California High-Speed Rail Authority

Fresno to Bakersfield Project Section

Sustainability Management Plan

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CALIFORNIA High-Speed Rail Authority

U.S. Department of Transportation
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ACRONYMS AND ABBREVIATIONS

AC	Asphalt Concrete
Air District	San Joaquin Valley Air Pollution Control District
Authority	California High-Speed Rail Authority
CY	cubic yards
DFJV	Dragados/Flatiron Joint Venture
EMMA	Environmental Mitigation Management and Assessment
Final EIR/EIS	Final environmental impact report/environmental impact statement
FSC	Forest Stewardship Council
GHG	Greenhouse Gas
LEED	Leadership in Energy and Environmental Design
SMP	Sustainability Management Plan
T	tons
VERA	Voluntary Emissions Reduction Agreement

1 INTRODUCTION

As required by air quality mitigation measure AQ-MM#4 of the Fresno to Bakersfield Section California High-Speed Train (HST) Final Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (Final EIR/EIS; Authority and FRA 2014), this Sustainability Management Plan (SMP) describes measures that comply with reporting requirements identified in the VERA between the California High-Speed Rail Authority (Authority) and the San Joaquin Valley Air Pollution Control District (2015), and Construction Waste Management and Materials tracking as required by the Section 44 of the General Provisions in the executed contract between Dragados/Flatiron Joint Venture (DFJV) and the Authority (2015). The SMP was developed for Construction Package 2-3 of the Fresno to Bakersfield Section of the California High-Speed Rail Project (Project) by the California High-Speed Rail Authority (Authority), the Federal Railroad Administration, and DFJV (Proponent).

The Project is a design-build project with the design component directed by DFJV, with oversight from the Authority and the Federal Railroad Administration. The governing authorizations pertinent to this document include the Final EIR/EIS (2014) prepared by the Federal Railroad Administration. Specifically, this SMP meets the requirements of Section 44 of the General Provisions.

The Project Sustainability Requirements are as follows:

- Exemplary energy use minimization and energy efficiency
- Minimized water use
- Reduction in greenhouse gas (GHG) emissions and dependency on fossil fuels
- Employment of sustainable, healthy materials and reduction of the extraction of scarce resources
- Elimination of concrete and steel waste to landfill, reduction of all other waste

The SMP demonstrates how DFJV will meet or exceed regulatory and contract requirements during design and construction activities. Per the General Provisions (Section 44.3.1):

The plan shall identify and establish a sustainability baseline from which improvements shall be measured and against which progress shall be tracked. The plan shall identify how the Contractor will track and report site fuel, emissions, energy, water consumption (Construction GHG Emissions baseline), waste, materials, and other appropriate subcategories. The SMP shall identify staff assigned for implementation of the plan and collection and reporting of data. The SMP shall identify how sustainability management is integrated into the overall management of the Project. The SMP shall include reference to the estimated number of site staff, and how staff will be oriented concerning Project sustainability requirements and goals.

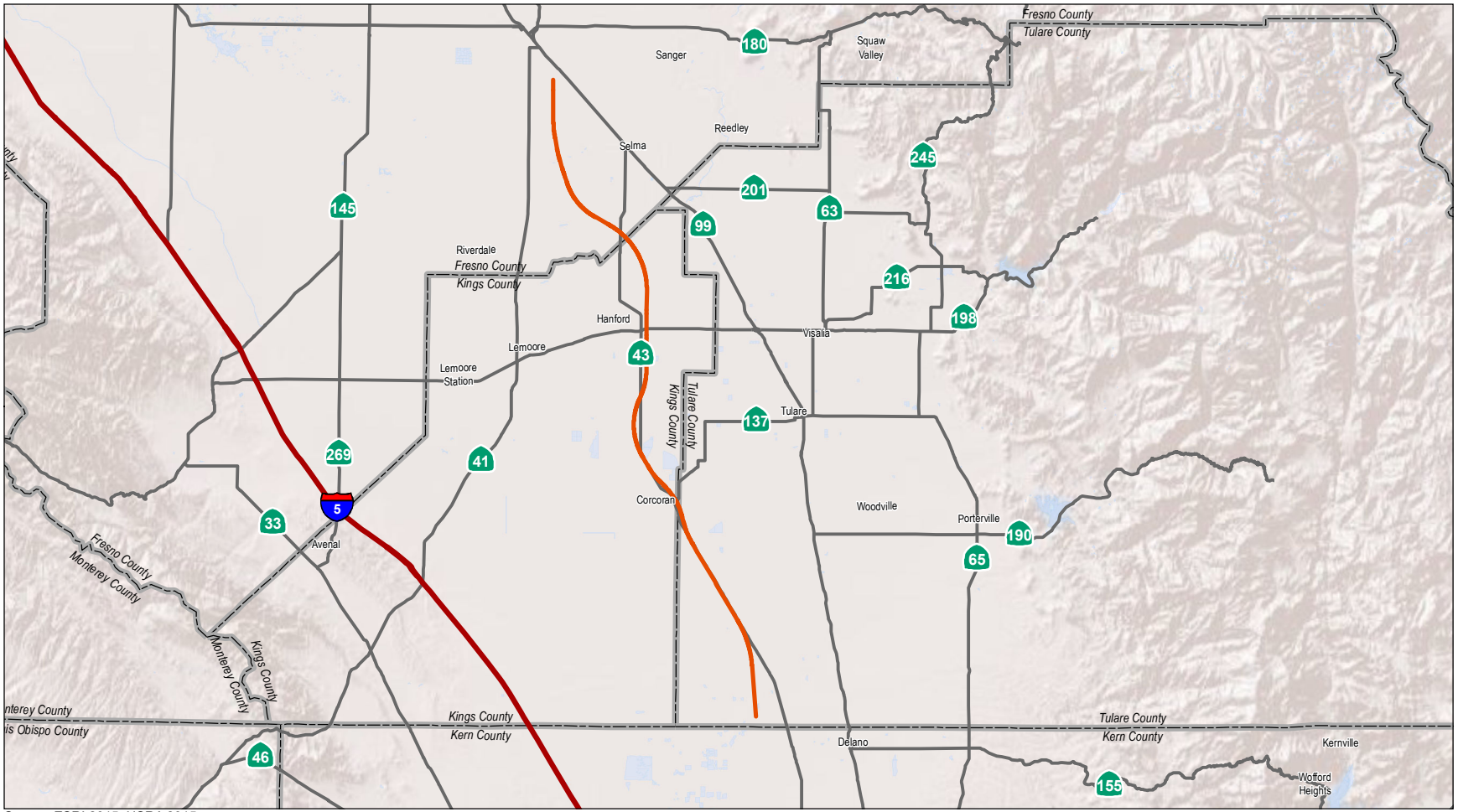
The SMP also includes a Construction Waste Management Plan (CWMP), which demonstrates how DFJV will meet the landfill diversion requirements for construction and demolition debris (Section 4.2, Construction Waste Management).

2 PROJECT LOCATION AND DESCRIPTION

The Project is approximately 65 miles long and is primarily located adjacent to the existing BNSF Railway right-of-way (Figure 1). The area in which the Project occurs (hereto referred to as *study area*) is bounded by East American Avenue to the north and the Tulare-Kern County line 1 mile to the south. The Project is located in the Counties of Fresno, Tulare, and Kings and the Cities of Hanford, Corcoran, and Allensworth.

The study area partially consists of the BNSF Railway right-of-way, which includes both a northbound and southbound track in an area typically 120 feet wide; agriculture land; and urban areas. Additional right-of-way would be required to accommodate stations, multiple track at stations, maintenance buildings, and power substations (Figure 2).

Although the design is currently at 15 percent, as it currently stands, the Project includes at-grade, below-grade, and elevated track segments. The at-grade track will be laid on an earthen railbed topped with rock ballast, below-grade track will be laid in an open or covered trench at a depth that would allow roadway and other grade-level uses above the track, and elevated track segments will span long sections of urban development or aerial roadway structures. The height of elevated track sections will depend on the height of existing structures below, and will range from 40 to 80 feet.



