112	0.099	0.064	0.050	0.025	0.527	0.104
25	0.116	0.106	0.071	0.050	0.025	0.547	0.110
30	0.117	0.107	0.071	0.051	0.025	0.549	0.110
35	0.117	0.107	0.071	0.051	0.025	0.550	0.110
40	0.117	0.107	0.071	0.051	0.025	0.551	0.110
45	0.117	0.107	0.071	0.051	0.025	0.552	0.111
50	0.116	0.107	0.071	0.051	0.025	0.544	0.110
55	0.113	0.107	0.071	0.051	0.025	0.532	0.108

60 0.111 0.107 0.071 0.051 0.025 0.522 0.107

**Calculate CO2 emissions from fossil fuel combustion**

Emission factor (Kg CO<sub>2</sub>/unit) = {Default carbon content \* Oxidation factor \* Default Net calorific value \* Carbon molecule mass ratio (44/12) \* F

Fuel (Litres / kg)	Default carbon content (Kg/GJ)	Oxidation factor	Net calorific value (TJ/Gg)	Carbon molecule mass ratio	Fuel density (Kg/Litre)	emission factor (gram/Litre)
Diesel	20.2	1	43	44/12	0.845	2691.212
Petrol	18.9	1	44.3	44/12	0.775	2379.242

The references for various values taken in the table above are;

1. Default carbon content in each of the fuel came from the table 1.3, Chapter 1, Volume 2 of IPCC Guidelines for National GHG Inventories 2006.
2. Default oxidation factor in each of the fuel came from the table 1.4, Chapter 1, Volume 2 of IPCC Guidelines for National GHG Inventories 2006.
3. Default net calorific value in each of the fuel came from the table 1.2, Chapter 1, Volume 2 of IPCC Guidelines for National GHG Inventories 2006.

From <http://greencleanguide.com/2011/10/25/calculate-co2-emissions-from-fossil-fuel-combustion/>

**Calculate Methane (CH4) and Nitrous Oxide (N2O) emissions**

Methane (CH4) calculation method

Run EMFAC2011-LDV to calculate CH4 for those vehicle categories;

Use CH4 = 0.0408 \* TOG = 0.058821 \* THC to calculate CH4 for EMFAC2011-HD categories.

Nitrous Oxide (N2O) calculation method

Use 4.16% of NOx to calculate N2O for all gasoline vehicles, the same assumption as for the emissions inventory for the Advanced Clean Cars r

Use 0.3316 g/gallon fuel to calculate for all diesel vehicles as the GHG inventory.

From: [http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011\\_web\\_db\\_qstn07](http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07)

**Global Warming Potential**

Gas	(years)	Global Warming Potential
Carbon Dioxide	50-200	1
Methane	12 ± 3	25
Nitrous Oxide	120	298
HFC-23	264	14800
HFC-134a	14.6	1430
HFC-152a	1.5	124
PFC:	50000	7390
PFC:	10000	12200
Sulfur Hexafluoride	3200	22800

**Table 1. Oakland Army Base project construction activities for Project Alternative “Option 2B1 - R&D Building and 7th Street Overpass”.**

Vehicle Type	Fuel Type	Duration (days)	Start	Finish	Total Hours	Years of Construction (Hours)							
						2012	2013	2014	2015	2016	2017	2018	2019
<b>Site A</b>		<b>911</b>	<b>06/03/13</b>	<b>11/28/16</b>	<b>181,662</b>	<b>0</b>	<b>24,200</b>	<b>25,818</b>	<b>56,342</b>	<b>75,302</b>	<b>0</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	911	06/03/13	11/28/16	29,662	0	5,368	3,786	8,470	12,038	0	0	0
Work Truck (Ford F350)	DIESEL	911	06/03/13	11/28/16	9,936	0	1,712	1,408	2,616	4,200	0	0	0
Peterbilt WT 4000 Water Truck	DIESEL	893	06/27/13	11/28/16	4,352	0	1,216	2,136	520	480	0	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	873	06/03/13	10/05/16	65,520	0	2,160	0	26,160	37,200	0	0	0
Peterbilt 357 Concrete Truck	DIESEL	507	08/27/14	08/04/16	23,272	0	0	40	10,648	12,584	0	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	837	09/13/13	11/28/16	1,920	0	160	0	320	1,440	0	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	410	05/05/15	11/28/16	640	0	0	0	160	480	0	0	0
CAT 416D Skip (3054C DIT)	DIESEL	60	09/06/16	11/28/16	480	0	0	0	0	480	0	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	837	09/13/13	11/28/16	800	0	160	0	160	480	0	0	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	873	06/03/13	10/05/16	7,096	0	720	40	2,616	3,720	0	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	559	06/27/13	08/18/15	1,296	0	512	624	160	0	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	893	06/27/13	11/28/16	1,968	0	352	776	360	480	0	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	503	09/13/13	08/18/15	320	0	160	0	160	0	0	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	483	06/27/13	05/04/15	1,328	0	352	776	200	0	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	483	06/27/13	05/04/15	1,328	0	352	776	200	0	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	893	06/27/13	11/28/16	10,960	0	2,112	5,808	2,560	480	0	0	0
Manitowoc 12000 Large Crane (332 hp)	DIESEL	94	06/03/13	10/10/13	720	0	720	0	0	0	0	0	0
TEREX RT 555 Small Crane (Cummings QSB 185)	DIESEL	5	09/03/14	09/09/14	40	0	0	40	0	0	0	0	0
Barge Crane	DIESEL	282	06/27/13	07/25/14	936	0	352	584	0	0	0	0	0
Building Crane	DIESEL	252	08/19/15	08/04/16	2,112	0	0	0	872	1,240	0	0	0
American 5299 Dynamic Compaction Crane	DIESEL	217	06/17/13	04/15/14	10,320	0	4,800	5,520	0	0	0	0	0
Tug (1200HP)	DIESEL	282	06/27/13	07/25/14	5,616	0	2,112	3,504	0	0	0	0	0
Air Compressor	ELECTRICAL	577	06/03/13	08/18/15	1,040	0	880	0	160	0	0	0	0
<b>Site B</b>		<b>1,089</b>	<b>06/27/13</b>	<b>08/29/17</b>	<b>176,668</b>	<b>0</b>	<b>18,128</b>	<b>13,528</b>	<b>2,596</b>	<b>62,728</b>	<b>79,688</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	1,089	06/27/13	08/29/17	20,756	0	4,296	2,312	820	5,320	8,008	0	0
Work Truck (Ford F350)	DIESEL	1,089	06/27/13	08/29/17	7,640	0	1,368	1,032	232	2,192	2,816	0	0
Peterbilt WT 4000 Water Truck	DIESEL	1,077	07/15/13	08/29/17	2,424	0	736	424	144	640	480	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	1,065	07/09/13	08/07/17	79,112	0	2,088	464	0	31,680	44,880	0	0
Peterbilt 357 Concrete Truck	DIESEL	610	02/04/15	06/06/17	33,168	0	0	0	80	16,672	16,416	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	969	12/12/13	08/29/17	1,920	0	88	72	0	320	1,440	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	322	06/06/16	08/29/17	640	0	0	0	0	160	480	0	0
CAT 416D Skip (3054C DIT)	DIESEL	60	06/07/17	08/29/17	480	0	0	0	0	0	480	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	969	12/12/13	08/29/17	800	0	88	72	0	160	480	0	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	1,029	08/28/13	08/07/17	4,848	0	648	72	80	1,712	2,336	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	779	07/09/13	07/01/16	2,672	0	1,024	1,408	80	160	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	1,077	07/15/13	08/29/17	1,216	0	216	128	72	320	480	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	779	07/09/13	07/01/16	712	0	232	320	0	160	0	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	755	07/15/13	06/03/16	576	0	216	128	72	160	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	755	07/15/13	06/03/16	576	0	216	128	72	160	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	1,077	07/15/13	08/29/17	5,680	0	1,296	960	864	2,080	480	0	0

Vehicle Type	Fuel Type	Duration (days)	Start	Finish	Total Hours	Years of Construction (Hours)							
						2012	2013	2014	2015	2016	2017	2018	2019
TEREX RT 555 Small Crane (Cummings QSB 185)	DIESEL	395	08/28/13	03/03/15	800	0	648	72	80	0	0	0	0
Barge Crane	DIESEL	471	07/15/13	05/05/15	312	0	216	96	0	0	0	0	0
Building Crane	DIESEL	176	10/04/16	06/06/17	1,584	0	0	0	0	672	912	0	0
American 5299 Dynamic Compaction Crane	DIESEL	273	06/27/13	07/14/14	7,840	0	2,720	5,120	0	0	0	0	0
Tug (1200HP)	DIESEL	471	07/15/13	05/05/15	1,872	0	1,296	576	0	0	0	0	0
Air Compressor	ELECTRICAL	743	08/28/13	07/01/16	1,040	0	736	144	0	160	0	0	0
<b>Site C</b>		<b>1,056</b>	<b>07/09/13</b>	<b>07/25/17</b>	<b>165,730</b>	<b>0</b>	<b>5,658</b>	<b>26,254</b>	<b>4,266</b>	<b>67,958</b>	<b>61,594</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	1,056	07/09/13	07/25/17	21,002	0	874	5,702	810	7,398	6,218	0	0
Work Truck (Ford F350)	DIESEL	1,056	07/09/13	07/25/17	8,040	0	432	2,208	432	2,752	2,216	0	0
Peterbilt WT 4000 Water Truck	DIESEL	1,040	07/31/13	07/25/17	2,040	0	168	720	80	592	480	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	1,034	07/17/13	07/03/17	71,952	0	176	2,824	312	34,760	33,880	0	0
Peterbilt 357 Concrete Truck	DIESEL	559	03/12/15	05/02/17	28,280	0	0	0	40	15,712	12,528	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	851	04/22/14	07/25/17	1,920	0	0	160	0	320	1,440	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	300	06/01/16	07/25/17	640	0	0	0	0	160	480	0	0
CAT 416D Skip (3054C DIT)	DIESEL	60	05/03/17	07/25/17	480	0	0	0	0	0	480	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	851	04/22/14	07/25/17	800	0	0	160	0	160	480	0	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	905	01/14/14	07/03/17	4,712	0	0	720	40	2,216	1,736	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	770	07/17/13	06/28/16	6,432	0	936	3,656	1,600	240	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	1,040	07/31/13	07/25/17	1,064	0	56	192	40	296	480	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	770	07/17/13	06/28/16	1,472	0	176	824	312	160	0	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	740	07/31/13	05/31/16	424	0	56	192	40	136	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	740	07/31/13	05/31/16	424	0	56	192	40	136	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	1,040	07/31/13	07/25/17	4,240	0	336	1,152	480	1,792	480	0	0
TEREX RT 555 Small Crane (Cummings QSB 185)	DIESEL	641	01/14/14	06/28/16	840	0	0	720	40	80	0	0	0
Barge Crane	DIESEL	459	07/31/13	05/05/15	232	0	56	176	0	0	0	0	0
Building Crane	DIESEL	176	08/30/16	05/02/17	1,584	0	0	0	0	888	696	0	0
American 5299 Dynamic Compaction Crane	DIESEL	324	07/09/13	10/03/14	6,720	0	2,000	4,720	0	0	0	0	0
Tug (1200HP)	DIESEL	459	07/31/13	05/05/15	1,392	0	336	1,056	0	0	0	0	0
Air Compressor	ELECTRICAL	641	01/14/14	06/28/16	1,040	0	0	880	0	160	0	0	0
<b>Site D</b>		<b>1,197</b>	<b>12/11/13</b>	<b>07/12/18</b>	<b>374,540</b>	<b>0</b>	<b>1,296</b>	<b>22,024</b>	<b>11,848</b>	<b>31,734</b>	<b>225,560</b>	<b>82,078</b>	<b>0</b>
Commuter Vehicle	UNLEADED	1,197	12/11/13	07/12/18	37,972	0	240	4,976	1,336	2,510	20,408	8,502	0
Work Truck (Ford F350)	DIESEL	1,197	12/11/13	07/12/18	14,584	0	96	3,216	1,392	1,256	5,864	2,760	0
Peterbilt WT 4000 Water Truck	DIESEL	1,085	03/07/14	05/03/18	3,064	0	0	712	1,344	528	0	480	0
Kenworth Cummings 330 Delivery Truck	DIESEL	1,162	01/29/14	07/12/18	168,360	0	0	2,376	544	16,640	105,520	43,280	0
Peterbilt 357 Concrete Truck	DIESEL	440	09/05/16	05/11/18	109,472	0	0	0	0	6,816	82,944	19,712	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	963	08/26/14	05/03/18	1,920	0	0	160	0	320	0	1,440	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	454	08/08/16	05/03/18	640	0	0	0	0	160	0	480	0
CAT 416D Skip (3054C DIT)	DIESEL	60	02/09/18	05/03/18	480	0	0	0	0	0	0	480	0
CAT 442E Backhoe (3054C DIT)	DIESEL	963	08/26/14	05/03/18	800	0	0	160	0	160	0	480	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	1,083	05/20/14	07/12/18	9,696	0	0	720	0	832	5,864	2,280	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	678	01/29/14	09/02/16	4,512	0	0	1,424	2,928	160	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	1,085	03/07/14	05/03/18	1,184	0	0	184	256	264	0	480	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	678	01/29/14	09/02/16	1,080	0	0	376	544	160	0	0	0