Source: ESRI 2015, HSRA 2015

September 30, 2015

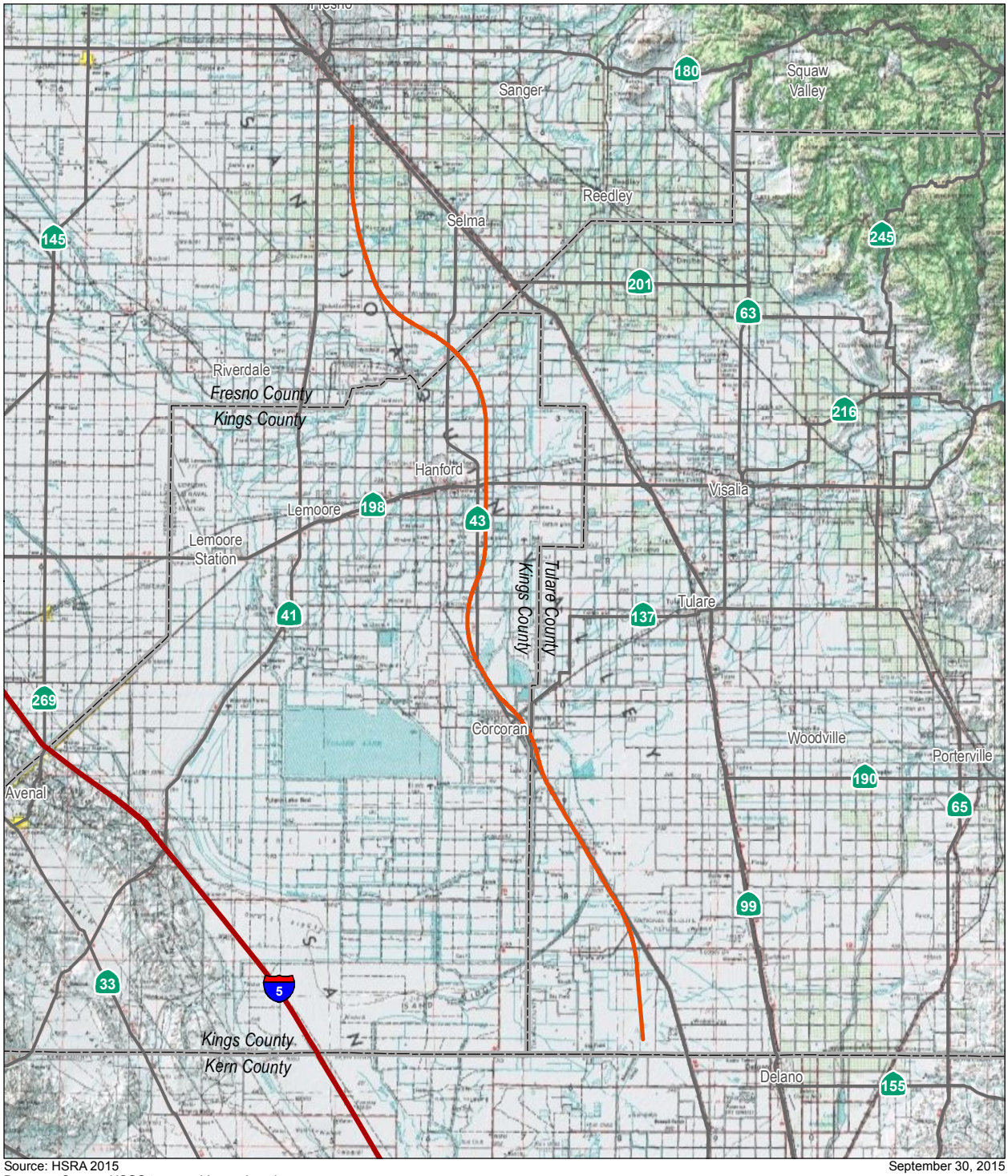
N

0 5 10
Miles

0 10 20
Kilometers

CP 2-3 Alignment

Figure 1
Regional Map



Source: HSRA 2015
Basemap Source: USGS topographic quadrangles

September 30, 2015

CP 2-3 Alignment

N

0 4 8
Miles

0 8 16
Kilometers

Figure 2
Vicinity Map

3 SUSTAINABLE PRACTICES

3.1 Goals and Objectives

Per the requirements outlined in Section 44 of the General Provisions, the project-wide sustainability goals will be validated through the continual monitoring and reporting of each effort. Due to the spanning nature of our sustainability strategies, specific monitoring procedures will be needed to accommodate each goal. The Authority's Web portal, used as a centralized location to store all data regarding fuel use, water use, power use, materials, waste, and diesel emissions, will be utilized to track the overall reduction of emissions and waste when compared to our baseline.

Per our construction waste management plan, all recycling and waste diverted from landfills will be tracked. Off-site recycling services will be utilized for each designated material and tracked in detail including the tonnage of recycle material, hauler company name, and where the material will be diverted. In addition, delivery receipts for all waste and salvaged materials will be tracked and delivered to the jurisdictional authority or utility owner.

The use of post- consumer, post-industrial recycled products and materials is a vital aspect of our SMP and will need to be tracked accordingly. All post-consumer material used in both the office and fieldwork will be tracked by type, quantity, location, and dollar value. In tracking this information, we will be able to compare the price differences and show the efficient use of energy and monetary value.

Upon the substantial completion of the Project, a contract close-out report will be made to document final levels of sustainable energy use and diversion against the construction greenhouse gas emissions baseline. Final quantities for the Project's fuel, emissions, energy, and water reduction, as well as quantities of diverted material from landfills, will be the basis for our overall accomplishment of this SMP.

3.2 Success Criteria

Success of the methods employed in this SMP will be measured in terms of the following:

- Reducing the emission of criteria air pollutants
- Reduction of greenhouse gas emissions
- Reduced energy consumption
- Increased use of renewable energy sources
- Reduced water consumption
- Meeting waste reduction targets
- Use of post-consumer recycled products and building materials
- Sustainable construction practices, including on-site reuse and recycling, reducing site run-off, and energy-efficient temporary structures

These criteria will be monitored through EMMA. Equipment usage and fuel consumption tracking will also be monitored to meet the reporting requirements of the Voluntary Emissions Mitigation Agreement (VERA) (Appendix A).

3.3 Baseline

The reporting requirements of the SMP, described in Section 4, identify how the Contractor will track and report site fuel, emissions, energy, water consumption, waste, materials, and other appropriate subcategories. Reductions are normally compared against a baseline – the anticipated emissions, waste generation, or resource consumption levels prior to implementation of identified sustainability practices. For some resources, a baseline has been established, such as air pollutant emissions (see Section 4.1). For construction and demolition debris, the baseline is comparative – based on the percentage of material reused or recycled that would otherwise be disposed of in a landfill (percent of total material that is diverted). For other resources, such as fuel, electricity, and water consumption, an absolute quantitative baseline is not available. Through the collection and reporting of data, DFJV or the Authority may establish a baseline (for items other than emissions and waste diversion) for this project or future projects within the Program.

4 PLAN IMPLEMENTATION

4.1 Equipment and Fuel

DFJV will comply with reporting requirements identified in the VERA between the Authority and the San Joaquin Valley Air Pollution Control District.

4.1.1 Equipment and Fuel Usage Measures

The following measures are identified in the General Provisions. DFJV will reduce emissions and energy use below regulatory requirements and the estimated baseline through:

- Use of cleaner engines, including non-road engines meeting or exceeding Tier III, and on-road engines meeting 2004 On-Highway Heavy Duty Engine Emissions Standards or cleaner, whether the equipment is owned or rented.
- Use of cleaner fuels including ultra-low sulfur diesel.
- Use of cleaner diesel control technology, including EPA or California Air Resources Board verified diesel particulate filters or diesel oxidation catalysts.
- Efficient use of fuel.
- Use of renewable diesel or bio-diesel preventive measures.

4.1.2 Tracking Requirements

DFJV and its subcontractors will track daily equipment operation hours using a tracking spreadsheet that meets the requirements of the VERA. The tracking spreadsheet will identify the following:

- Equipment (on- or off-road)
- Serial number
- Make, model, model year
- Rated horsepower
- Load factor
- Fuel type
- Hours operated
- Construction activity

An example is provided in Appendix B of this SMP. This information will be recorded daily. The equipment usage information will be uploaded to EMMA on a monthly basis by DFJV staff. The Authority will then provide this information (through EMMA) to the Air District within 60 days of the start of construction, and every 3 months thereafter, using a Construction Report format that meets the requirements of the VERA (VERA Attachment A-8; Authority and SJVAPCD 2015).

4.1.3 Emissions Baseline

The equipment and fuel consumption information will be used to track improvements in air pollutant emissions as compared to the baseline per the VERA. The estimated project emissions (baseline) are listed below in Table 1.

Table 1 Air Pollutant Emissions Baseline

Pollutant	ROG/VOC	NOx	PM10
Tons to be Reduced - 2015	33.82	574.84	72.55
Tons to be Reduced – 2016	16.68	124.84	32.43
Tons to be Reduced – 2017	0.50	5.58	6.07
Tons to be Reduced – 2018	0.53	13.55	12.17

Table 1 Air Pollutant Emissions Baseline

Pollutant	ROG/VOC	NOx	PM10
Tons to be Reduced – 2019-2028	0	0	0
Total for CP 2-3	*51.53*	*718.81*	*123.22*

Source: VERA, Attachment A-4.

4.2 Construction Waste Management

The Construction Waste Management Plan was designed by DFJV with regards to the goals specified by the Authority. This SMP will be adhered to by all subcontractors, along with DFJV and other jobsite personnel during the construction of this Project.

DFJV has adopted policies and requirements to promote the reuse, recycling, and management of construction and demolition debris to divert such debris from landfill disposal sites.