Vehicle Type	Fuel Type	Duration (days)	Start	Finish	Total Hours	Years of Construction (Hours)							
						2012	2013	2014	2015	2016	2017	2018	2019
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	631	03/07/14	08/05/16	544	0	0	184	256	104	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	631	03/07/14	08/05/16	544	0	0	184	256	104	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	1,085	03/07/14	05/03/18	4,528	0	0	1,104	1,536	1,408	0	480	0
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	90	05/20/14	09/22/14	720	0	0	720	0	0	0	0	0
Barge Crane	DIESEL	347	03/07/14	07/06/15	392	0	0	184	208	0	0	0	0
Building Crane	DIESEL	374	12/06/16	05/11/18	6,336	0	0	0	0	152	4,960	1,224	0
American 5299 Dynamic Compaction Crane	DIESEL	258	12/11/13	12/05/14	5,040	0	960	4,080	0	0	0	0	0
Tug (1200HP)	DIESEL	347	03/07/14	07/06/15	2,352	0	0	1,104	1,248	0	0	0	0
Air Compressor	ELECTRICAL	529	08/26/14	09/02/16	320	0	0	160	0	160	0	0	0
<b>Site E</b>		<b>1,942</b>	<b>07/18/12</b>	<b>12/26/19</b>	<b>362,188</b>	<b>23,584</b>	<b>23,584</b>	<b>6,604</b>	<b>24,560</b>	<b>8,100</b>	<b>17,224</b>	<b>152,624</b>	<b>105,908</b>
Commuter Vehicle	UNLEADED	1,942	07/18/12	12/26/19	47,452	288	288	2,460	4,280	988	3,120	15,528	20,500
Work Truck (Ford F350)	DIESEL	1,942	07/18/12	12/26/19	15,800	256	256	592	2,232	512	1,288	5,256	5,408
Peterbilt WT 4000 Water Truck	DIESEL	1,942	07/18/12	12/26/19	3,576	512	512	16	144	696	1,216	0	480
Kenworth Cummings 330 Delivery Truck	DIESEL	1,357	09/23/14	12/04/19	143,400	0	0	1,728	1,472	280	2,000	85,120	52,800
Peterbilt 357 Concrete Truck	DIESEL	504	10/30/17	10/03/19	56,480	0	0	0	0	0	760	39,352	16,368
Kenworth Cummings 350 Dbl Bottom	DIESEL	1,942	07/18/12	12/26/19	45,440	21,760	21,760	16	144	0	320	0	1,440
CAT CS74 Roller (C6.6 ACERT)	DIESEL	564	10/30/17	12/26/19	640	0	0	0	0	0	160	0	480
CAT 416D Skip (3054C DIT)	DIESEL	60	10/04/19	12/26/19	480	0	0	0	0	0	0	0	480
CAT 442E Backhoe (3054C DIT)	DIESEL	1,303	12/30/14	12/26/19	800	0	0	16	144	0	160	0	480
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	1,357	09/23/14	12/04/19	11,264	0	0	576	144	0	360	5,256	4,928
CAT 345 CL Excavator (C13 ACERT)	DIESEL	759	12/30/14	11/24/17	7,312	0	0	16	5,344	1,632	320	0	0
CAT 14H Motor Grader (C11)	DIESEL	1,942	07/18/12	12/26/19	1,832	256	256	0	0	232	608	0	480
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	759	12/30/14	11/24/17	1,640	0	0	16	1,184	280	160	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	1,378	07/18/12	10/27/17	1,192	256	256	0	0	232	448	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	1,378	07/18/12	10/27/17	1,192	256	256	0	0	232	448	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	913	06/28/16	12/26/19	7,408	0	0	0	0	1,392	5,536	0	480
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	849	09/23/14	12/22/17	880	0	0	576	144	0	160	0	0
Barge Crane	DIESEL	29	06/28/16	08/05/16	232	0	0	0	0	232	0	0	0
Building Crane	DIESEL	440	01/26/18	10/03/19	3,696	0	0	0	0	0	0	2,112	1,584
American 5299 Dynamic Compaction Crane	DIESEL	113	01/27/15	07/02/15	9,040	0	0	0	9,040	0	0	0	0
Tug (1200HP)	DIESEL	29	06/28/16	08/05/16	1,392	0	0	0	0	1,392	0	0	0
Air Compressor	ELECTRICAL	829	09/23/14	11/24/17	1,040	0	0	592	288	0	160	0	0
<b>Site F</b>		<b>916</b>	<b>01/27/15</b>	<b>07/31/18</b>	<b>73,246</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12,904</b>	<b>15,104</b>	<b>8,466</b>	<b>36,772</b>	<b>0</b>
Commuter Vehicle	UNLEADED	916	01/27/15	07/31/18	10,680	0	0	0	3,840	1,872	948	4,020	0
Work Truck (Ford F350)	DIESEL	916	01/27/15	07/31/18	4,368	0	0	0	1,144	1,056	600	1,568	0
Peterbilt WT 4000 Water Truck	DIESEL	846	05/05/15	07/31/18	2,336	0	0	0	160	1,104	592	480	0
Kenworth Cummings 330 Delivery Truck	DIESEL	900	01/27/15	07/09/18	23,088	0	0	0	2,160	688	2,160	18,080	0
Peterbilt 357 Concrete Truck	DIESEL	110	12/06/17	05/08/18	7,744	0	0	0	0	0	576	7,168	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	846	05/05/15	07/31/18	1,920	0	0	0	160	0	320	1,440	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	190	11/08/17	07/31/18	640	0	0	0	0	0	160	480	0
CAT 416D Skip (3054C DIT)	DIESEL	60	05/09/18	07/31/18	480	0	0	0	0	0	0	480	0
CAT 442E Backhoe (3054C DIT)	DIESEL	846	05/05/15	07/31/18	800	0	0	0	160	0	160	480	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	900	01/27/15	07/09/18	1,952	0	0	0	720	0	144	1,088	0



Vehicle Type	Fuel Type	Duration (days)	Start	Finish	Total Hours	Years of Construction (Hours)							
						2012	2013	2014	2015	2016	2017	2018	2019
CAT 345 CL Excavator (C13 ACERT)	DIESEL	676	05/05/15	12/05/17	4,128	0	0	0	160	3,808	160	0	0
CAT 14H Motor Grader (C11)	DIESEL	517	08/08/16	07/31/18	1,144	0	0	0	0	368	296	480	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	676	05/05/15	12/05/17	1,008	0	0	0	160	688	160	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	327	08/08/16	11/07/17	504	0	0	0	0	368	136	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	327	08/08/16	11/07/17	470	0	0	0	0	368	102	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	517	08/08/16	07/31/18	4,480	0	0	0	0	2,208	1,792	480	0
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	90	01/27/15	06/01/15	720	0	0	0	720	0	0	0	0
Barge Crane	DIESEL	46	08/08/16	10/10/16	368	0	0	0	0	368	0	0	0
Building Crane	DIESEL	66	02/06/18	05/08/18	528	0	0	0	0	0	0	528	0
American 5299 Dynamic Compaction Crane	DIESEL	33	07/03/15	08/18/15	2,640	0	0	0	2,640	0	0	0	0
Tug (1200HP)	DIESEL	46	08/08/16	10/10/16	2,208	0	0	0	0	2,208	0	0	0
Air Compressor	ELECTRICAL	746	01/27/15	12/05/17	1,040	0	0	0	880	0	160	0	0
<b>Rail Yard</b>		<b>504</b>	<b>03/26/15</b>	<b>02/28/17</b>	<b>41,642</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20,718</b>	<b>17,765</b>	<b>3,158</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	504	03/26/15	02/28/17	4,247	0	0	0	1,673	2,088	486	0	0
Work Truck (Ford F350)	DIESEL	379	06/11/15	11/22/16	10,612	0	0	0	3,622	6,991	0	0	0
Peterbilt WT 4000 Water Truck	DIESEL	494	03/26/15	02/14/17	880	0	0	0	720	0	160	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	449	06/11/15	02/28/17	1,320	0	0	0	920	0	400	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	484	03/26/15	01/31/17	6,720	0	0	0	5,920	0	800	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	20	01/18/17	02/14/17	240	0	0	0	0	0	240	0	0
Delmag 30/32 Pile Hammer	DIESEL	20	06/11/15	07/08/15	160	0	0	0	160	0	0	0	0
CAT 416D Skip (3054C DIT)	DIESEL	20	01/18/17	02/14/17	160	0	0	0	0	0	160	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	20	03/26/15	04/22/15	160	0	0	0	160	0	0	0	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	429	06/11/15	01/31/17	3,811	0	0	0	2,219	1,419	176	0	0
CAT 320D Excavator (C6.4 ACERT)	DIESEL	189	09/25/15	06/15/16	1,895	0	0	0	703	1,195	0	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	55	03/26/15	06/10/15	440	0	0	0	440	0	0	0	0
CAT AP-1055B Paver (C7)	DIESEL	10	02/01/17	02/14/17	80	0	0	0	0	0	80	0	0
CAT 14H Motor Grader (C11)	DIESEL	464	04/23/15	01/31/17	360	0	0	0	280	0	80	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	504	03/26/15	02/28/17	3,133	0	0	0	1,781	1,195	160	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	35	04/23/15	06/10/15	280	0	0	0	280	0	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	464	04/23/15	01/31/17	360	0	0	0	280	0	80	0	0
Manitowoc 12000 Large Crane (332 hp)	DIESEL	449	06/11/15	02/28/17	320	0	0	0	160	0	160	0	0
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	50	11/23/16	01/31/17	400	0	0	0	0	224	176	0	0
Ballast Regulator	DIESEL	114	06/16/16	11/22/16	1,137	0	0	0	0	1,136	0	0	0
Mark II Ballast Tamper	DIESEL	114	06/16/16	11/22/16	1,137	0	0	0	0	1,136	0	0	0
Rail Car	Null	379	06/11/15	11/22/16	0	0	0	0	0	0	0	0	0
Rail Saw and Drill	ELECTRICAL	189	09/25/15	06/15/16	1,895	0	0	0	703	1,195	0	0	0
Air Compressor	ELECTRICAL	189	09/25/15	06/15/16	1,895	0	0	0	703	1,195	0	0	0
<b>Wharf</b>		<b>500</b>	<b>06/02/15</b>	<b>05/01/17</b>	<b>71,700</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14,303</b>	<b>49,829</b>	<b>7,568</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	500	06/02/15	05/01/17	6,900	0	0	0	1,495	4,717	688	0	0
Work Truck (Ford F350)	DIESEL	500	06/02/15	05/01/17	7,200	0	0	0	1,648	4,864	688	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	500	06/02/15	05/01/17	19,200	0	0	0	3,720	13,416	2,064	0	0
Peterbilt 357 Concrete Truck	DIESEL	400	10/20/15	05/01/17	14,400	0	0	0	1,272	11,064	2,064	0	0
Delmag 30/32 Pile Hammer	DIESEL	300	06/02/15	07/25/16	2,400	0	0	0	1,224	1,176	0	0	0

Vehicle Type	Fuel Type	Duration (days)	Start	Finish	Total Hours	Years of Construction (Hours)							
						2012	2013	2014	2015	2016	2017	2018	2019
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	400	10/20/15	05/01/17	4,800	0	0	0	424	3,688	688	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	300	06/02/15	07/25/16	2,400	0	0	0	1,224	1,176	0	0	0
Manitowoc 12000 Large Crane (332 hp)	DIESEL	300	06/02/15	07/25/16	2,400	0	0	0	1,224	1,176	0	0	0
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	400	10/20/15	05/01/17	4,800	0	0	0	424	3,688	688	0	0
Air Compressor	ELECTRICAL	500	06/02/15	05/01/17	7,200	0	0	0	1,648	4,864	688	0	0
<b>Maritime Street</b>		<b>288</b>	<b>09/12/14</b>	<b>10/20/15</b>	<b>20,030</b>	<b>0</b>	<b>0</b>	<b>5,279</b>	<b>14,751</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	288	09/12/14	10/20/15	2,318	0	0	639	1,679	0	0	0	0
Work Truck (Ford F350)	DIESEL	288	09/12/14	10/20/15	2,264	0	0	632	1,632	0	0	0	0
Peterbilt WT 4000 Water Truck	DIESEL	248	10/10/14	09/22/15	1,584	0	0	472	1,112	0	0	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	174	09/12/14	05/13/15	600	0	0	400	200	0	0	0	0
Peterbilt 357 Concrete Truck	DIESEL	129	03/20/15	09/16/15	960	0	0	0	960	0	0	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	258	09/26/14	09/22/15	4,720	0	0	880	3,840	0	0	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	193	12/26/14	09/22/15	496	0	0	32	464	0	0	0	0
CAT 416D Skip (3054C DIT)	DIESEL	143	03/06/15	09/22/15	584	0	0	0	584	0	0	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	253	10/31/14	10/20/15	960	0	0	320	640	0	0	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	224	09/26/14	08/05/15	1,120	0	0	480	640	0	0	0	0
CAT AP-1055B Paver (C7)	DIESEL	103	05/01/15	09/22/15	184	0	0	0	184	0	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	224	10/10/14	08/19/15	520	0	0	152	368	0	0	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	179	10/31/14	07/08/15	720	0	0	320	400	0	0	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	179	09/26/14	06/03/15	160	0	0	80	80	0	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	184	10/10/14	06/24/15	240	0	0	120	120	0	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	224	10/10/14	08/19/15	880	0	0	272	608	0	0	0	0
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	288	09/12/14	10/20/15	280	0	0	80	200	0	0	0	0
Air Compressor	ELECTRICAL	278	09/26/14	10/20/15	1,440	0	0	400	1,040	0	0	0	0
<b>West Burma</b>		<b>288</b>	<b>11/08/17</b>	<b>12/14/18</b>	<b>19,422</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,197</b>	<b>17,225</b>	<b>0</b>
Commuter Vehicle	UNLEADED	288	11/08/17	12/14/18	2,378	0	0	0	0	0	245	2,133	0
Work Truck (Ford F350)	DIESEL	278	11/22/17	12/14/18	2,224	0	0	0	0	0	224	2,000	0
Peterbilt WT 4000 Water Truck	DIESEL	258	11/22/17	11/16/18	1,664	0	0	0	0	0	224	1,440	0
Kenworth Cummings 330 Delivery Truck	DIESEL	179	11/08/17	07/16/18	640	0	0	0	0	0	240	400	0
Peterbilt 357 Concrete Truck	DIESEL	129	05/16/18	11/12/18	960	0	0	0	0	0	0	960	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	258	11/22/17	11/16/18	3,780	0	0	0	0	0	288	3,492	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	193	02/21/18	11/16/18	448	0	0	0	0	0	0	448	0
CAT 416D Skip (3054C DIT)	DIESEL	143	05/02/18	11/16/18	544	0	0	0	0	0	0	544	0
CAT 442E Backhoe (3054C DIT)	DIESEL	253	12/27/17	12/14/18	1,040	0	0	0	0	0	24	1,016	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	224	11/22/17	10/01/18	1,200	0	0	0	0	0	184	1,016	0
CAT AP-1055B Paver (C7)	DIESEL	103	06/27/18	11/16/18	64	0	0	0	0	0	0	64	0
CAT 14H Motor Grader (C11)	DIESEL	224	12/06/17	10/15/18	560	0	0	0	0	0	120	440	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	199	12/27/17	10/01/18	880	0	0	0	0	0	24	856	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	179	11/22/17	07/30/18	160	0	0	0	0	0	80	80	0
CAT 815F Compactor (9 ACERT)	DIESEL	184	12/06/17	08/20/18	240	0	0	0	0	0	120	120	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	224	12/06/17	10/15/18	800	0	0	0	0	0	240	560	0
TEREX RT 555 Small Crane (Cummins QSB 185)	DIESEL	288	11/08/17	12/14/18	320	0	0	0	0	0	80	240	0
Air Compressor	ELECTRICAL	278	11/22/17	12/14/18	1,520	0	0	0	0	0	104	1,416	0

Vehicle Type	Fuel Type	Duration (days)	Start	Finish	Total Hours	Years of Construction (Hours)							
						2012	2013	2014	2015	2016	2017	2018	2019
<b>East Burma</b>		<b>79</b>	<b>06/01/16</b>	<b>09/19/16</b>	<b>5,831</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,831</b>	<b>0</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	79	06/01/16	09/19/16	679	0	0	0	0	679	0	0	0
Work Truck (Ford F350)	DIESEL	79	06/01/16	09/19/16	632	0	0	0	0	632	0	0	0
Peterbilt WT 4000 Water Truck	DIESEL	79	06/01/16	09/19/16	472	0	0	0	0	472	0	0	0
Peterbilt 357 Concrete Truck	DIESEL	20	08/17/16	09/13/16	480	0	0	0	0	480	0	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	64	06/22/16	09/19/16	1,440	0	0	0	0	1,440	0	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	54	07/06/16	09/19/16	224	0	0	0	0	224	0	0	0
CAT 416D Skip (3054C DIT)	DIESEL	34	08/03/16	09/19/16	272	0	0	0	0	272	0	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	30	06/22/16	08/02/16	160	0	0	0	0	160	0	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	30	06/22/16	08/02/16	160	0	0	0	0	160	0	0	0
CAT AP-1055B Paver (C7)	DIESEL	4	09/14/16	09/19/16	32	0	0	0	0	32	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	55	06/01/16	08/16/16	280	0	0	0	0	280	0	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	30	06/22/16	08/02/16	160	0	0	0	0	160	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	15	06/01/16	06/21/16	120	0	0	0	0	120	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	55	06/01/16	08/16/16	400	0	0	0	0	400	0	0	0
Air Compressor	ELECTRICAL	60	06/22/16	09/13/16	320	0	0	0	0	320	0	0	0
<b>7th Street Reconstruction</b>		<b>507</b>	<b>02/17/14</b>	<b>01/26/16</b>	<b>126,525</b>	<b>0</b>	<b>0</b>	<b>74,387</b>	<b>51,128</b>	<b>1,010</b>	<b>0</b>	<b>0</b>	<b>0</b>
Commuter Vehicle	UNLEADED	507	02/17/14	01/26/16	13,941	0	0	8,283	5,528	130	0	0	0
Work Truck (Ford F350)	DIESEL	507	02/17/14	01/26/16	12,936	0	0	7,128	5,664	144	0	0	0
Peterbilt WT 4000 Water Truck	DIESEL	482	02/17/14	12/22/15	3,208	0	0	1,640	1,568	0	0	0	0
Kenworth Cummings 330 Delivery Truck	DIESEL	507	02/17/14	01/26/16	24,344	0	0	14,280	9,472	592	0	0	0
Peterbilt 357 Concrete Truck	DIESEL	467	03/03/14	12/15/15	20,160	0	0	11,896	8,264	0	0	0	0
Kenworth Cummings 350 Dbl Bottom	DIESEL	482	02/17/14	12/22/15	11,520	0	0	7,840	3,680	0	0	0	0
CAT CS74 Roller (C6.6 ACERT)	DIESEL	228	09/10/14	07/24/15	336	0	0	72	264	0	0	0	0
Delmag 30/32 Pile Hammer	DIESEL	318	05/05/14	07/22/15	840	0	0	760	80	0	0	0	0
CAT 416D Skip (3054C DIT)	DIESEL	355	07/02/14	11/10/15	448	0	0	16	432	0	0	0	0
CAT 442E Backhoe (3054C DIT)	DIESEL	447	04/14/14	12/29/15	2,560	0	0	400	2,160	0	0	0	0
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	477	02/17/14	12/15/15	7,912	0	0	5,272	2,640	0	0	0	0
CAT 345 CL Excavator (C13 ACERT)	DIESEL	333	03/31/14	07/08/15	2,024	0	0	1,208	816	0	0	0	0
CAT AP-1055B Paver (C7)	DIESEL	4	06/15/15	06/18/15	32	0	0	0	32	0	0	0	0
CAT 14H Motor Grader (C11)	DIESEL	375	02/17/14	07/24/15	768	0	0	448	320	0	0	0	0
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	373	02/17/14	07/22/15	2,200	0	0	1,560	640	0	0	0	0
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	333	03/31/14	07/08/15	864	0	0	608	256	0	0	0	0
CAT 815F Compactor (9 ACERT)	DIESEL	363	02/17/14	07/08/15	1,000	0	0	784	216	0	0	0	0
CAT 627G Scraper (CAT C15/CAT C9 ACERT)	DIESEL	278	07/02/14	07/24/15	528	0	0	88	440	0	0	0	0
Manitowoc 12000 Large Crane (332 hp)	DIESEL	432	03/03/14	10/27/15	1,856	0	0	1,456	400	0	0	0	0
TEREX RT 555 Small Crane (Cummings QSB 185)	DIESEL	507	02/17/14	01/26/16	8,096	0	0	4,416	3,536	144	0	0	0
Air Compressor	ELECTRICAL	477	03/03/14	12/29/15	10,952	0	0	6,232	4,720	0	0	0	0
<b>Total Construction</b>		<b>1,942</b>	<b>07/18/12</b>	<b>12/26/19</b>	<b>1,619,184</b>	<b>23,584</b>	<b>72,866</b>	<b>173,894</b>	<b>213,416</b>	<b>335,361</b>	<b>405,455</b>	<b>288,699</b>	<b>105,908</b>

Architectural Dimension also provided estimates of the fraction of time each piece of equipment would be used on-site and off-site (see Table 2). For off-road construction equipment, on-site idling and on-site operation were not modeled separately as time spent idling has already been assumed to be included in the average engine load factors used in the emissions calculation. For on-road vehicle sources, idling emissions were calculated separately, and an average on-site travel speed of 15 mph was assumed. As estimated by Architectural Dimension, off-site travel for on-road vehicle sources was assumed to occur at an average speed of 40 mph.

**Table 2. On-site and off-site trip fractions for construction vehicles.**

Resource Name	Fuel Type	Off Site Hours	On-Site Hours	On-Site Idle
<b>OAB Vehicles</b>				
Commuter Vehicle	UNLEADED	95%	5%	0%
<b>Trucking</b>				
Work Truck (Ford F350)	DIESEL	0%	85%	15%
Peterbilt WT 4000 Water Truck	DIESEL	0%	85%	15%
Kenworth Cummings 330 Delivery Truck	DIESEL	0%	85%	15%
Peterbilt 357 Concrete Truck	DIESEL	70%	10%	20%
Kenworth Cummings 350 Dbl Bottom	DIESEL	0%	85%	15%
<b>Equipment</b>				
CAT CS74 Roller (C6.6 ACERT)	DIESEL	0%	85%	15%
Delmag 30/32 Pile Hammer	DIESEL	0%	85%	15%
CAT 416D Skip (3054C DIT)	DIESEL	0%	85%	15%
CAT 442E Backhoe (3054C)	DIESEL	0%	85%	15%
CAT TL 1055 Forklift (C4.4 EIDITAAC)	DIESEL	0%	90%	10%
<b>Heavy Equipment</b>				
CAT 320D Excavator (C6.4 ACERT)	DIESEL	0%	90%	10%
CAT345 CL Excavator (C13 ACERT)	DIESEL	0%	90%	10%
CAT AP-1055B Paver (C7)	DIESEL	0%	90%	10%
CAT 14H Motor Grader (C11)	DIESEL	0%	90%	10%
CAT 966 Large Rubber Tire Loader (C7 ATAAC)	DIESEL	0%	90%	10%
CAT D8R Bull Dozer (3406C SCAC)	DIESEL	0%	90%	10%
CAT 815F Compactors (9 ACERT)	DIESEL	0%	90%	10%
CAT 627G Scrapers (CAT C15/CAT C9 ACERT)	DIESEL	0%	90%	10%
<b>Crane</b>				
Manitowoc 12000 Large Crane (332 hp)	DIESEL	0%	75%	25%
TEREX RT 555 Small Crane (Cummings QSB 185)	DIESEL	0%	75%	25%
Barge Crane	DIESEL	0%	75%	25%
Building Crane	DIESEL	0%	75%	25%
American 5299 Dynamic Compaction Crane	DIESEL	0%	75%	25%
<b>Barge Tug</b>				
Tug (2 x 855 hp)	DIESEL	80%	0%	20%
<b>Rail Tools</b>				
Ballast Regulator	DIESEL	0%	100%	0%
Mark II Ballast Tamper	DIESEL	0%	100%	0%
Rail Car	Null	0%	100%	0%
<b>Small Tools</b>				
Rail Saw and Drill	ELECTRICAL	0%	100%	0%
Air Compressor	ELECTRICAL	0%	100%	0%

Tugs used to move barges that would bring fill to the project site from Decker Island in the San Francisco Bay Delta were specified to be model year 2003 Cat 3508B tugs with two engines at 855 horsepower each. Two tugs would be needed for each complete roundtrip – one to bring the barge to the construction site from Decker Island and one to take the barge back out. Given the logistical considerations, a total of six tugs would be needed to complete the required three barge deliveries per day. Each one-way trip was assumed to be composed of six hours of transit and two hours of idling on-site.

### Emission Factors

HC, NO<sub>x</sub> and PM emission factors for all construction equipment were modeled using the CARB's latest 2011 inventory model for in-use off-road equipment ("OFFROAD2011").<sup>5</sup> Because OFFROAD2011 only generates emission factors for these three pollutants, the CARB OFFROAD2007 model was used to calculate emission factors for CO, SO<sub>x</sub>, and the three greenhouse gases analyzed: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Load factors were generally obtained from OFFROAD2011 for each piece of equipment. Horsepower information was either provided by Architectural Dimension or manufacturer specification sheets that ENVIRON has obtained. A few pieces of equipment lack detailed descriptions and ENVIRON has used default horsepower information from the OFFROAD2011 model; these included cranes, pile hammers, ballast tampers, and rail saw and drills. Emission factors for on-road vehicles were obtained from CARB's EMFAC2011 model. In addition to all the pollutants mentioned above, PM emissions from tire wear and brake wear were modeled for all on-road vehicle sources, and evaporative running loss hydrocarbon emissions were also modeled for gasoline-fueled employee commute vehicles. Note that road dust and fugitive dust emissions were not evaluated in this study due to lack of available data and conformance with Bay Area Air Quality Management District (BAAQMD) May 2011 California Environmental Quality Act Guidance<sup>6</sup> which only recommends evaluation of exhaust emissions. ENVIRON researched the trucks used for construction, and classified all trucks except the Ford F350 as heavy-heavy duty diesel trucks. The Ford F350 work truck was modeled as a light-heavy duty diesel truck. All employee commute vehicles were assumed to be light-duty, gasoline-fueled automobiles. Emission factors were based on an assumed on-site travel speed of 15 mph and an off-site travel speed of 40 mph. Emission factors for barge tugs were calculated using the methodologies specified for tugs in CARB's emission regulation for harbor crafts operating in California.<sup>7</sup>

Due to equipment turnover, deterioration, and regulation mandates, emissions factors vary from year to year. Table 3 and Table 4 below summarize the emissions factors used for the construction phase for off-road sources (construction equipment and barge tugs) and on-road sources (vehicles), respectively.

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<sup>5</sup> <http://www.arb.ca.gov/msei/off-road-emissions-inventory-v3-scenpop-and-hp.mdb>

<sup>6</sup>

<http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en>

<sup>7</sup> <http://www.arb.ca.gov/ports/marinevess/harborcraft.htm>

**Table 3. Emissions factors for project construction related off-road sources.**

Year	Equipment	Fuel	HP	LF	Emission Factors (g/hp-hr)									
					TOG	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2012	Tug (1200HP) Idle	Diesel	1710	0.1	0.920	0.808	2.181	7.554	0.006	0.371	0.360	568.030	0.073	0.020
2012	Tug (1200HP) Maneuver	Diesel	1710	0.1	0.920	0.808	2.181	7.554	0.006	0.371	0.360	568.030	0.073	0.020
2012	Tug (1200HP) Transit	Diesel	1710	0.5	0.920	0.808	2.181	7.554	0.006	0.371	0.360	568.030	0.073	0.020
2012	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2012	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.612	0.512	2.359	8.302	0.010	0.381	0.350	852.450	0.076	0.000
2012	Ballast Regulator	Diesel	240	0.3417	0.502	0.420	2.022	7.144	0.010	0.308	0.284	852.450	0.067	0.000
2012	Barge Crane	Diesel	208	0.2881	0.612	0.512	2.359	8.302	0.010	0.381	0.350	852.450	0.076	0.000
2012	Building Crane	Diesel	208	0.2881	0.612	0.512	2.359	8.302	0.010	0.381	0.350	852.450	0.076	0.000
2012	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.334	0.279	2.233	5.777	0.010	0.185	0.171	852.450	0.070	0.000
2012	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.397	0.332	5.072	5.389	0.010	0.275	0.253	852.450	0.088	0.000
2012	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.569	0.476	5.861	6.079	0.010	0.490	0.450	852.450	0.113	0.000
2012	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.569	0.476	5.861	6.079	0.010	0.490	0.450	852.450	0.113	0.000
2012	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.443	0.371	3.450	6.643	0.008	0.269	0.247	852.450	0.080	0.000
2012	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.449	0.376	2.628	6.667	0.008	0.278	0.256	852.450	0.062	0.000
2012	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.366	0.306	2.196	5.858	0.010	0.198	0.182	852.450	0.069	0.000
2012	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.504	0.421	5.205	6.442	0.010	0.329	0.303	852.450	0.112	0.000
2012	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.370	0.309	4.903	5.383	0.010	0.255	0.235	852.450	0.094	0.000
2012	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.656	0.549	4.903	8.584	0.008	0.401	0.369	852.450	0.097	0.000
2012	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.568	0.476	5.001	7.120	0.010	0.387	0.356	852.450	0.083	0.000
2012	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.229	0.192	2.004	4.057	0.008	0.131	0.121	852.450	0.059	0.000
2012	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.749	0.627	5.609	7.215	0.010	0.612	0.563	852.450	0.120	0.000
2012	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.455	0.381	2.695	6.789	0.008	0.281	0.259	852.450	0.070	0.000
2012	Mark II Ballast Tamper	Diesel	327	0.3417	0.354	0.296	2.120	5.398	0.008	0.207	0.190	852.450	0.062	0.000
2012	Rail Saw and Drill	Electrical	81	0.3417	0.749	0.627	5.609	7.215	0.010	0.612	0.563	852.450	0.120	0.000
2012	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.612	0.512	2.359	8.302	0.010	0.381	0.350	852.450	0.076	0.000
2013	Tug (1200HP) Idle	Diesel	1710	0.1	0.936	0.822	2.205	7.623	0.006	0.380	0.368	568.030	0.074	0.020
2013	Tug (1200HP) Maneuver	Diesel	1710	0.1	0.936	0.822	2.205	7.623	0.006	0.380	0.368	568.030	0.074	0.020
2013	Tug (1200HP) Transit	Diesel	1710	0.5	0.936	0.822	2.205	7.623	0.006	0.380	0.368	568.030	0.074	0.020
2013	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2013	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.604	0.506	2.241	8.156	0.010	0.375	0.345	852.450	0.071	0.000
2013	Ballast Regulator	Diesel	240	0.3417	0.453	0.379	1.959	6.520	0.010	0.273	0.251	852.450	0.064	0.000
2013	Barge Crane	Diesel	208	0.2881	0.604	0.506	2.241	8.156	0.010	0.375	0.345	852.450	0.071	0.000
2013	Building Crane	Diesel	208	0.2881	0.604	0.506	2.241	8.156	0.010	0.375	0.345	852.450	0.071	0.000
2013	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.339	0.283	2.146	5.746	0.010	0.185	0.170	852.450	0.067	0.000
2013	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.374	0.313	5.065	5.090	0.010	0.253	0.233	852.450	0.083	0.000
2013	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.548	0.458	5.814	5.882	0.010	0.468	0.431	852.450	0.103	0.000
2013	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.548	0.458	5.814	5.882	0.010	0.468	0.431	852.450	0.103	0.000
2013	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.439	0.367	3.214	6.517	0.008	0.264	0.242	852.450	0.076	0.000
2013	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.349	0.292	2.457	5.437	0.008	0.213	0.196	852.450	0.058	0.000
2013	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.369	0.309	2.109	5.753	0.010	0.196	0.181	852.450	0.065	0.000
2013	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.468	0.392	5.172	6.059	0.010	0.304	0.280	852.450	0.106	0.000