This document sets forth planning and reporting requirements toward achieving construction and demolition debris diversion goals. It also sets forth certain required waste reduction measures.

The requirements in this document do not apply to hazardous waste, universal waste, or treated wood waste. DFJV will handle and dispose of such wastes in accordance with all applicable laws and regulations. Such wastes will be documented separately from construction and demolition debris.

DFJV will manage and minimize construction waste by diversion of construction and demolition debris from landfills through the use of recycling and reusing selected materials throughout the Project. The minimum percentages are 75 percent of construction and demolition waste and 100 percent of steel, concrete and asphalt construction and demolition waste from landfills. In order to help achieve these goals, DFJV will provide a cost analysis for recycling and separating selected waste materials.

Each new subcontractor that comes onto the site will be provided with a copy of the Construction Waste Management Plan, which will also be posted in the project office. DFJV will contractually require all subcontractors to comply with these recycling guidelines. A copy of this Construction Waste Management Plan will accompany all subcontractor agreements and require subcontractor participation. DFJV will discuss goals and handling procedures of the waste generated with its subcontractors during coordination meetings. The Project's first coordination meeting will provide an orientation discussion of the Construction Waste Management Plan. Items that will be discussed at this orientation are as follows:

- Plan requirements
- A review of waste handling procedures
- Location of dumpsters and bins
- Waste segregation requirements
- Discussion regarding cross contamination of waste
- Enforcement requirements
- Open discussion for suggestion and comments regarding effectiveness of plan and feedback to the Authority

DFJV will provide dumpsters and bins for materials sorted on-site and bulk mixed waste for all construction related waste generated on this Project. DFJV will separate concrete, asphalt, lumber, and steel on-site. All other construction waste will be mixed together in one dumpster on-site and then sorted and separated at the recycling facility. A list of recycling and waste management facilities is provided in Section 4.2, and a map is included as Appendix C. Mixed construction waste will be taken to a recycling facility that has a diversion rate of at least 75 percent. In the event that a subcontractor provides their own dumpster and bin, they will be responsible to providing DFJV with a monthly report of the total recycled and reused (diverted)

and the total non-recycled materials to be included in the Project's overall waste management and waste reduction program.

Best management practices at the study area will include the following items to accomplish the waste diversion goals:

- All recycling containers will be clearly labeled.
- There will be a designated area on-site reserved for a row of dumpsters and bins in which recyclables and salvageable materials will be placed.
- Lists of acceptable and unacceptable materials will be posted throughout the site.
- Recycling coordinators will inspect the containers on a weekly basis to ensure that no contamination is occurring and precautions will also be taken to deter any contamination by the public.
- Hazardous waste will be managed by a licensed hazardous waste vendor.

The waste hauler will track the total amount of construction waste leaving the Project by weight or by volume and supply DFJV with copies of tickets or detailed receipts from all loads of construction waste removed from the jobsite. The waste hauler will also notify DFJV of the amount of these materials and how they will be disposed of (reused, recycled, salvaged, or taken to a landfill).

4.2.1 Definitions

- **AC:** Asphalt Concrete.
- **Class III Landfill:** A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from the California Integrated Waste Management Board (CIWMB) and is regulated by the Enforcement Agency (EA).
- **Construction and Demolition (C&D) Debris**: Building materials and solid waste generated from construction and demolition activities, including, but not limited to, fully cured asphalt; concrete; brick; rock; lumber; gypsum wallboard; cardboard and other associated packaging; roofing material; ceramic tile; carpeting; fixtures; plastic pipe; metals; tree trunks; and other vegetative matter resulting from land clearing and landscaping for construction, deconstruction, demolition and land developments. Hazardous waste, as defined in California Health and Safety Code Section 25100 et seq., as amended, is not construction and demolition debris.
- **Hazardous Materials:** Any element, chemical, compound, mixture, material or substance, whether solid, liquid or gaseous, which at any time is defined, listed, classified, or otherwise regulated in any way under any environmental laws, or any other such substances or conditions (including mold and other mycotoxins, fungi or fecal material) that may create any unsafe or hazardous condition or pose any threat or harm to the environment or human health and safety. "Hazardous materials" includes the following:
  - Hazardous wastes, hazardous material, hazardous substances, hazardous constituents, and toxic substances, ignitable, corrosive and reactive substances or related materials, whether solid, liquid, or gas, including substances defined as or included in the definition of "hazardous substance," "hazardous waste," "hazardous material," "extremely hazardous waste," "acutely hazardous waste," "radioactive waste," "radioactive materials," "bio-hazardous waste," "pollutant," "toxic pollutant," "contaminant," "restricted hazardous waste," "infectious waste," "toxic substance," "toxic waste," "toxic material," or any other term or expression intended to define, list, or classify substances by reason of properties harmful to health, safety, or the indoor or outdoor environment (including harmful properties such as ignitability, corrosivity, reactivity, carcinogenicity, toxicity, reproductive toxicity, "TCLP" toxicity" or "EP toxicity" or words of similar import under any applicable Environmental Laws)

  - Any petroleum product, including crude oil and any fraction thereof, and including any refined petroleum product or any additive thereto or fraction thereof, and any waste oil or waste petroleum byproduct or fraction thereof or additive thereto
  - Any solvent, solvent waste, including any refined solvent product, and any waste solvent or waste solvent byproduct, including any additive, byproduct or fraction of any of the foregoing
  - Any drilling fluids, produced waters and other wastes associated with the exploration, development or production of crude oil, natural gas, or geothermal resources
  - Any flammable substances or explosives, including unexploded ordnance
  - Any radioactive materials
  - Any asbestos or asbestos-containing materials
  - Silica
- **Project Right-of-Way:** Any real property (which term is inclusive of all estates, easements, leases, and other interests in real property, whether temporary or permanent), improvements and fixtures within the lines established by the Right-of-Way Plans to delineate the outside limits of the Project for (1) construction work, and (2) O&M work (both horizontal and, where specified, vertical), as such limits may be adjusted from time to time in accordance with the contract documents. The term specifically includes all air space, surface rights, and subsurface rights within the horizontal limits of the project right-of-way to the extent they are subject to an interest held by the Authority.
- **Recover or Recovery:** Any activity, including source reduction; deconstruction and salvaging; reuse, recycling, and composting, which causes materials to be recovered for use as a resource and diverted from disposal.
- **Recyclable Material:** Any material or product separated or capable of being separated at its point of discard or from the solid waste stream for utilization as a raw material in the manufacture of a new product.
- **Recycling:** The process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste. Recycling does not include burning, incinerating, or thermally destroying solid waste.
- **Recycling Facility:** A recycling facility is an operation that collects and does any one or a combination of the following: sorting, cleaning, treating, reusing, and reconstituting materials that would otherwise become solid waste.
- **Reuse:** Making new use of a material without altering its form.
- **Site:** The project right-of-way, Temporary Construction Easement, and any other temporary rights or interests that the Authority and DFJV may acquire in connection with the Project, including for construction, staging, lay down, storage, stockpiling, and borrow areas.
- **Source-Separated Materials**: Materials that are sorted at the site of generation by individual material type for the purpose of reuse or recycling (e.g., demolished concrete that is separated at the site for delivery to a base course recycling facility).
- **Undesirable Materials:** Any excavated or buried materials that are not hazardous materials, but due to the lack of engineering or other desirable properties, have no inherent value; cannot be utilized or sold; and must be handled, transported, and disposed. Undesirable materials include garbage, trash, or other discarded items, muck or organic material. The term *undesirable materials* excludes archeological, paleontological or cultural resources.
- **Universal Waste:** Any of the following hazardous wastes that are subject to the universal waste requirements (1) batteries, (2) pesticides, (3) mercury-containing equipment, and (4) fluorescent lamps.
- **Work:** All of the work and services required to be furnished, performed and provided by Developer under the contract documents, including all administrative, design, engineering, construction, utility adjustment, financing, payment to third parties, support services, operations, maintenance and management services, except for those efforts that such contract documents expressly specify will be performed by persons other than developer-related entities.

4.2.2 Overview of Work

Prior to commencing construction or demolition work at the site, DFJV will conduct a site assessment to estimate the types and quantities of materials that will be generated by project-related construction and demolition and to identify which materials are anticipated to be feasible and practical for reuse and recycling.

4.2.2.1 Recycled Materials

Materials that will be recycled on this Project include, but are not limited to, the following:

- Asphalt
- Asphalt shingles
- Bricks
- Ceramic fixtures
- Clean lumber
- Concrete
- Drywall
- Wood
- Scrap metal
- Paper

4.2.2.2 Reused Materials

Items that are to be salvaged and turned over to jurisdictional authorities include, but are not limited to, the following:

- Asbestos
- Hazardous materials

Items that are to be salvaged and reused in work include, but are not limited to, the following:

- Fencing
- Wood

Materials that are to be reused in work include, but are not limited to, the following:

- Concrete
- Wood
- Asphalt

4.2.2.3 Salvage Materials

Items that are to be salvaged and reused through donations to identified charitable organizations include, but are not limited to, the following:

- Asphalt shingles
- Bathtub
- Bricks
- Ceramic fixtures
- Doors
- Drywall
- Fencing
- Windows
- Appliances
- Furniture

4.2.2.4 Non-Recyclable Materials

Items that are not recyclable or otherwise recoverable and will be disposed of in landfills include, but are not limited to, the following:

- Asbestos
- Painted wood
- Sod
- Contaminated paper
- Waxed cardboard
- Metal containers
- Light bulbs
- Styrofoam
- Mirrors
- Carpet

These materials cannot be recycled because these materials are unable to be processed or treated for reuse in some form.