Year	Equipment	Fuel	HP	LF	Emission Factors (g/hp-hr)									
					TOG	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2013	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.348	0.291	4.886	5.113	0.010	0.238	0.219	852.450	0.089	0.000
2013	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.642	0.537	4.583	8.337	0.008	0.390	0.359	852.450	0.093	0.000
2013	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.553	0.462	5.006	6.902	0.010	0.375	0.345	852.450	0.076	0.000
2013	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.220	0.184	1.923	3.735	0.008	0.121	0.111	852.450	0.057	0.000
2013	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.730	0.611	5.559	7.033	0.010	0.597	0.549	852.450	0.110	0.000
2013	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.441	0.369	2.506	6.516	0.008	0.270	0.248	852.450	0.066	0.000
2013	Mark II Ballast Tamper	Diesel	327	0.3417	0.323	0.270	2.001	4.821	0.008	0.183	0.168	852.450	0.059	0.000
2013	Rail Saw and Drill	Electrical	81	0.3417	0.730	0.611	5.559	7.033	0.010	0.597	0.549	852.450	0.110	0.000
2013	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.604	0.506	2.241	8.156	0.010	0.375	0.345	852.450	0.071	0.000
2014	Tug (1200HP) Idle	Diesel	1710	0.1	0.953	0.837	2.228	7.692	0.006	0.389	0.377	568.030	0.075	0.020
2014	Tug (1200HP) Maneuver	Diesel	1710	0.1	0.953	0.837	2.228	7.692	0.006	0.389	0.377	568.030	0.075	0.020
2014	Tug (1200HP) Transit	Diesel	1710	0.5	0.953	0.837	2.228	7.692	0.006	0.389	0.377	568.030	0.075	0.020
2014	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.584	0.489	2.141	7.860	0.010	0.360	0.331	852.450	0.067	0.000
2014	Ballast Regulator	Diesel	240	0.3417	0.431	0.361	1.907	6.153	0.010	0.255	0.234	852.450	0.060	0.000
2014	Barge Crane	Diesel	208	0.2881	0.584	0.489	2.141	7.860	0.010	0.360	0.331	852.450	0.067	0.000
2014	Building Crane	Diesel	208	0.2881	0.584	0.489	2.141	7.860	0.010	0.360	0.331	852.450	0.067	0.000
2014	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.345	0.288	2.069	5.740	0.010	0.185	0.171	852.451	0.063	0.000
2014	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.345	0.289	5.059	4.657	0.010	0.229	0.211	852.450	0.078	0.000
2014	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.515	0.431	5.772	5.581	0.010	0.438	0.403	852.450	0.094	0.000
2014	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.515	0.431	5.772	5.581	0.010	0.438	0.403	852.450	0.094	0.000
2014	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.423	0.354	3.013	6.233	0.008	0.251	0.231	852.450	0.073	0.000
2014	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.334	0.280	2.306	5.183	0.008	0.202	0.185	852.450	0.055	0.000
2014	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.360	0.301	2.033	5.495	0.010	0.187	0.172	852.450	0.061	0.000
2014	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.444	0.372	5.145	5.736	0.010	0.287	0.264	852.450	0.102	0.000
2014	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.325	0.272	4.872	4.724	0.010	0.219	0.202	852.450	0.084	0.000
2014	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.625	0.523	4.286	8.058	0.008	0.376	0.346	852.450	0.089	0.000
2014	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.511	0.428	5.012	6.352	0.010	0.345	0.317	852.450	0.069	0.000
2014	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.206	0.172	1.861	3.353	0.008	0.108	0.099	852.450	0.055	0.000
2014	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.697	0.584	5.513	6.723	0.010	0.574	0.528	852.450	0.101	0.000
2014	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.427	0.357	2.343	6.264	0.008	0.260	0.239	852.450	0.063	0.000
2014	Mark II Ballast Tamper	Diesel	327	0.3417	0.314	0.263	1.905	4.565	0.008	0.172	0.159	852.450	0.056	0.000
2014	Rail Saw and Drill	Electrical	81	0.3417	0.697	0.584	5.513	6.723	0.010	0.574	0.528	852.450	0.101	0.000
2014	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.584	0.489	2.141	7.860	0.010	0.360	0.331	852.450	0.067	0.000
2015	Tug (1200HP) Idle	Diesel	1710	0.1	0.969	0.851	2.251	7.761	0.006	0.398	0.386	568.030	0.077	0.020
2015	Tug (1200HP) Maneuver	Diesel	1710	0.1	0.969	0.851	2.251	7.761	0.006	0.398	0.386	568.030	0.077	0.020
2015	Tug (1200HP) Transit	Diesel	1710	0.5	0.969	0.851	2.251	7.761	0.006	0.398	0.386	568.030	0.077	0.020
2015	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2015	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.568	0.475	2.062	7.622	0.010	0.348	0.320	852.450	0.063	0.000
2015	Ballast Regulator	Diesel	240	0.3417	0.400	0.335	1.864	5.643	0.010	0.230	0.211	852.450	0.057	0.000
2015	Barge Crane	Diesel	208	0.2881	0.568	0.475	2.062	7.622	0.010	0.348	0.320	852.450	0.063	0.000
2015	Building Crane	Diesel	208	0.2881	0.568	0.475	2.062	7.622	0.010	0.348	0.320	852.450	0.063	0.000
2015	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.350	0.293	2.004	5.728	0.010	0.186	0.171	852.449	0.059	0.000

Year	Equipment	Fuel	HP	LF	Emission Factors (g/hp-hr)									
					TOG	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2015	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.339	0.284	5.054	4.481	0.010	0.221	0.203	852.450	0.072	0.000
2015	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.503	0.421	5.734	5.422	0.010	0.424	0.390	852.450	0.086	0.000
2015	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.503	0.421	5.734	5.422	0.010	0.424	0.390	852.450	0.086	0.000
2015	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.418	0.349	2.836	6.086	0.008	0.246	0.226	852.450	0.069	0.000
2015	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.328	0.274	2.177	5.031	0.008	0.195	0.179	852.450	0.052	0.000
2015	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.359	0.300	1.971	5.369	0.010	0.183	0.169	852.450	0.058	0.000
2015	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.433	0.362	5.121	5.537	0.010	0.277	0.255	852.450	0.096	0.000
2015	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.322	0.269	4.860	4.630	0.010	0.215	0.198	852.450	0.078	0.000
2015	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.626	0.524	4.012	7.997	0.008	0.373	0.343	852.450	0.085	0.000
2015	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.500	0.419	5.020	6.135	0.010	0.335	0.308	852.450	0.064	0.000
2015	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.205	0.172	1.811	3.214	0.008	0.104	0.096	852.450	0.052	0.000
2015	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.673	0.563	5.470	6.502	0.010	0.553	0.509	852.450	0.092	0.000
2015	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.420	0.351	2.208	6.124	0.008	0.253	0.233	852.450	0.059	0.000
2015	Mark II Ballast Tamper	Diesel	327	0.3417	0.312	0.261	1.831	4.425	0.008	0.167	0.154	852.450	0.054	0.000
2015	Rail Saw and Drill	Electrical	81	0.3417	0.673	0.563	5.470	6.502	0.010	0.553	0.509	852.450	0.092	0.000
2015	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.568	0.475	2.062	7.622	0.010	0.348	0.320	852.450	0.063	0.000
2016	Tug (1200HP) Idle	Diesel	1710	0.1	0.985	0.865	2.275	7.831	0.006	0.407	0.395	568.030	0.078	0.020
2016	Tug (1200HP) Maneuver	Diesel	1710	0.1	0.985	0.865	2.275	7.831	0.006	0.407	0.395	568.030	0.078	0.020
2016	Tug (1200HP) Transit	Diesel	1710	0.5	0.985	0.865	2.275	7.831	0.006	0.407	0.395	568.030	0.078	0.020
2016	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2016	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.551	0.461	2.002	7.381	0.010	0.335	0.308	852.450	0.060	0.000
2016	Ballast Regulator	Diesel	240	0.3417	0.386	0.323	1.827	5.407	0.010	0.217	0.200	852.450	0.054	0.000
2016	Barge Crane	Diesel	208	0.2881	0.551	0.461	2.002	7.381	0.010	0.335	0.308	852.450	0.060	0.000
2016	Building Crane	Diesel	208	0.2881	0.551	0.461	2.002	7.381	0.010	0.335	0.308	852.450	0.060	0.000
2016	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.352	0.295	1.950	5.663	0.010	0.184	0.169	852.450	0.056	0.000
2016	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.316	0.265	5.050	4.081	0.010	0.201	0.185	852.450	0.067	0.000
2016	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.476	0.398	5.701	5.142	0.010	0.396	0.364	852.450	0.078	0.000
2016	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.476	0.398	5.701	5.142	0.010	0.396	0.364	852.450	0.078	0.000
2016	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.400	0.335	2.682	5.757	0.008	0.232	0.213	852.450	0.065	0.000
2016	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.295	0.247	2.070	4.456	0.008	0.173	0.159	852.450	0.049	0.000
2016	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.348	0.291	1.921	5.115	0.010	0.174	0.160	852.450	0.055	0.000
2016	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.383	0.321	5.102	4.874	0.010	0.242	0.223	852.450	0.091	0.000
2016	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.299	0.250	4.849	4.239	0.010	0.197	0.181	852.450	0.073	0.000
2016	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.609	0.509	3.761	7.710	0.008	0.359	0.330	852.450	0.081	0.000
2016	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.469	0.392	5.028	5.675	0.010	0.310	0.285	852.450	0.060	0.000
2016	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.189	0.158	1.769	2.815	0.008	0.091	0.083	852.450	0.049	0.000
2016	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.633	0.529	5.430	6.144	0.010	0.518	0.476	852.450	0.084	0.000
2016	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.392	0.328	2.098	5.649	0.008	0.233	0.215	852.450	0.057	0.000
2016	Mark II Ballast Tamper	Diesel	327	0.3417	0.302	0.253	1.770	4.150	0.008	0.159	0.146	852.450	0.051	0.000
2016	Rail Saw and Drill	Electrical	81	0.3417	0.633	0.529	5.430	6.144	0.010	0.518	0.476	852.450	0.084	0.000
2016	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.551	0.461	2.002	7.381	0.010	0.335	0.308	852.450	0.060	0.000
2017	Tug (1200HP) Idle	Diesel	1710	0.1	1.001	0.879	2.298	7.900	0.006	0.417	0.404	568.030	0.079	0.020
2017	Tug (1200HP) Maneuver	Diesel	1710	0.1	1.001	0.879	2.298	7.900	0.006	0.417	0.404	568.030	0.079	0.020



Year	Equipment	Fuel	HP	LF	Emission Factors (g/hp-hr)									
					TOG	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2017	Tug (1200HP) Transit	Diesel	1710	0.5	1.001	0.879	2.298	7.900	0.006	0.417	0.404	568.030	0.079	0.020
2017	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2017	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.496	0.415	1.955	6.655	0.010	0.297	0.273	852.450	0.057	0.000
2017	Ballast Regulator	Diesel	240	0.3417	0.364	0.304	1.800	5.022	0.010	0.199	0.183	852.450	0.051	0.000
2017	Barge Crane	Diesel	208	0.2881	0.496	0.415	1.955	6.655	0.010	0.297	0.273	852.450	0.057	0.000
2017	Building Crane	Diesel	208	0.2881	0.496	0.415	1.955	6.655	0.010	0.297	0.273	852.450	0.057	0.000
2017	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.350	0.293	1.906	5.525	0.010	0.180	0.166	852.449	0.053	0.000
2017	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.295	0.247	5.047	3.700	0.010	0.182	0.167	852.450	0.061	0.000
2017	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.443	0.370	5.672	4.809	0.010	0.362	0.333	852.450	0.071	0.000
2017	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.443	0.370	5.672	4.809	0.010	0.362	0.333	852.450	0.071	0.000
2017	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.376	0.315	2.548	5.340	0.008	0.214	0.197	852.450	0.062	0.000
2017	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.262	0.220	1.981	3.840	0.008	0.150	0.138	852.450	0.046	0.000
2017	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.330	0.276	1.883	4.755	0.010	0.162	0.149	852.450	0.052	0.000
2017	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.344	0.288	5.085	4.353	0.010	0.214	0.197	852.450	0.086	0.000
2017	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.278	0.232	4.840	3.874	0.010	0.180	0.166	852.450	0.068	0.000
2017	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.585	0.490	3.533	7.333	0.008	0.341	0.313	852.450	0.077	0.000
2017	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.449	0.376	5.034	5.362	0.010	0.294	0.270	852.450	0.056	0.000
2017	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.177	0.148	1.737	2.507	0.008	0.081	0.075	852.450	0.047	0.000
2017	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.584	0.488	5.393	5.721	0.010	0.470	0.433	852.450	0.075	0.000
2017	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.363	0.303	2.008	5.232	0.008	0.212	0.195	852.450	0.054	0.000
2017	Mark II Ballast Tamper	Diesel	327	0.3417	0.295	0.247	1.725	3.949	0.008	0.152	0.140	852.450	0.049	0.000
2017	Rail Saw and Drill	Electrical	81	0.3417	0.584	0.488	5.393	5.721	0.010	0.470	0.433	852.450	0.075	0.000
2017	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.496	0.415	1.955	6.655	0.010	0.297	0.273	852.450	0.057	0.000
2018	Tug (1200HP) Idle	Diesel	1710	0.1	1.017	0.894	2.322	7.969	0.006	0.426	0.413	568.030	0.080	0.020
2018	Tug (1200HP) Maneuver	Diesel	1710	0.1	1.017	0.894	2.322	7.969	0.006	0.426	0.413	568.030	0.080	0.020
2018	Tug (1200HP) Transit	Diesel	1710	0.5	1.017	0.894	2.322	7.969	0.006	0.426	0.413	568.030	0.080	0.020
2018	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2018	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.427	0.357	1.917	5.773	0.010	0.250	0.230	852.450	0.054	0.000
2018	Ballast Regulator	Diesel	240	0.3417	0.268	0.224	1.779	3.648	0.010	0.135	0.124	852.450	0.048	0.000
2018	Barge Crane	Diesel	208	0.2881	0.427	0.357	1.917	5.773	0.010	0.250	0.230	852.450	0.054	0.000
2018	Building Crane	Diesel	208	0.2881	0.427	0.357	1.917	5.773	0.010	0.250	0.230	852.450	0.054	0.000
2018	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.340	0.284	1.871	5.271	0.010	0.171	0.158	852.449	0.050	0.000
2018	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.241	0.202	5.045	2.924	0.010	0.142	0.130	852.450	0.056	0.000
2018	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.372	0.311	5.646	4.154	0.010	0.294	0.271	852.450	0.065	0.000
2018	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.372	0.311	5.646	4.154	0.010	0.294	0.271	852.450	0.065	0.000
2018	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.326	0.273	2.431	4.568	0.008	0.180	0.166	852.450	0.059	0.000
2018	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.216	0.181	1.908	3.098	0.008	0.119	0.110	852.450	0.044	0.000
2018	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.295	0.247	1.852	4.131	0.010	0.140	0.129	852.450	0.049	0.000
2018	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.300	0.251	5.072	3.747	0.010	0.183	0.168	852.450	0.082	0.000
2018	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.235	0.196	4.832	3.181	0.010	0.147	0.135	852.450	0.064	0.000
2018	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.529	0.443	3.329	6.502	0.008	0.300	0.276	852.450	0.073	0.000
2018	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.378	0.316	5.034	4.430	0.010	0.241	0.222	852.450	0.052	0.000
2018	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.154	0.129	1.710	2.050	0.008	0.066	0.061	852.450	0.044	0.000

Year	Equipment	Fuel	HP	LF	Emission Factors (g/hp-hr)									
					TOG	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
2018	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.493	0.412	5.358	4.955	0.010	0.392	0.360	852.449	0.067	0.000
2018	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.327	0.274	1.934	4.634	0.008	0.187	0.172	852.450	0.051	0.000
2018	Mark II Ballast Tamper	Diesel	327	0.3417	0.224	0.188	1.696	2.907	0.008	0.104	0.095	852.450	0.046	0.000
2018	Rail Saw and Drill	Electrical	81	0.3417	0.493	0.412	5.358	4.955	0.010	0.392	0.360	852.449	0.067	0.000
2018	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.427	0.357	1.917	5.773	0.010	0.250	0.230	852.450	0.054	0.000
2019	Tug (1200HP) Idle	Diesel	1710	0.1	1.034	0.908	2.345	8.039	0.006	0.435	0.422	568.030	0.082	0.020
2019	Tug (1200HP) Maneuver	Diesel	1710	0.1	1.034	0.908	2.345	8.039	0.006	0.435	0.422	568.030	0.082	0.020
2019	Tug (1200HP) Transit	Diesel	1710	0.5	1.034	0.908	2.345	8.039	0.006	0.435	0.422	568.030	0.082	0.020
2019	Air Compressor	Electrical	78	0.3216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2019	American 5299 Dynamic Compaction Crane	Diesel	208	0.2881	0.377	0.316	1.883	5.084	0.010	0.216	0.198	852.450	0.051	0.000
2019	Ballast Regulator	Diesel	240	0.3417	0.229	0.191	1.762	3.020	0.010	0.106	0.097	852.450	0.045	0.000
2019	Barge Crane	Diesel	208	0.2881	0.377	0.316	1.883	5.084	0.010	0.216	0.198	852.450	0.051	0.000
2019	Building Crane	Diesel	208	0.2881	0.377	0.316	1.883	5.084	0.010	0.216	0.198	852.450	0.051	0.000
2019	CAT 14H Motor Grader (C11)	Diesel	240	0.4087	0.318	0.266	1.846	4.866	0.010	0.156	0.144	852.450	0.047	0.000
2019	CAT 320D Excavator (C6.4 ACERT)	Diesel	148	0.3819	0.218	0.182	5.043	2.533	0.010	0.122	0.112	852.450	0.052	0.000
2019	CAT 416D Skip (3054C DIT)	Diesel	77	0.3685	0.325	0.272	5.625	3.693	0.010	0.247	0.227	852.450	0.059	0.000
2019	CAT 442E Backhoe (3054C DIT)	Diesel	78	0.3685	0.325	0.272	5.625	3.693	0.010	0.247	0.227	852.450	0.059	0.000
2019	CAT 627G Scraper (CAT C15/CAT C9 ACERT)	Diesel	394	0.4824	0.303	0.254	2.330	4.156	0.008	0.163	0.150	852.450	0.056	0.000
2019	CAT 815F Compactor (9 ACERT)	Diesel	253	0.3752	0.207	0.173	1.846	2.908	0.008	0.111	0.102	852.450	0.042	0.000
2019	CAT 966 Large Rubber Tire Loader (C7 ATAAC)	Diesel	216	0.3618	0.274	0.229	1.828	3.745	0.010	0.126	0.116	852.450	0.046	0.000
2019	CAT AP-1055B Paver (C7)	Diesel	174	0.4154	0.264	0.221	5.060	3.245	0.010	0.159	0.146	852.450	0.077	0.000
2019	CAT CS74 Roller (C6.6 ACERT)	Diesel	143	0.3752	0.204	0.171	4.825	2.699	0.010	0.124	0.114	852.450	0.059	0.000
2019	CAT D8R Bull Dozer (3406C SCAC)	Diesel	328	0.3953	0.506	0.423	3.147	6.143	0.008	0.283	0.260	852.450	0.070	0.000
2019	CAT TL 1055 Forklift (C4.4 EIDITAAC)	Diesel	125	0.201	0.338	0.283	5.031	3.865	0.010	0.210	0.193	852.450	0.048	0.000
2019	CAT 345 CL Excavator (C13 ACERT)	Diesel	321	0.3819	0.143	0.120	1.690	1.780	0.008	0.058	0.053	852.450	0.042	0.000
2019	Delmag 30/32 Pile Hammer	Diesel	81	0.3417	0.442	0.370	5.326	4.497	0.010	0.343	0.315	852.450	0.060	0.000
2019	Manitowoc 12000 Large Crane (332 hp)	Diesel	332	0.2881	0.309	0.258	1.871	4.297	0.008	0.173	0.159	852.450	0.049	0.000
2019	Mark II Ballast Tamper	Diesel	327	0.3417	0.211	0.176	1.676	2.575	0.008	0.092	0.085	852.449	0.044	0.000
2019	Rail Saw and Drill	Electrical	81	0.3417	0.442	0.370	5.326	4.497	0.010	0.343	0.315	852.450	0.060	0.000
2019	TEREX RT 555 Small Crane (Cummins QSB 185)	Diesel	208	0.2881	0.377	0.316	1.883	5.084	0.010	0.216	0.198	852.450	0.051	0.000

Table 4. Emissions factors for project construction related on-road sources.

Year	On-Road Vehicles	Veh Class	Vocation	Speed	Emission Factors (g/hr or g/mile)															
					TOG exh	TOG evap	ROG exh	ROG evap	CO	NOx	SOx	PM10 exh	PM10 tire	PM10 brk	PM2.5 exh	PM2.5 tire	PM2.5 brk	CO2	CH4	N2O
2012	Commuter Vehicle	LDA	Onsite Idle	Idle	2.436	0.000	1.785	0.000	22.138	1.543	0.017	0.085	0.040	0.184	0.078	0.010	0.079	5428.856	0.275	0.064
2012	Commuter Vehicle	LDA	Onsite Move	15	0.226	0.089	0.170	0.089	3.127	0.246	0.003	0.007	0.008	0.037	0.007	0.002	0.016	617.645	0.032	0.010
2012	Commuter Vehicle	LDA	Offsite Move	40	0.078	0.089	0.060	0.089	1.894	0.183	0.003	0.002	0.008	0.037	0.002	0.002	0.016	292.469	0.014	0.008
2012	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	9.161	0.000	8.047	0.000	41.084	86.639	0.067	0.792	0.000	0.000	0.728	0.000	0.000	6974.119	0.374	0.000
2012	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	2.345	0.000	2.060	0.000	5.453	18.050	0.017	0.602	0.035	0.060	0.554	0.009	0.026	2729.289	0.096	0.060
2012	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.487	0.000	0.428	0.000	2.206	10.839	0.017	0.303	0.035	0.060	0.279	0.009	0.026	1702.091	0.020	0.060
2012	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	9.161	0.000	8.047	0.000	41.084	86.639	0.067	0.792	0.000	0.000	0.728	0.000	0.000	6974.119	0.374	0.000
2012	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	2.345	0.000	2.060	0.000	5.453	18.050	0.017	0.602	0.035	0.060	0.554	0.009	0.026	2729.289	0.096	0.060
2012	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.487	0.000	0.428	0.000	2.206	10.839	0.017	0.303	0.035	0.060	0.279	0.009	0.026	1702.091	0.020	0.060
2012	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	9.161	0.000	8.047	0.000	41.084	86.639	0.067	0.792	0.000	0.000	0.728	0.000	0.000	6974.119	0.374	0.000
2012	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	2.345	0.000	2.060	0.000	5.453	18.050	0.017	0.602	0.035	0.060	0.554	0.009	0.026	2729.289	0.096	0.060
2012	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.487	0.000	0.428	0.000	2.206	10.839	0.017	0.303	0.035	0.060	0.279	0.009	0.026	1702.091	0.020	0.060
2012	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	9.161	0.000	8.047	0.000	41.084	86.639	0.067	0.792	0.000	0.000	0.728	0.000	0.000	6974.119	0.374	0.000
2012	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	2.345	0.000	2.060	0.000	5.453	18.050	0.017	0.602	0.035	0.060	0.554	0.009	0.026	2729.289	0.096	0.060
2012	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.487	0.000	0.428	0.000	2.206	10.839	0.017	0.303	0.035	0.060	0.279	0.009	0.026	1702.091	0.020	0.060
2012	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	3.188	0.000	2.800	0.000	17.336	37.488	0.025	0.659	0.060	0.382	0.607	0.015	0.164	2637.128	0.130	0.087
2012	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.447	0.000	0.393	0.000	2.019	5.746	0.005	0.092	0.012	0.076	0.085	0.003	0.033	527.426	0.016	0.017
2012	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.196	0.000	0.172	0.000	0.698	4.246	0.005	0.041	0.012	0.076	0.037	0.003	0.033	527.426	0.008	0.017
2013	Commuter Vehicle	LDA	Onsite Idle	Idle	2.083	0.000	1.505	0.000	19.150	1.349	0.017	0.075	0.040	0.184	0.068	0.010	0.079	5432.017	0.255	0.056
2013	Commuter Vehicle	LDA	Onsite Move	15	0.192	0.079	0.142	0.079	2.727	0.215	0.003	0.007	0.008	0.037	0.006	0.002	0.016	617.996	0.030	0.009
2013	Commuter Vehicle	LDA	Offsite Move	40	0.066	0.079	0.050	0.079	1.660	0.159	0.003	0.002	0.008	0.037	0.002	0.002	0.016	292.638	0.012	0.007
2013	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	8.291	0.000	7.283	0.000	37.829	80.143	0.067	0.603	0.000	0.000	0.554	0.000	0.000	6995.573	0.338	0.000
2013	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	1.944	0.000	1.708	0.000	4.522	16.401	0.017	0.462	0.035	0.060	0.425	0.009	0.026	2731.137	0.079	0.060
2013	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.413	0.000	0.363	0.000	1.862	9.758	0.017	0.236	0.035	0.060	0.217	0.009	0.026	1703.244	0.017	0.060
2013	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	8.291	0.000	7.283	0.000	37.829	80.143	0.067	0.603	0.000	0.000	0.554	0.000	0.000	6995.573	0.338	0.000
2013	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	1.944	0.000	1.708	0.000	4.522	16.401	0.017	0.462	0.035	0.060	0.425	0.009	0.026	2731.137	0.079	0.060
2013	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.413	0.000	0.363	0.000	1.862	9.758	0.017	0.236	0.035	0.060	0.217	0.009	0.026	1703.244	0.017	0.060
2013	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	8.291	0.000	7.283	0.000	37.829	80.143	0.067	0.603	0.000	0.000	0.554	0.000	0.000	6995.573	0.338	0.000
2013	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	1.944	0.000	1.708	0.000	4.522	16.401	0.017	0.462	0.035	0.060	0.425	0.009	0.026	2731.137	0.079	0.060
2013	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.413	0.000	0.363	0.000	1.862	9.758	0.017	0.236	0.035	0.060	0.217	0.009	0.026	1703.244	0.017	0.060
2013	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	8.291	0.000	7.283	0.000	37.829	80.143	0.067	0.603	0.000	0.000	0.554	0.000	0.000	6995.573	0.338	0.000
2013	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	1.944	0.000	1.708	0.000	4.522	16.401	0.017	0.462	0.035	0.060	0.425	0.009	0.026	2731.137	0.079	0.060
2013	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.413	0.000	0.363	0.000	1.862	9.758	0.017	0.236	0.035	0.060	0.217	0.009	0.026	1703.244	0.017	0.060
2013	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	3.115	0.000	2.736	0.000	17.212	35.533	0.025	0.636	0.060	0.382	0.585	0.015	0.164	2633.520	0.125	0.087
2013	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.437	0.000	0.384	0.000	2.005	5.446	0.005	0.089	0.012	0.076	0.082	0.003	0.033	526.704	0.016	0.017
2013	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.191	0.000	0.168	0.000	0.693	4.025	0.005	0.039	0.012	0.076	0.036	0.003	0.033	526.704	0.007	0.017
2014	Commuter Vehicle	LDA	Onsite Idle	Idle	1.770	0.000	1.253	0.000	16.432	1.188	0.017	0.067	0.040	0.184	0.061	0.010	0.079	5434.993	0.240	0.049
2014	Commuter Vehicle	LDA	Onsite Move	15	0.162	0.069	0.118	0.069	2.367	0.189	0.003	0.006	0.008	0.037	0.005	0.002	0.016	618.328	0.027	0.008
2014	Commuter Vehicle	LDA	Offsite Move	40	0.055	0.069	0.041	0.069	1.452	0.139	0.003	0.002	0.008	0.037	0.002	0.002	0.016	292.797	0.011	0.006
2014	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	7.237	0.000	6.357	0.000	33.277	72.190	0.067	0.384	0.000	0.000	0.354	0.000	0.000	7022.554	0.295	0.000
2014	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	1.395	0.000	1.225	0.000	3.237	13.933	0.017	0.272	0.035	0.060	0.250	0.009	0.026	2736.437	0.057	0.060
2014	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.308	0.000	0.271	0.000	1.374	8.155	0.017	0.132	0.035	0.060	0.122	0.009	0.026	1706.549	0.013	0.060
2014	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	7.237	0.000	6.357	0.000	33.277	72.190	0.067	0.384	0.000	0.000	0.354	0.000	0.000	7022.554	0.295	0.000
2014	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	1.395	0.000	1.225	0.000	3.237	13.933	0.017	0.272	0.035	0.060	0.250	0.009	0.026	2736.437	0.057	0.060
2014	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.308	0.000	0.271	0.000	1.374	8.155	0.017	0.132	0.035	0.060	0.122	0.009	0.026	1706.549	0.013	0.060
2014	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	7.237	0.000	6.357	0.000	33.277	72.190	0.067	0.384	0.000	0.000	0.354	0.000	0.000	7022.554	0.295	0.000
2014	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	1.395	0.000	1.225	0.000	3.237	13.933	0.017	0.272	0.035	0.060	0.250	0.009	0.026	2736.437	0.057	0.060
2014	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.308	0.000	0.271	0.000	1.374	8.155	0.017	0.132	0.035	0.060	0.122	0.009	0.026	1706.549	0.013	0.060
2014	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	7.237	0.000	6.357	0.000	33.277	72.190	0.067	0.384	0.000	0.000	0.354	0.000	0.000	7022.554	0.295	0.000
2014	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	1.395	0.000	1.225	0.000	3.237	13.933	0.017	0.272	0.035	0.060	0.250	0.009	0.026	2736.437	0.057	0.060