Items that are non-recyclable will be disposed of at the landfills identified in Table 2. Each landfill location is identified on the Waste Management Area Map included as Appendix C.

Table 2 Landfills

Table #	Name	Address	Capacity
1	American Avenue Disposal Site	18950 W American Avenue, Kerman, California 9360	Through 2031
2	Visalia Disposal Site	8614 Avenue 328, Visalia, California 93291	Through 2024
3	Kern County Waste Management – Shafter Wasco Landfill	17621 Scofield Road, Shaffer, California 93263	Through 2053
4	Avenal Regional Landfill	1200 Skyline Blvd., Avenal, CA 93204	Through 2020

Source: CalRecycle 2016

The Waste Management Area Map for the described infrastructures and suggested travel routes are included in Appendix C.

4.2.3 Estimated Waste Calculations

Buildings

When feasible, DFJV will recycle waste materials from all demolished structures. These materials include, but are not limited to, lumber, drywall, concrete, roof and framing, carpet and tile, and concrete slabs. These materials will be placed in dumpsters and bins located on-site and sorted and recycled at a recycling facility. The waste hauler will pick up and drop off dumpster and bins as needed. DFJV has estimated approximately 5,834 tons of waste that will be generated from demolishing these structures. DFJV anticipates a 92 percent diversion rate from these materials.

Roadway

DFJV will recycle all waste materials that will be generated from the removals of streets, sidewalks, and driveways. These materials include concrete and asphalt. These materials will be sorted on-site and placed in a specific dumpster and bin. The waste hauler will transport these dumpsters and bins to their recycling facilities. DFJV has estimated approximately 78,747 tons of asphalt and approximately 2,064 tons of concrete (Table 3). DFJV will recycle 100 percent of these materials.

Table 3 Roadway Demolition Amounts

	Volume (CY)	Weight (T)
AC	53,331	78,747
Concrete	1,529	2,064
Building	4,321	5,834

4.2.4 Waste Reduction Measures

The DFJV will implement waste reduction measures during performance of the work including, but not limited to, the following:

- Minimize the procurement of unneeded supplies
- Reduce office paper waste by printing and copying double-sided
- To the extent possible, submit all submittal, reports, and forms in electronic format (PDF)
- Recycle field office wastes using available recycling and composting programs
- To the extent possible and in conformance the requirements of the contract documents, purchase products made with recycled content
- Handle and store material carefully

4.2.4.1 Recycling and Reuse Facilities

Table 4 indicates the recycling and reuse facilities as they are identified on the Waste Management Area Map included as Appendix C.

Table 4 Recycle and Reuse Facilities

Table #	Name	Address
1	Mid Valley Disposal Transfer Recycling Station	15300 W Jensen Ave., Kerman, CA 93630
2	Cedar Avenue Recycling and Transfer Station	3457 S Cedar Ave., Fresno, CA, 93725
3	Mid Valley Recycling Elm Ave	2721 S Elm Avenue, Fresno CA, 93708
4	Jefferson Avenue Transfer Station	5608 S Villa Avenue, Fresno, CA 93725
5	Tri County Transfer & Recycling, LLC	1675 Dockery Ave., Selma, CA 93662
6	Republic Services	5501 N Golden State Boulevard, Fresno, CA 93722
7	Mid Valley Disposal	1707 E Goshen Avenue, Visalia, CA 93292
8	Waste Management	4333 E Jefferson Avenue, Fresno, CA 93725
9	Kroeker Inc.	4627 South Chestnut Avenue, Fresno, CA 93725
10	Kings Waste and Recycling	7803 Hanford Armona Road, Hanford, CA 93230
11	Tulare County Recycling	26951 Road 140, Vasalia, CA 93292

Source: CalRecycle 2016

4.2.5 Tracking Requirements

- DFJV will monitor the process of waste management, recycling, and reuse of construction waste materials to ensure compliance with the CWMP during the course of the Project. A worksheet for tracking recycling and reuse of construction and demolition debris is included as Appendix D. DFJV will ensure that all supporting documentation that demonstrates compliance with the waste management plan is provided to the

Authority (an example of a typical waste facility report is included as Appendix E). A waste management log will be maintained by DFJV. It will list the materials recycled, the weight of these materials, and the cost analysis from reusing or recycling materials. This information will be uploaded to EMMA on a monthly basis.

- DFJV will enter and upload the estimated weight and volume of construction waste and demolition debris through the Authority's Web portal, EMMA. All weights and volumes of construction waste will be entered under the sustainability commitments tab in EMMA. There, DFJV will make sure that all information uploaded is accurate and correct. Information like the project section, reporting date, location of site, waste category, amount recycled, activity, and invoice amount. DFJV will also attach any disposal records.

4.3 Water Conservation

4.3.1 Reduction Measures

DFJV will implement the following measures to minimize water usage:

- Installation of water efficient fixtures in facilities and temporary offices, such as Energy Star or Water Sense certified products
- Use of non-potable water, including recycled water, wherever possible for, including but not limited to, dust control, landscaping water, and concrete production
- Dust control watering limited to the minimum necessary to comply with Air District fugitive dust standards and to avoid nuisance impacts to adjacent land uses
- Wherever feasible, use of permeable pavement to reduce stormwater runoff and to increase groundwater recharge (this measure is also applicable to Section 4.3.3, below)
- A regular inspection schedule to address water leaks

These measures are based on Section 44.2 of the General Provisions. The California Stormwater Quality Association also describes water conservation best management practices (BMP) for construction sites in BMP NS-1. Applicable measures are listed below. BMP NS-1 is included in Appendix H.

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.
- Lock water tank valves to prevent unauthorized use.

4.3.2 Tracking Requirements

DFJV will require all water truck operators to record the storage capacity of each truck, the number of water deliveries each day, and the water source of each delivery. Total dust control water usage will be reported monthly.

At all construction infrastructures, DFJV will record monthly domestic water consumption. If water service is provided to the site, the utility provider information will be used. In infrastructures where utility service is not available, total monthly water shipments to the site will be used.

An example of a water-use tracking log is provided in Appendix F. This information will be uploaded to EMMA on a monthly basis.

DFJV will record the number of water efficient fixtures and, if any, the number of standard fixtures installed in project infrastructures and temporary infrastructures. This information will be entered through EMMA.

4.3.3 Post Construction Best Management Practices

Although the SMP addresses only the construction phase, it should be noted that the California High-Speed Rail Authority has recently been added to the list of non-traditional permittees under the Phase II Small Municipal Separate Storm Water (MS4) Permit (State Water Board Order 2013-0001-DWQ), Therefore, the CHSR system will be considered a small MS$ upon completion, and the Authority must comply with post-construction BMP requirements as defined within F.5.g of the permit. During the application, review and approval of future development permits (e.g. maintenance facilities, O&M yards, access roads, or other improvement), the requirement for post-construction BMPs will be identified (i.e. Site Design Measures and Low Impact Development Design Standards) and BMPs required to be incorporated into future projects will follow the appropriate jurisdictional Storm Water Management Program (SWMP). Once current construction has been completed, activities at the site have limited ongoing potential to cause stormwater pollution since all stormwater up to the required design storm will be contained on-site. Potentially applicable BMPs are included in Appendix H.

4.4 Energy Conservation

4.4.1 Reduction Measures

DFJV will implement the following measures to minimize energy usage:

- DFJV will reduce energy usage through:
  - Installation of energy-efficient lighting at permanent and temporary infrastructures. Energy efficient fluorescent lighting fixtures with automatic motion-detector shut-offs are preferred.
  - Maximized use of natural lighting in permanent and temporary infrastructures.
  - Use of energy-efficient programmable thermostats to reduce heating and cooling when buildings are unoccupied.
  - Use of energy-efficient appliances at permanent and temporary infrastructures.
  - Use of energy-efficient (Energy Star or equivalent) computers, printers, and network equipment, and implementation of automatic energy save mode when inactive.
- DFJV will participate in energy-efficient programs at leased infrastructures, where available. Examples include LEED and Energy Star for commercial buildings and Hines GO (Green Office) for current DFJV infrastructures in Hines-owned and -operated properties.
- DFJV will use renewable energy at construction yards and offices wherever feasible. For example, the local utility provider may provide a “green” option for a higher mix of renewable energy. If renewable sources are available, DFJV will compare the cost of renewable energy to the traditional energy source provided by the utility over the life of the Project. DFJV will also compare the indirect air pollutant emissions of the renewable source versus the traditional source.
- Use of solar power equipment wherever possible (such as sign boards for road closures).
- Use “cool roof” technology whenever possible on permanent and temporary infrastructures to reduce energy usage.
- Materials delivery streamlining.
- DFJV will provide a means to coordinate ride sharing for workers (such as a ride board on-site or on line).