Year	On-Road Vehicles	Veh Class	Vocation	Speed	Emission Factors (g/hr or g/mile)															
					TOG exh	TOG evap	ROG exh	ROG evap	CO	NOx	SOx	PM10 exh	PM10 tire	PM10 brk	PM2.5 exh	PM2.5 tire	PM2.5 brk	CO2	CH4	N2O
2014	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.308	0.000	0.271	0.000	1.374	8.155	0.017	0.132	0.035	0.060	0.122	0.009	0.026	1706.549	0.013	0.060
2014	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	3.022	0.000	2.654	0.000	16.997	33.504	0.025	0.610	0.060	0.382	0.561	0.015	0.164	2629.819	0.125	0.087
2014	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.424	0.000	0.372	0.000	1.980	5.135	0.005	0.086	0.012	0.076	0.079	0.003	0.033	525.964	0.015	0.017
2014	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.186	0.000	0.163	0.000	0.684	3.795	0.005	0.037	0.012	0.076	0.034	0.003	0.033	525.964	0.007	0.017
2015	Commuter Vehicle	LDA	Onsite Idle	Idle	1.516	0.000	1.051	0.000	14.202	1.058	0.017	0.062	0.040	0.184	0.057	0.010	0.079	5438.153	0.230	0.044
2015	Commuter Vehicle	LDA	Onsite Move	15	0.138	0.062	0.098	0.062	2.071	0.168	0.003	0.005	0.008	0.037	0.005	0.002	0.016	618.683	0.025	0.007
2015	Commuter Vehicle	LDA	Offsite Move	40	0.046	0.062	0.034	0.062	1.281	0.122	0.003	0.002	0.008	0.037	0.002	0.002	0.016	292.967	0.010	0.005
2015	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	7.274	0.000	6.389	0.000	34.359	66.240	0.067	0.305	0.000	0.000	0.281	0.000	0.000	7030.165	0.297	0.000
2015	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	1.196	0.000	1.051	0.000	2.688	12.020	0.017	0.177	0.035	0.060	0.163	0.009	0.026	2727.218	0.049	0.060
2015	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.271	0.000	0.238	0.000	1.163	6.944	0.017	0.095	0.035	0.060	0.087	0.009	0.026	1700.800	0.011	0.060
2015	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	7.274	0.000	6.389	0.000	34.359	66.240	0.067	0.305	0.000	0.000	0.281	0.000	0.000	7030.165	0.297	0.000
2015	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	1.196	0.000	1.051	0.000	2.688	12.020	0.017	0.177	0.035	0.060	0.163	0.009	0.026	2727.218	0.049	0.060
2015	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.271	0.000	0.238	0.000	1.163	6.944	0.017	0.095	0.035	0.060	0.087	0.009	0.026	1700.800	0.011	0.060
2015	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	7.274	0.000	6.389	0.000	34.359	66.240	0.067	0.305	0.000	0.000	0.281	0.000	0.000	7030.165	0.297	0.000
2015	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	1.196	0.000	1.051	0.000	2.688	12.020	0.017	0.177	0.035	0.060	0.163	0.009	0.026	2727.218	0.049	0.060
2015	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.271	0.000	0.238	0.000	1.163	6.944	0.017	0.095	0.035	0.060	0.087	0.009	0.026	1700.800	0.011	0.060
2015	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	7.274	0.000	6.389	0.000	34.359	66.240	0.067	0.305	0.000	0.000	0.281	0.000	0.000	7030.165	0.297	0.000
2015	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	1.196	0.000	1.051	0.000	2.688	12.020	0.017	0.177	0.035	0.060	0.163	0.009	0.026	2727.218	0.049	0.060
2015	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.271	0.000	0.238	0.000	1.163	6.944	0.017	0.095	0.035	0.060	0.087	0.009	0.026	1700.800	0.011	0.060
2015	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	2.922	0.000	2.567	0.000	16.763	31.541	0.025	0.585	0.060	0.382	0.538	0.015	0.164	2626.395	0.120	0.087
2015	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.410	0.000	0.360	0.000	1.953	4.834	0.005	0.082	0.012	0.076	0.075	0.003	0.033	525.279	0.015	0.017
2015	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.180	0.000	0.158	0.000	0.675	3.572	0.005	0.036	0.012	0.076	0.033	0.003	0.033	525.279	0.007	0.017
2016	Commuter Vehicle	LDA	Onsite Idle	Idle	1.310	0.000	0.886	0.000	12.352	0.952	0.017	0.059	0.040	0.184	0.054	0.010	0.079	5441.175	0.220	0.040
2016	Commuter Vehicle	LDA	Onsite Move	15	0.118	0.056	0.082	0.056	1.826	0.151	0.003	0.005	0.008	0.037	0.005	0.002	0.016	619.025	0.023	0.006
2016	Commuter Vehicle	LDA	Offsite Move	40	0.039	0.056	0.028	0.056	1.138	0.109	0.003	0.002	0.008	0.037	0.001	0.002	0.016	293.129	0.009	0.005
2016	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	6.812	0.000	5.984	0.000	33.311	60.057	0.067	0.162	0.000	0.000	0.149	0.000	0.000	7047.469	0.278	0.000
2016	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	1.018	0.000	0.894	0.000	2.214	10.434	0.017	0.107	0.035	0.060	0.098	0.009	0.026	2722.193	0.042	0.060
2016	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.243	0.000	0.214	0.000	1.009	5.934	0.017	0.074	0.035	0.060	0.068	0.009	0.026	1697.665	0.010	0.060
2016	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	6.812	0.000	5.984	0.000	33.311	60.057	0.067	0.162	0.000	0.000	0.149	0.000	0.000	7047.469	0.278	0.000
2016	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	1.018	0.000	0.894	0.000	2.214	10.434	0.017	0.107	0.035	0.060	0.098	0.009	0.026	2722.193	0.042	0.060
2016	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.243	0.000	0.214	0.000	1.009	5.934	0.017	0.074	0.035	0.060	0.068	0.009	0.026	1697.665	0.010	0.060
2016	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	6.812	0.000	5.984	0.000	33.311	60.057	0.067	0.162	0.000	0.000	0.149	0.000	0.000	7047.469	0.278	0.000
2016	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	1.018	0.000	0.894	0.000	2.214	10.434	0.017	0.107	0.035	0.060	0.098	0.009	0.026	2722.193	0.042	0.060
2016	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.243	0.000	0.214	0.000	1.009	5.934	0.017	0.074	0.035	0.060	0.068	0.009	0.026	1697.665	0.010	0.060
2016	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	6.812	0.000	5.984	0.000	33.311	60.057	0.067	0.162	0.000	0.000	0.149	0.000	0.000	7047.469	0.278	0.000
2016	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	1.018	0.000	0.894	0.000	2.214	10.434	0.017	0.107	0.035	0.060	0.098	0.009	0.026	2722.193	0.042	0.060
2016	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.243	0.000	0.214	0.000	1.009	5.934	0.017	0.074	0.035	0.060	0.068	0.009	0.026	1697.665	0.010	0.060
2016	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	2.803	0.000	2.462	0.000	16.430	29.476	0.025	0.558	0.060	0.382	0.513	0.015	0.164	2623.158	0.115	0.087
2016	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.393	0.000	0.345	0.000	1.914	4.518	0.005	0.078	0.012	0.076	0.072	0.003	0.033	524.632	0.014	0.017
2016	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.172	0.000	0.151	0.000	0.661	3.339	0.005	0.034	0.012	0.076	0.032	0.003	0.033	524.632	0.007	0.017
2017	Commuter Vehicle	LDA	Onsite Idle	Idle	1.117	0.000	0.729	0.000	10.611	0.863	0.017	0.057	0.040	0.184	0.053	0.010	0.079	5443.407	0.215	0.036
2017	Commuter Vehicle	LDA	Onsite Move	15	0.099	0.050	0.066	0.050	1.599	0.136	0.003	0.005	0.008	0.037	0.005	0.002	0.016	619.277	0.022	0.006
2017	Commuter Vehicle	LDA	Offsite Move	40	0.032	0.050	0.022	0.050	1.008	0.097	0.003	0.001	0.008	0.037	0.001	0.002	0.016	293.249	0.008	0.004
2017	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	6.971	0.000	6.124	0.000	34.250	56.063	0.067	0.135	0.000	0.000	0.124	0.000	0.000	7047.255	0.284	0.000
2017	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	0.966	0.000	0.848	0.000	2.087	9.365	0.017	0.086	0.035	0.060	0.079	0.009	0.026	2717.210	0.039	0.060
2017	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.235	0.000	0.206	0.000	0.966	5.286	0.017	0.066	0.035	0.060	0.060	0.009	0.026	1694.558	0.010	0.060
2017	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	6.971	0.000	6.124	0.000	34.250	56.063	0.067	0.135	0.000	0.000	0.124	0.000	0.000	7047.255	0.284	0.000
2017	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	0.966	0.000	0.848	0.000	2.087	9.365	0.017	0.086	0.035	0.060	0.079	0.009	0.026	2717.210	0.039	0.060
2017	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.235	0.000	0.206	0.000	0.966	5.286	0.017	0.066	0.035	0.060	0.060	0.009	0.026	1694.558	0.010	0.060
2017	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	6.971	0.000	6.124	0.000	34.250	56.063	0.067	0.135	0.000	0.000	0.124	0.000	0.000	7047.255	0.284	0.000
2017	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	0.966	0.000	0.848	0.000	2.087	9.365	0.017	0.086	0.035	0.060	0.079	0.009	0.026	2717.210	0.039	0.060
2017	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.235	0.000	0.206	0.000	0.966	5.286	0.017	0.066	0.035	0.060	0.060	0.009	0.026	1694.558	0.010	0.060

Year	On-Road Vehicles	Veh Class	Vocation	Speed	Emission Factors (g/hr or g/mile)															
					TOG exh	TOG evap	ROG exh	ROG evap	CO	NOx	SOx	PM10 exh	PM10 tire	PM10 brk	PM2.5 exh	PM2.5 tire	PM2.5 brk	CO2	CH4	N2O
2017	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	6.971	0.000	6.124	0.000	34.250	56.063	0.067	0.135	0.000	0.000	0.124	0.000	0.000	7047.255	0.284	0.000
2017	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	0.966	0.000	0.848	0.000	2.087	9.365	0.017	0.086	0.035	0.060	0.079	0.009	0.026	2717.210	0.039	0.060
2017	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.235	0.000	0.206	0.000	0.966	5.286	0.017	0.066	0.035	0.060	0.060	0.009	0.026	1694.558	0.010	0.060
2017	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	2.686	0.000	2.359	0.000	16.109	27.553	0.025	0.532	0.060	0.382	0.490	0.015	0.164	2619.977	0.110	0.087
2017	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.377	0.000	0.331	0.000	1.876	4.223	0.005	0.075	0.012	0.076	0.069	0.003	0.033	523.995	0.014	0.017
2017	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.165	0.000	0.145	0.000	0.648	3.121	0.005	0.033	0.012	0.076	0.030	0.003	0.033	523.995	0.006	0.017
2018	Commuter Vehicle	LDA	Onsite Idle	Idle	0.954	0.000	0.596	0.000	9.118	0.790	0.017	0.057	0.040	0.184	0.053	0.010	0.079	5445.238	0.205	0.033
2018	Commuter Vehicle	LDA	Onsite Move	15	0.083	0.045	0.053	0.045	1.406	0.124	0.003	0.005	0.008	0.037	0.005	0.002	0.016	619.486	0.021	0.005
2018	Commuter Vehicle	LDA	Offsite Move	40	0.026	0.045	0.017	0.045	0.897	0.086	0.003	0.001	0.008	0.037	0.001	0.002	0.016	293.348	0.008	0.004
2018	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	7.227	0.000	6.349	0.000	35.560	53.038	0.067	0.131	0.000	0.000	0.121	0.000	0.000	7044.947	0.295	0.000
2018	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	0.964	0.000	0.847	0.000	2.081	8.535	0.017	0.083	0.035	0.060	0.076	0.009	0.026	2712.765	0.039	0.060
2018	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.236	0.000	0.207	0.000	0.968	4.774	0.017	0.065	0.035	0.060	0.060	0.009	0.026	1691.786	0.010	0.060
2018	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	7.227	0.000	6.349	0.000	35.560	53.038	0.067	0.131	0.000	0.000	0.121	0.000	0.000	7044.947	0.295	0.000
2018	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	0.964	0.000	0.847	0.000	2.081	8.535	0.017	0.083	0.035	0.060	0.076	0.009	0.026	2712.765	0.039	0.060
2018	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.236	0.000	0.207	0.000	0.968	4.774	0.017	0.065	0.035	0.060	0.060	0.009	0.026	1691.786	0.010	0.060
2018	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	7.227	0.000	6.349	0.000	35.560	53.038	0.067	0.131	0.000	0.000	0.121	0.000	0.000	7044.947	0.295	0.000
2018	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	0.964	0.000	0.847	0.000	2.081	8.535	0.017	0.083	0.035	0.060	0.076	0.009	0.026	2712.765	0.039	0.060
2018	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.236	0.000	0.207	0.000	0.968	4.774	0.017	0.065	0.035	0.060	0.060	0.009	0.026	1691.786	0.010	0.060
2018	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	7.227	0.000	6.349	0.000	35.560	53.038	0.067	0.131	0.000	0.000	0.121	0.000	0.000	7044.947	0.295	0.000
2018	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	0.964	0.000	0.847	0.000	2.081	8.535	0.017	0.083	0.035	0.060	0.076	0.009	0.026	2712.765	0.039	0.060
2018	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.236	0.000	0.207	0.000	0.968	4.774	0.017	0.065	0.035	0.060	0.060	0.009	0.026	1691.786	0.010	0.060
2018	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	2.564	0.000	2.252	0.000	15.769	25.674	0.025	0.506	0.060	0.382	0.466	0.015	0.164	2617.080	0.105	0.087
2018	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.360	0.000	0.316	0.000	1.837	3.935	0.005	0.071	0.012	0.076	0.065	0.003	0.033	523.416	0.013	0.017
2018	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.158	0.000	0.138	0.000	0.635	2.908	0.005	0.031	0.012	0.076	0.029	0.003	0.033	523.416	0.006	0.017
2019	Commuter Vehicle	LDA	Onsite Idle	Idle	0.839	0.000	0.504	0.000	8.039	0.734	0.017	0.057	0.040	0.184	0.053	0.010	0.079	5447.078	0.200	0.031
2019	Commuter Vehicle	LDA	Onsite Move	15	0.072	0.042	0.044	0.042	1.263	0.114	0.003	0.005	0.008	0.037	0.005	0.002	0.016	619.695	0.020	0.005
2019	Commuter Vehicle	LDA	Offsite Move	40	0.022	0.042	0.014	0.042	0.814	0.079	0.003	0.001	0.008	0.037	0.001	0.002	0.016	293.447	0.008	0.003
2019	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Idle	Idle	7.412	0.000	6.511	0.000	36.512	50.831	0.067	0.128	0.000	0.000	0.118	0.000	0.000	7043.794	0.302	0.000
2019	Kenworth Cummings 330 Delivery Truck	HHDT	Onsite Move	15	0.954	0.000	0.838	0.000	2.057	7.894	0.017	0.080	0.035	0.060	0.073	0.009	0.026	2709.401	0.039	0.060
2019	Kenworth Cummings 330 Delivery Truck	HHDT	Offsite Move	40	0.234	0.000	0.206	0.000	0.960	4.370	0.017	0.064	0.035	0.060	0.059	0.009	0.026	1689.688	0.010	0.060
2019	Peterbilt 357 Concrete Truck	HHDT	Onsite Idle	Idle	7.412	0.000	6.511	0.000	36.512	50.831	0.067	0.128	0.000	0.000	0.118	0.000	0.000	7043.794	0.302	0.000
2019	Peterbilt 357 Concrete Truck	HHDT	Onsite Move	15	0.954	0.000	0.838	0.000	2.057	7.894	0.017	0.080	0.035	0.060	0.073	0.009	0.026	2709.401	0.039	0.060
2019	Peterbilt 357 Concrete Truck	HHDT	Offsite Move	40	0.234	0.000	0.206	0.000	0.960	4.370	0.017	0.064	0.035	0.060	0.059	0.009	0.026	1689.688	0.010	0.060
2019	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Idle	Idle	7.412	0.000	6.511	0.000	36.512	50.831	0.067	0.128	0.000	0.000	0.118	0.000	0.000	7043.794	0.302	0.000
2019	Kenworth Cummings 350 Dbl Bottom	HHDT	Onsite Move	15	0.954	0.000	0.838	0.000	2.057	7.894	0.017	0.080	0.035	0.060	0.073	0.009	0.026	2709.401	0.039	0.060
2019	Kenworth Cummings 350 Dbl Bottom	HHDT	Offsite Move	40	0.234	0.000	0.206	0.000	0.960	4.370	0.017	0.064	0.035	0.060	0.059	0.009	0.026	1689.688	0.010	0.060
2019	Peterbilt WT 4000 Water Truck	HHDT	Onsite Idle	Idle	7.412	0.000	6.511	0.000	36.512	50.831	0.067	0.128	0.000	0.000	0.118	0.000	0.000	7043.794	0.302	0.000
2019	Peterbilt WT 4000 Water Truck	HHDT	Onsite Move	15	0.954	0.000	0.838	0.000	2.057	7.894	0.017	0.080	0.035	0.060	0.073	0.009	0.026	2709.401	0.039	0.060
2019	Peterbilt WT 4000 Water Truck	HHDT	Offsite Move	40	0.234	0.000	0.206	0.000	0.960	4.370	0.017	0.064	0.035	0.060	0.059	0.009	0.026	1689.688	0.010	0.060
2019	Work Truck (Ford F350)	LHD1	Onsite Idle	Idle	2.447	0.000	2.149	0.000	15.457	23.947	0.025	0.482	0.060	0.382	0.444	0.015	0.164	2614.410	0.100	0.087
2019	Work Truck (Ford F350)	LHD1	Onsite Move	15	0.343	0.000	0.301	0.000	1.800	3.670	0.005	0.068	0.012	0.076	0.062	0.003	0.033	522.882	0.013	0.017
2019	Work Truck (Ford F350)	LHD1	Offsite Move	40	0.150	0.000	0.132	0.000	0.622	2.712	0.005	0.030	0.012	0.076	0.027	0.003	0.033	522.882	0.006	0.017