These measures are based on Section 44.2 of the General Provisions, the Authority’s “Sustainability” Policy Directive (2013), and the VERA (Authority and SJVAPCD 2015).

These energy conservation measures are in addition to the fuel reduction and renewable fuel measures described in Section 4.1, Equipment and Fuel, of this SMP.

4.4.2 Tracking Requirements

DFJV will track monthly energy usage, noting the percentage of renewable energy sources. An example of an energy-use tracking log is provided in Appendix G. Energy usage information will be entered into EMMA on a monthly basis.

DFJV will track the purchase of energy efficient equipment, noting any certifications (Energy Star), and enter the information into EMMA.

4.5 Materials Conservation

4.5.1 Reduction Measures

DFJV will procure environmentally preferable products wherever feasible.[1]

Where practical, DFJV will use post-consumer, post-industrial recycled products and materials or waste materials, such as fly-ash, Ground Granulated Blast Furnace Slag, crushed glass, recycled aggregate, and Tire Derived Aggregate.

4.5.2 Tracking Requirements

DFJV will track the use of post-consumer, post-industrial products and materials. This information will be entered into EMMA.

4.6 Other Sustainable construction Practices

4.6.1 Reduction Measures

In addition to the measures described previously, DFJV will consider other feasible improvements to the sustainability of the Project. These measures include, but are not limited to, the following:

- On-site recycling and reuse of construction and demolition debris (non-hazardous and non-contaminated materials), such as concrete, cement, masonry materials, scrap metal, rock, wood (not treated), glass, plastics, landscape materials, piping and plumbing materials, drywall, asphalt pavement, and other construction materials
- Modular construction and off-site fabrication to minimize on-site waste
- Reusable formwork
- Packaging of take-back arrangements with suppliers
- Selection of compostable or reusable temporary erosion control devices
- Use of FSC-certified timber for on-site carpentry work
- Recycling and composting of infrastructures in site offices
- Use of recycled paper for site office use (minimum 30 percent post-consumer recycled content)
- Use of products formulated with safer chemicals to reduce chemical exposures to workers and the public
- Use of paperless documentation, records management, and submittal process

4.6.2 Tracking Requirements

DFJV will document all measures that exceed regulatory or contract requirements.

On-site recycling of materials will be reported monthly through EMMA as part of overall waste diversion tracking.

1 http://www.dgs.ca.gov/buyinggreen/Home/BuyersMain.aspx

5 ORGANIZATION AND TRAINING

The Environmental Compliance Manager will have overall responsibility for implementation of the SMP. In addition, the parties responsible for tracking each section (for example, water conservation) will be identified.

Currently, the following personnel have been identified for tracking implementation. DFJV will notify the Authority of any changes in assignment:

- Jason Phillips (Environmental Compliance Manager, Sustainability) – accepts and approves entries for DFJV
- Mike Bradfield (Engineer) – Responsible for inputting construction waste and recycling, equipment, and fuel usage into EMMA
- Philip Lappe (Environmental Engineer, WPCM) – Responsible for inputting water and energy usage into EMMA

The on-boarding process for all site workers and subcontractors will include the objectives of the SMP and the responsibility for implementing reduction measures. The following items will be addressed in the on-boarding process (tailored to the particular scope of the worker or subcontractor):

- Objectives of the SMP
- Reporting of off-road and on-road equipment usage
- Recycling, disposal, and tracking of construction debris
- Tracking of construction materials
- Jobsite best management practices for energy and water

6 MATERIALS QUANTITY ESTIMATE

DFJV will provide quantity estimates as inputs to the Authority's energy analysis for construction materials. Upon completion of final design for incremental sections, DFJV will enter and upload a quantity estimate for that section of completed design, using the materials report form in EMMA, of the following materials:

- Concrete (cast in place) cubic yards by mix design
- Precast cubic yards
- Aggregate cubic yards
- Imported fill or soil cubic yards
- Rebar ton
- Structural steel ton

Prior to final acceptance, DFJV will enter and upload an updated materials report form in EMMA with the actual material quantities incorporated into the Project based on the as-built drawings.

7 REFERENCES

California High-Speed Rail Authority (Authority). 2013. Policy Directive POLI-PLAN-03. "Sustainability." August 19, 2013.

California High-Speed Rail Authority and Dragados/Flatiron Joint Venture (Authority and DFJV). 2015. Executed Contract. Section 44 of the General Provisions. May 18, 2015.

California High-Speed Rail Authority and Federal Railroad Administration (Authority and FRA). 2014. *Fresno to Bakersfield Section California High-Speed Train (HST) Final Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS).* April 2014.

California High-Speed Rail Authority and San Joaquin Valley Air Pollution Control District (Authority and SJVAPCD). 2015. Voluntary Emissions Reduction Agreement (VERA). December 2015.

APPENDIX A: Voluntary Emissions Reduction Agreement

STANDARD AGREEMENT

STD. 213 (NEW 06/03)

AGREEMENT NUMBER
HSR15-75
REGISTRATION NUMBER

1. This Agreement is entered into between the State Agency and the Contractor named below

STATE AGENCY'S NAME
California High-Speed Rail Authority

CONTRACTOR'S NAME
San Joaquin Valley Unified Air Pollution Control District

2. The term of this Agreement is: December 30, 2015 (or upon DGS approval, whichever is later) through July 31, 2028.

3. The maximum amount of this Agreement is: $10,806,923 ("Agreement Funding Maximum").
Ten Million, Eight Hundred Six Thousand, Nine Hundred Twenty-Three Dollars

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement:

Exhibit A – Scope of Work and its Attachments A-1 to A-9 (Attachment A-4 includes a budget)	29	Pages
Exhibit B – Budget Detail and Payment Provisions	1	Page
Exhibit C – General Terms and Conditions	4	Pages
Exhibit D – Special Terms and Conditions	3	Pages
Exhibit E – Supplemental Terms and Conditions for Contracts Using Federal Funds	7	Pages

IN WITNESS WHEREOF, this Agreement has been executed by parties hereto (additional signatures on following page).

CONTRACTOR

CONTRACTOR'S NAME *(If other than an individual, state whether a corporation, partnership, etc.)*
San Joaquin Valley Unified Air Pollution Control District

BY *(Authorized Signature)*: Seyed Sadredin

DATE SIGNED *(Do not type)*: 12/24/15

PRINTED NAME AND TITLE OF PERSON SIGNING
Seyed Sadredin, Executive Director/APCO

ADDRESS
1990 E. Gettysburg Avenue, Fresno, CA 93726

STATE OF CALIFORNIA

AGENCY NAME
California High-Speed Rail Authority

BY *(Authorized Signature)*: Jeff Morales

DATE SIGNED *(Do not type)*: 12.29.15

PRINTED NAME AND TITLE OF PERSON SIGNING
Jeff Morales, Chief Executive Officer

ADDRESS
770 L Street, Suite 620 MS 1, Sacramento, CA 95814

California Department of General Services Use Only

☐ Exempt per:

ADDITIONAL SIGNATURE PAGE FOR VERA BETWEEN CALIFORNIA HIGH-SPEED RAIL AUTHORITY AND SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT FOR CONSTRUCTION PACKAGE 2/3 (FRESNO TO BAKERSFIELD)
December 2015
HSRA AGREEMENT NUMBER: HSR15-75
DISTRICT AGREEMENT NUMBER: 20150266

The following authorized representatives of the District, by their signatures, recommend and approve this Agreement for execution by the District's Governing Board. ***Recommended for approval:***

San Joaquin Valley Unified Air Pollution
Control District

Approved as to legal form:
San Joaquin Valley Unified Air Pollution
Control District

Jessica E. Hafer Fierro
for Annette Ballatore-Williamson
District Counsel

Date: 12/28/15

Approved as to accounting form:
San Joaquin Valley Unified Air Pollution
Control District

Mehri Barati
Director of Administrative Services

Date: 12/24/15

EXHIBIT A
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VOLUNTARY EMISSION REDUCTION AGREEMENT (District No. 20150266) FOR THE FRESNO COUNTY PORTION OF THE FRESNO-BAKERSFIELD HIGH-SPEED RAIL SEGMENT

This Voluntary Emission Reduction Agreement ("Agreement" or "VERA") is entered into between the CALIFORNIA HIGH-SPEED RAIL AUTHORITY ("Authority") and the SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT ("District" or "Contractor"). Authority and District are each a "Party" and collectively are the "Parties". As used herein, "Agreement" or "VERA" includes the Standard Agreement cover page (STD 213), this Exhibit A (Scope of Work) and Exhibits B to E inclusive.

RECITALS

WHEREAS, District is an air pollution control district formed by the counties of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the Valley portion of Kern, pursuant to California Health and Safety Code section 40150, et seq.; and

WHEREAS, District is responsible for developing and implementing air quality control measures within the District Boundaries as depicted in Attachment A-1 ("District Boundaries") attached hereto and incorporated herein, including air quality control measures for stationary sources, transportation sources, and indirect sources; and

WHEREAS, the Authority, in partnership with the Federal Railroad Administration ("FRA"), is developing an electrified high-speed rail ("HSR") system ("System"), which includes construction of guide-way segments, and ancillary facilities such as maintenance facilities, electrical overhead catenary, stations, and overpasses for California pursuant to the California High-Speed Rail Act (Public Utilities Code section 18500 *et seq.*) ("Rail Act") and the Safe, Reliable High-Speed Passenger Train Bond

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Act for the 21st Century (codified at Streets and Highways Code section 2704 *et seq.*) ("Bond Act") that would serve the San Francisco Bay Area, Sacramento, Central Valley, Los Angeles and San Diego (as depicted in Attachment A-2); and

WHEREAS, the System includes segments (or portions thereof) that will be constructed within the San Joaquin Valley ("SJV") District Boundaries including the following: Merced to San Jose, Merced to Fresno, Fresno to Bakersfield, Bakersfield to Palmdale, and Sacramento to Merced collectively referred to as "HST SJV District Portion"; and

WHEREAS, on June 19, 2014 the Parties entered into a Memorandum of Understanding to establish the process to fully mitigate (by offsetting to net zero) emissions from construction of the HST SJV District Portion and

WHEREAS, the Authority completed Program-level Environmental Impact Statements/Reports (EIS/EIR) in 2005, 2008, 2010 and 2012 pursuant to the National Environmental Policy Act ("NEPA") and California Environmental Quality Act ("CEQA") evaluating impacts of the System, and selecting preferred route corridors; and

WHEREAS, a project level Final EIS/EIR ("FB FEIR") for the Fresno to Bakersfield Segment ("FB Segment") was certified via Resolution 14-09 ("FB FEIR Resolution") and the FB Segment was approved and CEQA findings made via Resolution 14-10 ("FB Segment Resolution") by the Authority's Board of Directors in May 2014 and FRA's associated Record of Decision ("ROD") issued in June 2014; and

WHEREAS, during the public process leading up to the MF FEIR, the District recommended in writing that the Authority enter into VERAs with the District as a mitigation measure for construction emissions (because of the offsets it would achieve); and

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WHEREAS, construction of a portion of the FB Segment (grade separations, track bed and track bed structures from the intersection south of East American Avenue in Fresno County to one mile north of the Kern/Tulare County Line; rails, electrification and stations will be part of a future construction package(s)) is anticipated to commence Winter 2015 (known as Construction Package 2-3 "CP 2-3"); and

WHEREAS, despite incorporation of various requirements and mitigation measures (i.e., using the cleanest construction and hauling fleet as reasonably practicable, as detailed in FB FEIR AQ-MM#1 and #2) to reduce the construction emissions associated with the FB Segment, the Authority concluded in its FB Segment Resolution that construction would nevertheless still cause significant cumulative impacts on air quality within the District Boundaries because of the existing nonattainment status or maintenance status for Criteria Pollutants (extreme nonattainment, in the case of ozone precursors Oxides of Nitrogen ("NOx") and Volatile Organic Compounds ("VOCs")); and

WHEREAS, the Authority in the FB Segment Resolution committed to fully mitigate-cumulative air quality impacts of the FB Segment resulting from construction for VOC, NOx, Particulate Matter of 10 microns or less in size ("PM10") and Particulate Matter of 2.5 microns or less in size ("PM2.5") (the "Offset Obligation"), collectively referred to as "Criteria Pollutants", by offsetting Criteria Pollutants collectively in the aggregate to net zero; and

WHEREAS, the Authority determined the Offset Obligation was feasible because of the District's representations to the Authority about its expertise and its ability to partner with the Authority to implement the Offset Obligation at the Offset Cost Schedule set forth in Table 1; and

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WHEREAS, the Authority in the FB Segment Resolution committed to causing the emissions offsets to occur within one year of the associated emission to be offset, or longer as permitted by 40 Code of Federal Regulations Part 93 Section 93.163 ("Offset Timing Requirement"); and

WHEREAS, the District has developed Incentive Programs around several core principles, including cost-effectiveness, integrity, effective program administration, excellent customer service, the efficient use of District resources, fiscal transparency and public accountability; and

WHEREAS, the District's Incentive Programs involve the District using monies (such as project-proponent-provided monies) to fund (usually on a percentage basis) the purchase and use by third parties of newer equipment that emits fewer Criteria Pollutants to replace older, less-clean-burning equipment (such as farm tractors), which the District administers through Individual Incentive Program Funding Agreements; and

WHEREAS, the District's Individual Incentive Program Funding Agreements require the user of the new equipment to use the new equipment for a minimum number of hours (based on the user's historical use of the replaced equipment) over a specified number of years, with penalties and remedies for failure to so use the equipment including potentially having to return the funds for redeployment, and require permanent destruction of the replaced equipment; and

WHEREAS, the Individual Incentive Program Funding Agreements, because of their requirements, result in reductions of Criteria Pollutants that get assigned to the project proponent providing the funding (the Authority, in this case) to offset emissions by that project proponent ("Criteria Pollutant VERA Offsets"); and

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WHEREAS, the Criteria Pollutant VERA Offsets, because of the requirements of and protections in the Individual Incentive Program Funding Agreements, are generated and become secured upon execution of each Individual Incentive Program Funding Agreement; and

WHEREAS, the District's Incentive Programs are regularly audited by independent outside agencies including professional accountancy corporations on behalf of the federal government, the California Air Resources Board (ARB), the California Department of Finance and the California Bureau of State Audits ("Successful Audit History"); and

WHEREAS, the District has determined that with appropriate funding from Authority, the District can generate and certify Criteria Pollutant VERA Offsets to fully offset the CP 2-3 portion of the FB Segment ("CP 2-3 Portion") construction emissions of Criteria Pollutants; and

WHEREAS, District has a history of successfully implementing at least eleven agreements similar to this VERA at an average cost-effectiveness per ton of $7,911, and has never to date needed to request a project proponent in any of those VERAs or any other VERA to provide funds beyond the original total funds estimate (including administrative fee) and deposit.

AGREEMENT

1. **Offset of Emissions of Criteria Pollutants during Construction for CP 2-3 Portion and Cost Estimate**

i. For CP 2-3, the Authority shall fully offset its actual construction emissions of Criteria Pollutants, which offsets the District shall provide and guarantee through the Authority's funding of and the District execution and implementation of Individual

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Incentive Program Funding Agreements ("IIPFA") that achieve surplus, quantifiable and enforceable emissions reductions.

ii. For the purpose of this Agreement, "fully offset" or "net zero" means that the aggregate sum of all Criteria Pollutants emission reductions achieved by the IIPFAs is equal to, or greater than, the aggregate sum of actual Criteria Pollutant emissions from construction of the CP 2-3 Portion, meaning excess offset of one Criteria Pollutant is credited against emissions of other Criteria Pollutants. "Surplus" emission reductions are reductions that are not otherwise required by existing laws or regulations.

iii. CP 2-3 extends approximately from the intersection south of East American Avenue in Fresno County to one mile north of the Kern/Tulare County Line, as shown in Attachment A-3. Estimated construction emissions of Criteria Pollutants, by year by pollutant, for CP 2-3 are set forth in Attachment A-4 ("CP 2-3 Criteria Pollutants Estimate"), which reflect implementation of AQ-MM#1 and #2 (contractor's use of a cleaner fleet). Based on the District's current estimated cost-per-ton, plus the District's four percent (4%) administrative cost overhead ("District Overhead") to procure offsets and to implement this Agreement, as specified in Section 2.1, and the CP 2-3 Criteria Pollutants Estimate, achieving Criteria Pollutant VERA Offsets for CP 2-3 to net zero will cost approximately $8,645,538 ("CP 2-3 Offset Cost Estimate"), as also shown in Attachment A-4. This is only an estimate; the actual cost to fully offset CP 2-3 may be higher or lower depending upon a number of factors which cannot be precisely determined now, including but not limited to the evolving market price to accomplish offsets and the actual pace and sequencing of construction. Accordingly, the Authority agrees to provide funds up to $10,806,923 ("Agreement Funding Maximum") (which is the above amount plus twenty-five percent (25%); any additional amount would require

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an amendment to this VERA) to fully offset its actual CP 2-3 construction emissions of Criteria Pollutants, subject to the District's obligations to secure those offsets on the Authority's behalf in a cost-effective manner as required by Paragraph 2.1.

iv. The Authority at any time may submit to the District a Revised CP 2-3 Criteria Pollutants Estimate to reflect then-current information about construction timing, sequencing and equipment. The Authority and District shall work closely after submission to review and revise as necessary to allow District approval in writing within 30 days of submission; the CP 2-3 Offset Cost Estimate shall be adjusted accordingly, upon such approval, via Operating Memorandum pursuant to Paragraph 16.ii.