## General HRA Tables

**Table A.1  
Speciation Profiles for TOG  
Oakland Army Base  
Oakland, California**

Source	CAS Number	Chemical	Fraction of TOG
On-road Diesel Trucks <sup>1</sup>	107028	acrolein	0.01297
	108383	xylene, m- & p-	0.008886455
	108883	toluene	0.015179438
	50000	formaldehyde	0.08505
	71432	benzene	0.01045
	75070	acetaldehyde	0.15942
	78933	methyl ethyl ketone (mek) (2-butanone)	0.028604469
	95476	o-xylene	0.003165561
Off-road Diesel Equipment, Ships, Tugs, and Generator Sets <sup>2</sup>	--	isomers of butylbenzene	0.00127
	--	isomers of diethylbenzene	0.00135
	--	ethylhexane	0.00061
	--	c9 aromatics	0.00497
	--	c10 aromatics	0.00079
	--	alkene ketone	0.01749
	--	c6 aldehydes	0.03799
	--	c5 aldehyde	0.0011
	100414	ethylbenzene	0.00305
	100425	styrene	0.00058
	100527	benzaldehyde	0.00699
	103651	n-propylbenzene	0.00122
	106423	p-xylene	0.00095
	106978	n-butane	0.00104
	106989	1-butene	0.00666
	106990	1,3-butadiene	0.0019
	107835	2-methylpentane	0.00392
	108087	2,4-dimethylpentane	0.00019
	108383	m-xylene	0.00611
	108678	1,3,5-trimethylbenzene	0.00194
	108872	methylcyclohexane	0.00068
	108883	toluene	0.01473
	108941	cyclohexanone	0.00107
	109660	n-pentane	0.00175
	109671	1-pentene	0.00324
	110543	n-hexane	0.00157
	110827	cyclohexane	0.00026
	111659	n-octane	0.0014
	111842	n-nonane	0.0023
	1120214	n-undecane	0.00261
	115071	propene	0.02597
	115117	2-methylpropene	0.00922
	123386	propionaldehyde	0.0097
	123728	butyraldehyde	0.01868
	124185	n-decane	0.00529
	135013	1,2-diethylbenzene	0.00086
	135988	(1-methylpropyl)benzene	0.00051
	142825	n-heptane	0.00068
	287923	cyclopentane	0.00012
	463490	1,2-propadiene	0.00466
	496117	2,3-dihydroindene (indan)	0.00188
	50000	formaldehyde	0.14714
526738	1,2,3-trimethylbenzene	0.0012	
538932	(2-methylpropyl)benzene	0.00126	
540841	2,2,4-trimethylpentane	0.00298	
558372	3,3-dimethyl-1-butene	0.0282	
563780	2,3-dimethyl-1-butene	0.00028	

Source	CAS Number	Chemical	Fraction of TOG
Off-road Diesel Equipment, Ships, Tugs, and Generator Sets <sup>2</sup>	565593	2,3-dimethylpentane	0.00073
	565753	2,3,4-trimethylpentane	0.00015
	584941	2,3-dimethylhexane	0.00011
	589344	3-methylhexane	0.00348
	589435	2,4-dimethylhexane	0.00036
	590181	cis-2-butene	0.00094
	591764	2-methylhexane	0.00115
	591786	methyl n-butyl ketone	0.00899
	592278	2-methylheptane	0.00057
	611143	1-methyl-2-ethylbenzene	0.00138
	620144	1-methyl-3-ethylbenzene	0.00247
	624646	trans-2-butene	0.00195
	627203	cis-2-pentene	0.0003
	637503	b-methylstyrene	0.00047
	64175	ethanol	0.00009
	646048	trans-2-pentene	0.0004
	67561	methanol	0.0003
	67641	acetone	0.07507
	71432	benzene	0.02001
	74828	methane	0.04084
	74840	ethane	0.00565
	74851	ethene	0.14377
	74862	acetylene	0.04254
	74986	propane	0.00185
	75070	acetaldehyde	0.07353
	75285	isobutane	0.01222
	75832	2,2-dimethylbutane	0.00061
	78784	2-methylbutane	0.00602
	78933	methyl ethyl ketone (mek) (2-butanone)	0.01477
	91203	naphthalene	0.00085
	95476	o-xylene	0.00335
	95636	1,2,4-trimethylbenzene	0.0053
	96140	3-methylpentane	0.00115
96377	methylcyclopentane	0.00149	
98066	t-butylbenzene	0.00006	
98828	(1-methylethyl)benzene	0.00015	
--	unidentified	0.13862	

**Notes:**

1. Speciation profile for On-road Diesel Trucks obtained from USEPA Speciation Profile 4674 for Medium Duty Trucks. Only air toxics as defined by Cal/EPA are shown here.

1. Speciation profile for Off-road Diesel Equipment, Ships, Tugs, and Generator Sets obtained from ARB Speciation Profile 818. In the past, BAAQMD has recommended adding acrolein to the USEPA speciation profile 3161 for farm equipment. However, BAAQMD now advises to use the USEPA profile without additions. Therefore, speciation profile 818 was used in this analysis.

**Abbreviations:**

ARB: Air Resources Board  
BAAQMD: Bay Area Air Quality Management District  
Cal/EPA: California Environmental Protection Agency  
TOG: total organic gas  
USEPA: United States Environmental Protection Agency

**References:**

ARB. 2010. Organic Profiles. October 27. Available online: <http://www.arb.ca.gov/ei/speciate/dnldopt.htm>  
Cal/EPA. 2011. OEHHA/ARB Consolidated Table of Approved Risk Assessment Health Values. February 14. <http://www.arb.ca.gov/toxics/healthval/contable.pdf>  
USEPA. 2004. Speciation Profile for Diesel Exhaust - Medium Duty Trucks #4674. Available online: [http://cfpub.epa.gov/si/speciate/ehpa\\_speciate\\_browse\\_details.cfm?ptype=G&number=4674](http://cfpub.epa.gov/si/speciate/ehpa_speciate_browse_details.cfm?ptype=G&number=4674)



**Table A.2**  
**Toxicity Values<sup>1</sup>**  
**Oakland Army Base**  
**Oakland, California**

Chemical	Cancer Potency Factor	Chronic Reference Exposure Level	Acute Reference Exposure Level
	[mg/kg-day] <sup>-1</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
diesel PM	1.1	5	--
1,3-butadiene	0.6	20	--
acetaldehyde	0.01	140	470
acrolein	--	0.35	2.5
benzene	0.1	60	1300
ethylbenzene	0.0087	2000	--
formaldehyde	0.021	9	55
methanol	--	4000	28000
methyl ethyl ketone (mek) (2-butanone)	--	--	13000
m-xylene	--	700	22000
naphthalene	0.12	9	--
n-hexane	--	7000	--
o-xylene	--	700	22000
propene	--	3000	--
p-xylene	--	700	22000
styrene	--	900	21000
toluene	--	300	37000
xylene, m- & p-	--	700	22,000

**Notes:**

1. Values presented in this table reflect values used in this analysis for all toxic air contaminants identified in the speciation profiles. If a "--" is reported, OEHHA does not report that toxicity for this chemical.

**Abbreviations:**

PM: Particulate Matter

[mg/kg-day]<sup>-1</sup> : milligram per kilogram-day

µg/m<sup>3</sup>: microgram per cubic meter

**Sources:**

California Environmental Protection Agency (Cal/EPA). 2011. OEHHA/ARB Consolidated Table of Approved Risk Assessment Health Values. February 14. <http://www.arb.ca.gov/toxics/healthval/contable.pdf>

## Construction Tables

**Table B.1**  
**Modeling Parameters for Construction Sources**  
**Oakland Army Base**  
**Oakland, California**

Work Area <sup>1</sup>	Number of Sources <sup>2</sup>	Unit Emission Rate <sup>3</sup>	Release Height <sup>4</sup>	Initial Vertical Dimension <sup>5</sup>	Initial Lateral Dimension <sup>6</sup>
		g/s	m	m	m
Site A	125	0.008	4.57	1.06	11.63
Site B	96	0.010	4.57	1.06	11.63
Site C	78	0.013	4.57	1.06	11.63
Site D	57	0.018	4.57	1.06	11.63
Site E	107	0.009	4.57	1.06	11.63
Site F	32	0.031	4.57	1.06	11.63
Wharf	17	0.059	4.57	1.06	11.63
Barge Crane	1	1.000	4.57	1.06	23.26
Excavator/Dozer between Stockpile and Conveyor Belt	14	0.071	4.57	1.06	23.26
Scraper/ Grader/ Water Truck between Conveyor Belt and Site A	11	0.091	4.57	1.06	23.26
Scraper/ Grader/ Water Truck between Conveyor Belt and Site B	1	1.000	4.57	1.06	23.26
Scraper/ Grader/ Water Truck between Conveyor Belt and Site C	6	0.167	4.57	1.06	23.26
Scraper/ Grader/ Water Truck between Conveyor Belt and Site D	14	0.071	4.57	1.06	23.26
Scraper/ Grader/ Water Truck between Conveyor Belt and Site F	10	0.100	4.57	1.06	23.26
Railyard	66	0.015	4.57	1.06	11.63
Maritime Street	37	0.027	4.57	1.06	23.26
West Burma	35	0.029	4.57	1.06	23.26
East Burma	11	0.091	4.57	1.06	23.26
7th Street Reconstruction	20	0.050	4.57	1.06	23.26
Tug - Running Emissions	232	0.004	6	1.40	23.26
Tug - Idling Emissions	2	0.500	6	1.40	23.26

**Notes:**

1. See Figures for Work Area locations.
2. Large volume sources were modeled as smaller adjacent volume sources. The number of sources is the number of volume sources with the dimensions specified needed to cover the area of emissions.
3. Dispersion of emissions was modeled using the  $\chi/Q$  ("chi over q") method, such that each phase had unit emission rates (e.g., 1 gram per second [g/s]), and the model estimates dispersion factors (with units of  $[\mu\text{g}/\text{m}^3]/[\text{g}/\text{s}]$ ). For volume sources, an unit emission rate is calculated as the inverse of the number of sources.
4. Release height consistent with previous ARB study (ARB 2000) .
5. Initial vertical dimension for all sources is represented by an elevated volume source not adjacent to a building, consistent with AERMOD guidance (USEPA 2004).
6. Initial lateral dimension was determined using AERMOD guidance (USEPA 2004). The spacing between volume sources in one source is 50 m. Gridded volume sources were considered single volume sources (Site A-F, Wharf and Railyard), whereas line sources (Scraper/Grader/Water Truck travel between the Conveyor belt to Site, Barge Crane, all roadway construction, and tugs) were modeled as line sources represented by volume sources.

**Abbreviations:**

$\mu\text{g}/\text{m}^3$  - microgram per cubic meter  
 ARB - Air Resources Board  
 g - gram  
 m - meter  
 s - second  
 USEPA - United States Environmental Protection Agency

**Sources:**

ARB. 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. Appendix VII: Risk Characterization Scenarios. October.  
 USEPA. 2004. User's Guide for the AMS/EPA Regulatory Model - AERMOD. September. Available at: [http://www.epa.gov/scram001/dispersion\\_prefrec.htm](http://www.epa.gov/scram001/dispersion_prefrec.htm)

**Table B.2**  
**Exposure Parameters - Construction**  
**Oakland Army Base**  
**Oakland, California**

Exposure Parameter	Units	Resident Adult <sup>2</sup>	Resident Child <sup>2</sup>	School Child <sup>3</sup>	Daycare Child <sup>4</sup>	Recreational Adult <sup>5</sup>	Recreational Child <sup>5</sup>
Daily Breathing Rate (DBR)	[L/kg-day]	302	581	581	581	--	--
Hourly Breathing Rate (HBR)	[m <sup>3</sup> /hour]	--	--	--	--	1.74	1.32
Exposure Time (ET)	[hours/24 hours]	24	24	10	10	1	1
Exposure Frequency (EF)	[days/year]	350	350	180	245	52	52
Exposure Duration for 2012-2014 (ED1) <sup>1</sup>	[years]	2.25	2.25	2.25	2.25	2.25	2.25
Exposure Duration for 2014-2019 (ED2) <sup>1</sup>	[years]	5.25	5.25	5.25	3.63	5.25	5.25
Averaging Time (AT)	[days]	25,550	25,550	25,550	25,550	25,550	25,550
Intake Factor for 2012-2014, Inhalation (IF <sub>inh-1</sub> )	[m <sup>3</sup> /kg-day]	0.0093	0.0179	0.0038	0.0052	0.0001	0.0003
Intake Factor for 2014-2019, Inhalation (IF <sub>inh-2</sub> )	[m <sup>3</sup> /kg-day]	0.0217	0.0418	0.0090	0.0084	0.0003	0.0002

**Notes:**

1. Exposure durations for Phase I and II reflect the actual construction schedules from 2012-2014 and October 2014 - December 2019, respectively, provided by Architectural Dimensions.
2. Exposure parameters other than exposure duration reflect default values for residents (BAAQMD 2010).
3. Exposure parameters other than exposure duration reflect default values for students (BAAQMD 2010).
4. Daily breathing rates for day care child receptors reflect default breathing rate (BAAQMD 2010). The day care centers were assumed to operate 10 hours per day from 7 AM to 5 PM. The day care child receptor was assumed to be at a day care center while the parents are at work; 245 days reflects the default exposure frequency for a worker (BAAQMD 2010).
5. Hourly breathing rates for recreational child and adult receptors reflect maximum recommended mean breathing rates based on moderate activities for short-term exposures for age groups from birth to 11 years and from 16 years to 70 years (USEPA 2011). The recreational child and adult receptors were conservatively assumed to be at a recreational location one hour per day, once a week, and 52 weeks per year.

**Equation:**

Residents, School Child, and Daycare Child:

$$IF_{inh} = DBR * ET * EF * ED * CF1 / AT$$

$$CF1 = 0.001 (m^3/L)$$

Recreational User:

$$IF_{inh} = HBR * ET * EF * ED * CF2 / \text{Body Weight} / AT$$

Where: Body Weight<sub>adult</sub> = 63 kg (Cal/EPA 2003)

Body Weight<sub>child</sub> = 18 kg (Cal/EPA 2003)

CF2 = 24 hours/day

**Abbreviations:**

-- not applicable

BAAQMD - Bay Area Air Quality Management District

kg - kilogram

L - Liter

m<sup>3</sup> - cubic meters

USEPA - US Environmental Protection Agency

**Sources:**

BAAQMD. 2010. BAAQMD Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

USEPA. 2011. Exposure Factors Handbook: 2011 Edition. Table 6-2. September.

**Table B.3**  
**Age Sensitivity Factors (ASFs) - Construction<sup>1</sup>**  
**Oakland Army Base**  
**Oakland, California**

Receptor	ASF for 2012-2014	Note	ASF for 2014-2019	Note
Resident Adult	1	2, 3	1	2, 3
Resident Child	10	2, 4	3	2, 9
School Child	3	2, 5	3	2, 5
Day Care Child	10	2, 6	3	2, 9
Recreational Adult	1	2, 7	1	2, 7
Recreational Child	10	2, 8	3	2, 9

**Notes:**

1. ASF based on recommendations by the Cal/EPA OEHHA (2009) and BAAQMD (2010).
2. Based on BAAQMD 2010.
3. A resident adult was assumed to be 16 years old and above.
4. A resident child was assumed to be exposed at some point from the third trimester of pregnancy to two years of age between 2012 and 2014.
5. A school child was assumed to be from 6 years old to 16 years old.
6. Daycare centers were conservatively assumed to accept children as young as 6 weeks old. Therefore, ASF for a day care child was conservatively estimated assuming exposure occurs from age 6 weeks to 2 years old between 2012 and 2014.
7. A recreational adult was assumed to be 16 years old and above.
8. A recreational child was assumed to represent age third trimester to 2 years between 2012 and 2014.
9. A resident child, day care child, and recreational child were assumed to be from 2 years old to 16 years old during the construction schedule from 2014 to 2019.

**Abbreviations:**

BAAQMD - Bay Area Air Quality Management District  
 Cal/EPA - California Environmental Protection Agency  
 OEHHA - Office of Environmental Health Hazard Assessment

**Sources:**

BAAQMD. 2010. BAAQMD Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.  
 OEHHA. 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. May.