2. Emissions Offsets Funding

2.1 Offset Cost Per Ton

Offset cost estimates under this VERA are based on the District's cost per ton set forth below in Table 1 (Offset Cost Schedule).

Table 1 Offset Cost Schedule

Criteria Pollutants	Cost $/ton
NOx or VOC/ROG	$9,350
PM10 (which includes PM2.5)	$9,011

These per-ton costs are not a guarantee and only an estimate, but the District shall use every reasonable effort to accomplish average per-ton costs, calculated as of its execution of the last IIPFA under this VERA, no higher than these Table 1 costs, as Table 1 might be modified per this Paragraph 2.1. The Table 1 per-ton costs derive from District Rule 9510 (Indirect Source Review) and are subject to change through the District's formal public procedures for amending these rules. Consistent with District Rule 3180 (Administrative Fees for Indirect Source Review), the total offset cost

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estimates shall include (which is included in Attachment A-4) an administrative cost equal to four percent (4%) of the offset cost estimate. Any changes to District Rule 3180 or 9510 will be conducted through the District's formal public procedures and process for amending these rules.

District shall provide written notice (via email and mail) to the Authority of any pending Rule 3180/9510 cost per ton change at least fifteen (15) days prior to any District approval of or decision on such pending change. The results of that change shall be memorialized via Operating Memorandum pursuant to Paragraph 16.ii.

2.2 Air Quality Cost per-Ton

Revisions to the CP 2-3 Offset Cost Estimate (as contemplated in Paragraphs 1 and 3.2) shall be based on Table 1 or the average cost-effectiveness the District then projects it will accomplish for this VERA (based on the IIPFAs then executed to date under this VERA), if the District concludes after consulting with the Authority that the projected cost-effectiveness will be different than Table 1 (as Table 1 might be modified per Paragraph 2.1).

2.3 Payment of Funds for Criteria Pollutant VERA Offsets

i. Within fifteen (15) days after this VERA has been entered into by the Authority and the District, and then approved by the California Department of General Services ("DGS"), the District shall send to the Authority an Initial Invoice in the form of Attachment A-5, or in another form as the Authority may reasonably request.

ii. Within one hundred twenty (120) days after the Authority receives the Initial Invoice from the District or DGS has approved this VERA, whichever is later, the Authority shall deposit with the District initial funds in the amount of five-hundred thousand dollars ($500,000) ("Initial Deposit"), or a greater amount if the parties so

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agree via Operating Memorandum pursuant to Paragraph 16.ii, as initial funding towards the CP 2-3 Offset Cost Estimate. This initial deposit and each subsequent deposit are collectively referred to herein as "Deposits" with each being a "Deposit".

iii. The District will place each Deposit into a District-held but segregated High- Speed Rail Offset Funding Trust Account. Deposits will be used to fund Individual Incentive Program Funding Agreements. Deposits in the High- Speed Rail Offset Funding Trust Account are held by the District in trust for the Authority and are the property of the Authority until moved to the District's Committed High- Speed Rail Offsets Funds Account under Paragraph 2.4. This High- Speed Rail Offset Funding Trust Account shall serve all Authority VERAs as the Authority replenishes it in accordance with Paragraph 2.4.

2.4 Individual Incentive Program Funding Agreements; Secured Criteria Pollutant VERA Offsets Receipt; Trust Account Replenishment

i. Upon the Authority's submission to District of the Initial Deposit (and upon the Authority's written notice to proceed from its Contract Manager to the District based on relative certainty of a likely construction start date) and upon each Authority additional Deposit, the District is obligated to use Deposits to enter into IIPFAs to achieve Criteria Pollutant VERA Offsets for construction of the CP 2-3 Portion on behalf of the Authority to the extent required under this Agreement. District shall use diligent efforts to negotiate and prepare draft Individual Incentive Program Funding Agreements with the owners and/or operators of the pollution source equipment ("IIPFA Equipment User") within District Boundaries, as identified by the District's Incentive Programs (such Agreements may not involve retrofit of existing equipment or facilities). District shall use reasonable efforts, balanced with other requirements of this VERA, to prioritize owners

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and/or operators of pollution source equipment that will lead to generation of Criteria Pollutant VERA Offsets located as close as possible geographically to the location of the CP 2-3 construction.

ii. IIPFAs shall include the following: (a) the business address of the IIPFA Equipment User; (b) the Tax Identification Number of the IIPFA Equipment User; (c) the location(s) where the funded equipment is anticipated to be used; (d) replaced equipment disposal requirement; (e) description of replaced and new equipment; (f) minimum annual usage requirement for new equipment; and (g) the Authority named as an intended third-party beneficiary if the Authority so requests and the District so agrees. The Parties may adjust the preceding IIPFA content requirements via Operating Memorandum (pursuant to Paragraph 16.ii) if necessary to improve VERA implementation, provided such adjustments will allow the Authority to meet its auditing and reporting requirements.

iii. The District shall provide each negotiated draft IIPFA to the Authority via e-mail prior to District execution, together with a draft Criteria Pollutant VERA Offsets Receipt (defined in Paragraph 2.4.v. below) specifying clearly the amount of Criteria Pollutant VERA Offsets, by pollutant by year, the IIPFA will provide, how much such Criteria Pollutant VERA Offsets will cost out of the Deposit funds (including District Overhead), and the per-ton-by-pollutant cost, for review by the Authority within five (5) business days. Authority's review is limited to ensuring each IIPFA and associated draft Criteria Pollutant VERA Offsets Receipt (a) identifies the quantity of Criteria Pollutant reductions of which type are generated by the IIPFA in each year and associated costs (so the Authority knows exactly what it is paying for at what cost) and (b) meets the requirements in Paragraph 2.4 (sub-sections ii and iii) of this VERA for what IIPFAs and

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Criteria Pollutant VERA Offsets Receipts must contain.

iv. Upon full execution of an Authority-approved IIPFA, District may move funds equal to that shown in the associated draft Criteria Pollutant VERA Offset Receipt, including District Overhead which is to compensate the District for its staff time and other administrative costs to implement the IIPFA on behalf of the Authority. The Authority acknowledges that District has provided historical and auditable documentation to the Authority demonstrating that 4% is a reasonable approximation of the District's costs to implement agreements such as this VERA and IIPFAs; District agrees to provide any further of such documentation during the term of this VERA if the Authority reasonably concludes that such further documentation is necessary to satisfy any future audits or the FRA.

v. Within ten (10) days after full execution of each Authority-approved IIPFA, District shall provide a copy of that IIPFA and a Criteria Pollutant VERA Offsets Receipt (in the form of Attachment A-6, or in another form as the Authority may reasonably request) to the Authority specifying the amount of Criteria Pollutant VERA Offsets, by pollutant by year, secured by the IIPFA ("Secured Criteria Pollutant VERA Offsets"), how much such Criteria Pollutant VERA Offsets cost out of the Deposit funds (including the District Overhead), and the per-ton-by-pollutant cost. Thereafter, the District is obligated to implement each IIPFA and to ensure, at no further cost to and no further involvement by the Authority, that associated Secured Criteria Pollutants VERA Offsets are generated as set forth in the associated Criteria Pollutant VERA Offsets Receipt; should such generation fail as to any IIPFA and associated Criteria Pollutant VERA Offsets Receipt, the District shall take whatever steps are required (including but not limited to entering into additional IIPFAs, and funding them at no cost to the Authority) to

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ensure that substitute emissions reductions occur equivalent in amount to the associated Criteria Pollutant VERA Offsets Receipt, and in a timing manner that allows the Offset Timing Requirement to be met for actual Criteria Pollutant Emissions from CP 2-3 construction.

vi. The District shall keep detailed records of the generation of Secured Criteria Pollutants VERA Offsets over the life of the performances required under the associated IIPFA, consistent with District's record-keeping practices that have led to its Successful Audit History; District shall make such records available to the Authority and/or FRA for review upon request and shall keep such records for fifteen (15) years.

vii. Upon receiving any Criteria Pollutant VERA Offsets Receipt, the Authority shall have no more than sixty (60) days to replenish the High- Speed Rail Offset Funding Trust Account in the amount of that Receipt until total Deposits equal the CP 2-3 Offset Cost Estimate as it may by then have been adjusted pursuant to Paragraphs 1(iv) or 3.2(i). The District acknowledges that this sixty-day requirement is dependent upon the Authority receiving the required replenishment amount from FRA as reimbursement to the Authority of the Criteria Pollutant VERA Offsets Receipt amount. This subsection is not a limit on the Authority's obligations set forth in Paragraph 1.

viii. The District shall use every reasonable effort initially to match the Secured Criteria Pollutant VERA Offsets to the by-pollutant-by-year CP 2-3 Criteria Pollutants Estimate listed in Attachment A-4 (as it may get revised per Paragraph 1(iv)) to satisfy the Offset Timing Requirement on a 1:1 basis (not the higher offset ratios permitted by the Offset Timing Requirement), and shall adjust those efforts over time as reasonably possible (including by delaying execution of further IIPFAs if Criteria Pollutant VERA Offsets production get too far ahead temporally of actual emissions) to reflect actual

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emissions of Criteria Pollutants, as reported in accordance with Paragraph 3.2. The District shall advise the Authority in writing, as soon as the District recognizes and before executing any additional IIPFAs, if it reasonably determines that the 1:1 standard cannot be met, in which case the Parties shall meet and confer to develop an implementation strategy to ensure the timing and amounts of emissions reductions occur at a minimum as specified by the Offset Timing Requirement.