**Table B.4**  
**Cancer Risk, Chronic HI and PM Concentration from Project Construction**  
**Oakland Army Base**  
**Oakland, California**

	Population	Annual Average Concentration			Chronic HI <sup>3</sup>	Excess Lifetime Cancer Risk <sup>4</sup>
		PM <sub>2.5</sub> <sup>1</sup>	DPM <sup>2</sup>			
			July 2012 - Sept 2014	Oct 2014 - Dec 2019		
		µg/m <sup>3</sup>			unitless	in a million
2002 Project <sup>5</sup>	Resident Child	0.35	0.27	0.38	0.077	107
	Resident Adult					12
2012 Project <sup>5</sup>	Resident Child	0.14	0.15	0.09	0.030	42
	Resident Adult					4
<b>BAAQMD Threshold of Significance</b>		<b>0.30</b>	--	--	<b>1</b>	<b>10</b>

**Notes:**

1. PM<sub>2.5</sub> concentration shown here represents the maximum annual average concentration associated with the construction activity from OAB at an offsite sensitive population.

2. DPM concentration shown here is the concentration at the MEISR for cancer risk. Concentrations and exposure were calculated for two time periods depending on the appropriate ASF and risks from each period were added together. Therefore, concentrations from the two periods are shown here.

3. The potential for exposure to result in chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific noncancer chronic RELs presented in Table A.2. The maximum Chronic HI between the two periods is reported here.

4. The excess lifetime cancer risk assumes that an individual adjacent to the Project is exposed to all emissions. Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risks attributed to the emissions associated with construction were calculated based on the exposure point concentration (C), the intake factors presented in Table B.2, the CPF, and the ASFs. All receptors were assumed to be residents, the most conservative exposure scenario.

Calculation:

$$\text{Risk}_{\text{inh}} = \sum \text{Risk}_{\text{inh},i} = \sum C_i \times \text{MAF} \times \text{CF} \times \text{IF}_{\text{inh}} \times \text{CPF}_i \times \text{ASF}$$

Where:

$\text{Risk}_{\text{inh}}$  = Cancer Risk; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)

$\text{Risk}_{\text{inh},i}$  = Cancer Risk for Chemical i

$C_i$  = Modeled Annual Average Concentration in air for Chemical i (µg/m<sup>3</sup>)

MAF = Modeling Adjustment Factor

CF = Conversion Factor (mg/µg)

$\text{IF}_{\text{inh}}$  = Intake Factor for Inhalation (m<sup>3</sup>/kg-day)

$\text{CPF}_i$  = Cancer Potency Factor for Chemical i (mg chemical/kg body weight-day)

ASF = Age Sensitivity Factor (used only to calculate risk using 2012 Standards)

5. 2012 concentrations were estimated using AERMOD, USEPA's preferred air dispersion model and emissions as described in the report. Modeling parameters and dispersion factors from the 2012 Project Scenario were also used to estimate concentration from the 2002 Project Scenario.

**Abbreviations:**

µg - microgram

ASF - age sensitivity factor

BAAQMD - Bay Area Air Quality Management District

CPF - cancer potency factor

DPM - Diesel Particulate Matter

HI - Hazard Index

kg - kilogram

m - meter

mg - milligram

MEISR - Maximally Exposed Individual Sensitive Receptor

OAB - Oakland Army Base

PM<sub>2.5</sub> - particulate matter

REL - Reference Exposure Level

**Table B.5**  
**Acute HI from Project Construction**  
**Oakland Army Base**  
**Oakland, California**

Chemical	Acute REL [µg/m <sup>3</sup> ]	2002 Project <sup>1</sup>			Acute Hazard Quotient <sup>3</sup>	2012 Project <sup>1</sup>			Acute Hazard Quotient <sup>2,3</sup>
		1 Hour Concentration				1 Hour Concentration			
		Offroad Equipment	Onroad Equipment	Ships and Tugs		Offroad Equipment	Onroad Equipment	Ships and Tugs	
<b>Total TOG Concentration</b>	--	1,744	963	23	--	454	331	28	--
acetaldehyde	470	128	153	1.7	0.60	33	53	2.1	0.19
acrolein	3	0	12	0	5.0	0	4.3	0	1.7
benzene	1,300	35	10.1	0.46	0.035	9.1	3.5	0.57	0.0101
formaldehyde	55	257	82	3.4	6.216	67	28	4.2	1.8
methanol	28,000	0.52	0	0.007	0.00002	0.14	0	0.008	0.000005
methyl ethyl ketone (mek) (2-butanone)	13,000	26	28	0.34	0.0041	6.7	9.5	0.42	0.0013
m-xylene	22,000	11	0	0.14	0.00049	2.8	0	0.17	0.00013
o-xylene	22,000	5.8	3.0	0.077	0.00041	1.5	1.0	0.095	0.00012
p-xylene	22,000	1.7	0	0.02	0.00008	0.43	0	0.03	0.00002
styrene	21,000	1.0	0	0.01	0.00005	0.26	0	0.02	0.00001
toluene	37,000	26	15	0.3	0.0011	6.7	5.0	0.42	0.00033
xylene, m- & p-	22,000	0	8.6	0	0.00039	0	2.9	0	0.00013
<b>Acute HI</b>					<b>12</b>	<b>Acute HI</b>			<b>3.7</b>
<b>BAAQMD Significance Threshold</b>					<b>1.0</b>	<b>BAAQMD Significance Threshold</b>			<b>1.0</b>

**Notes:**

1. Acute HI was evaluated for the 2002 Project Construction and 2012 Project Construction assuming a similar construction schedule and construction activity for both scenarios. Acute HI for the 2002 Project Scenario was evaluated at the MEISR for 2012 Project Scenario .
2. The maximum Acute HI was estimated assuming construction activity would occur as per the construction schedule provided by Architectural Dimensions.
3. The potential for exposure to result in acute noncancer effects is evaluated by comparing the estimated maximum hourly air concentration to the chemical-specific noncancer acute RELs. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. The acute HI is calculated by summing each hazard quotient.

**Calculation:**

$$\text{Acute HI} = \sum \text{Acute HQ}_i = \sum C_i / \text{REL}_i$$

Where:

Acute HI = Acute Hazard Index

Acute HQ<sub>i</sub> = Acute Hazard Quotient for Chemical i

C<sub>i</sub> = Max hourly Air Concentration for Chemical i (µg/m<sup>3</sup>)

REL<sub>i</sub> = Noncancer Reference Exposure Level for Chemical i (µg/m<sup>3</sup>)

**Abbreviations:**

µg/m<sup>3</sup>: microgram per cubic meter

HI: Hazard Index

HQ: Hazard Quotient

MEISR - Maximally Exposed Individual Sensitive Receptor

REL: Reference Exposure Level

TOG: Total Organic Gases

UTM: Universal Transverse Coordinates

## Construction Figures





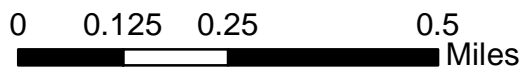
**Legend**

**Construction Area**

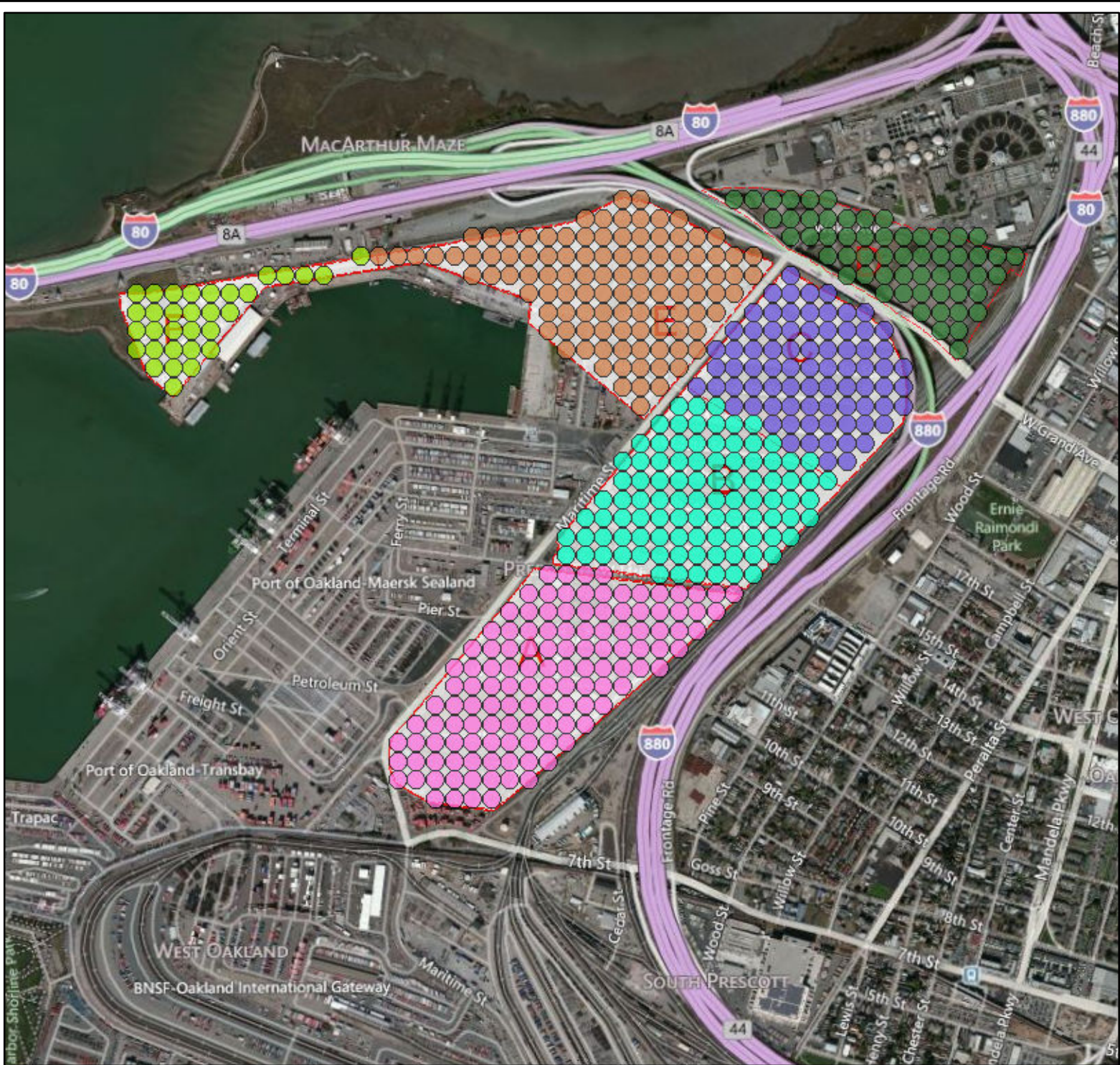
- Railyard Construction
- Wharf Improvements
- Maritime St
- West Burma
- East Burma
- Seventh Street Reconstruction

**Tug Operations**

- Tug Idling
- Tug Route



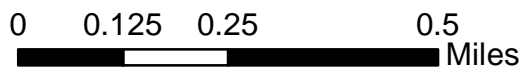
**Figure B.1**  
**Construction Sources**  
**Oakland Army Base**  
**Oakland, California**



**Legend**

**Construction Area**

- Site A
- Site B
- Site C
- Site D
- Site E
- Site F



**Figure B.2**  
**Construction Sources**  
**Oakland Army Base**  
**Oakland, California**



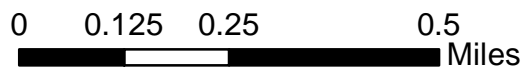
**Legend**

**Fill Routes**

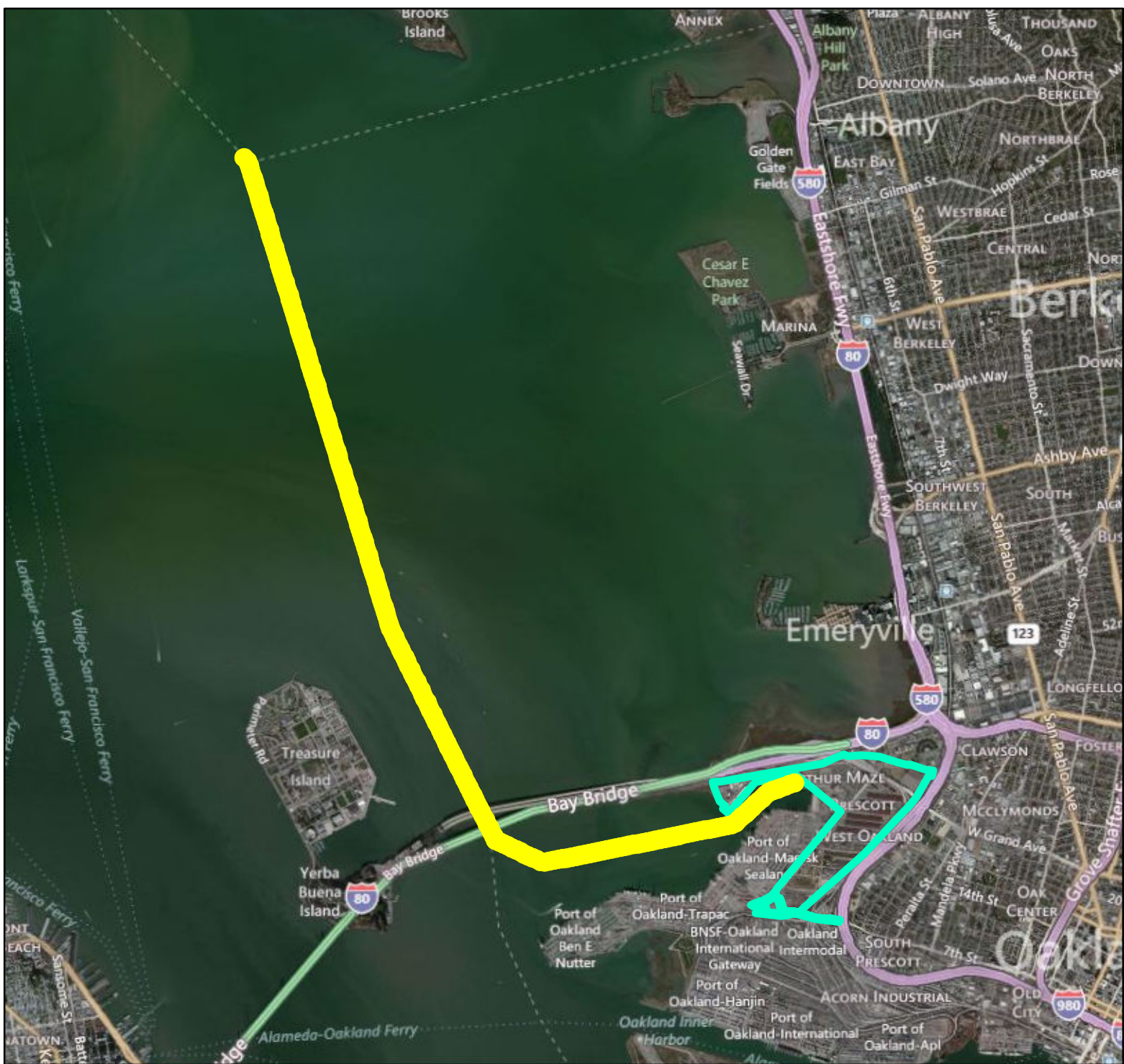
- to Site A
- to Site C
- to Site D
- to Site F
- To Conveyor

**Tug Operations**

- Tug Idling
- Tug Route



**Figure B.3**  
**Construction Sources**  
**Oakland Army Base**  
**Oakland, California**



**Legend**

- Tug Route
- Site Boundary



**Figure B.4**  
**Construction Sources**  
**Oakland Army Base**  
**Oakland, California**