3. Segment Related Construction Emissions

3.1 Actual Construction Emissions Assessment

i. Commencing at first to occur of excavation, grading, demolition, construction-vehicle travel on paved or unpaved surfaces creating vehicle exhaust, any of which occurs for the sole purpose of constructing (but not designing) the CP 2-3 Portion ("Construction"), the Authority shall start collecting detailed daily Construction information to determine the actual Criteria Pollutant Construction emissions for the CP 2-3 Portion. To determine the actual Criteria Pollutant Construction emissions for that Portion (for inclusion in the Construction Report required by Section 3.1.iii), the Authority shall use the California Emissions Estimator Model (CalEEMod), or any substitute computer model or analysis approved by the District (such as a spreadsheet containing hand calculations using the most current emission factors for quantifying actual construction emissions). The District and Authority shall agree in writing upon, via Operating Memorandum pursuant to Paragraph 16.ii, the date Construction started so as to fix subsequent reporting deadlines.

ii. Construction information shall include emission sources associated with the on-site and off-site construction activities. For on-site construction activities, the Authority shall collect data for all off-road equipment by equipment type, engine

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horsepower, engine model year, and total daily hours of operation for each construction activity (i.e., site preparation, grading, paving, demolition, etc.). For off-site construction activities, the Authority shall collect all vehicle trips by general category of activity (employee and vendor travel or materials delivery), by vehicle type (i.e., auto, light-duty truck, heavy duty truck) and their associated total vehicle miles. The on-site and off-site construction activities will be monitored by the Authority, as presented in Attachment A-7 ("Construction Reporting Detail Information"). Records of the construction information shall be kept by the Authority for fifteen (15) years and made available to the District upon request.

iii. The Authority shall submit to the District a Construction Report within sixty (60) days starting at the end of every three (3) month period (or other frequency, as the Parties may agree in writing via Operating Memorandum pursuant to Paragraph 16.ii) following the start of Construction, and within sixty (60) days of any termination pursuant to Section 5A.ii. The Construction Report, as outlined in Attachment A-8, shall be based on the Construction Reporting Detail Information collected during every three (3) month period and any other information or data as the Parties may agree to via Operating Memorandum pursuant to Paragraph 16.ii. The District shall evaluate the Construction Report and provide its review in the Emission Reduction Status Report in accordance with Paragraph 3.2. Upon completion of the entire CP 2-3 Construction activities that generate material amounts of Criteria Pollutants, but no later than sixty (60) days after the Authority's issuance to its CP 2-3 contractor of Certificate of Final Acceptance, the Authority shall submit to the District a Final Construction Report summarizing all actual Construction related Criteria Pollutant emissions for CP 2-3.

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3.2 Emission Reduction Status Reporting

i. Upon the District's receipt of the Construction Report, the District shall have sixty (60) days to prepare and submit to the Authority an Emission Reduction Status Report ("Status Report"). This Status Report shall compare the Secured Criteria Pollutant VERA Offsets to date to the emissions of Criteria Pollutants in the CP 2-3 Construction Reports to date. The Status Report also shall identify the average cost-effectiveness (in dollars per Criteria Pollutant per ton) based on the IIPFAs then executed to date under this VERA. Based on the foregoing in this Paragraph 3.2.i, the Status Report shall identify whether the then-current CP 2-3 Offset Cost Estimate is accurate and if not accurate shall propose a re-adjustment as necessary for the Authority's review and consideration for approval within thirty (30) days. The Status Report also shall provide an accounting of (a) the High- Speed Rail Offset Funding Trust Account, (b) the Committed High- Speed Rail Offsets Funds Account (listing the IIPFA associated with each funds commitment entry) and (c) funds actually paid out from the Committed High- Speed Rail Offsets Funds Account (listing the IIPFA associated with each payout and the associated Secured Criteria Pollutant Offset amount). The District agrees to meet telephonically or in person with the Authority if the Authority has any questions related to any Status Report.

ii. When the total Secured Criteria Pollutant VERA Offsets equal or exceed the total emissions of Criteria Pollutants reported in Construction Reports through the Final Construction Report for CP 2-3, the District shall issue a Final Status Report so verifying. Excess offsets achieved shall be handled pursuant to Paragraph 3.4. Any funds then remaining in the High- Speed Rail Offset Funding Trust Account associated

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with CP 2-3 shall be returned to the Authority by the District within thirty (30) days of issuing the Final Status Report, unless otherwise agreed to in writing by the Authority.

3.3. FB Segment Construction Phases after CP 2-3

Construction within the FB Segment beyond CP 2-3 will be handled via amendment to this VERA or via a separate VERA, as the Parties subsequently may agree in such amendment or separate VERA.

3.4. Disposition of Excess Secured Criteria Pollutants VERA Offsets

i. If total Secured Criteria Pollutant VERA Offsets exceed the total actual emissions of Criteria Pollutants reported in Construction Reports through the Final Construction Report for CP 2-3 ("CP 2-3 Excess Secured VERA Offsets"), as reported in the Final Status Report, such CP 2-3 Excess Secured VERA Offsets can be transferred to any other Authority construction within District Boundaries; use of such transfers must comply with the Offset Timing Requirement. Such transfer shall be deemed effective fifteen (15) days after Authority written notification to the District of such transfer. If other Authority construction is not available to receive the benefit of such a transfer, the Authority may transfer the CP 2-3 Excess Secured VERA Offsets to a third-party development project in the District Boundaries unless then-applicable law prohibits such a transfer.

ii. If CP 2-3 construction gets de-funded, halted or suspended for whatever reason for a predicted material amount of time, and if total Secured Criteria Pollutant VERA Offsets exceed the total emissions of Criteria Pollutants for CP 2-3 construction up to the construction halt or de-fund date, the District shall not enter any further IIPFAs for CP 2-3 and the Authority may transfer the excess Secured Criteria Pollutant VERA Offsets to other Authority construction or to a third-party development project(s) in the

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District Boundaries. In addition, District shall apply any funds then in the High- Speed Rail Offset Funding Trust Account for CP 2-3 to any then-active other Authority-District VERA(s); if there are none, then the District shall return to the Authority (if the Authority so requests) any such funds. Prior to re-starting CP 2-3 construction, the Authority shall deposit with the District funds equivalent to the transferred Secured Criteria Pollutant VERA Offsets plus any amount returned to the Authority (or applied to non-CP 2-3 Authority construction) out of the High- Speed Rail Offset Funding Trust Account pursuant to the preceding sentence.

4. District Rule 9510 (Indirect Source Review) Requirement

Authority acknowledges that it is required to comply with Rule 9510. The Authority has submitted, and the District has approved, an Air Impact Assessment ("AIA") Application, consistent with District Rule 9510 (Indirect Source Review) requirements. The Authority acknowledges that it is subject to all applicable provisions of District Rule 9510 that are in effect at the time of submitting an Air Impact Assessment Application.

5. Subsequent Litigation, Legislation and/or Administrative Action / Credit to the Authority

In the event that despite this Agreement, Authority is required as a result of a final judgment or District Approved Settlement (as defined below) in any third-party litigation, to pay monies in addition to the monies to be paid by Authority pursuant to this VERA, then District shall acknowledge and credit Authority with any additional emission reduction achieved to offset FB Segment construction emissions that will result from Authority's payment of such additional monies. For purposes of this Paragraph, a "District Approved Settlement" shall mean a settlement of a lawsuit filed pursuant to

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CEQA, NEPA or other applicable environmental law which (i) provides for Authority's payment of monies in exchange for a dismissal of such lawsuit, (ii) provides for the use of such monies by the petitioner in such lawsuit in such a manner as to mitigate adverse air quality impacts of the FB Segment, and (iii) is approved in writing by District. The District shall have no authority to commit the Authority's money in any settlement of a third-party lawsuit without the Authority's consent, and the District shall have no authority over the Authority's ability or decision to settle or terms of settlement; the District's role is limited to evaluating any settlement for credit-giving purposes as stated above.

5A. Term of Agreement

i. This Agreement shall be effective upon the date fully executed and approved by the California Department of General Services, and shall terminate automatically upon the first to occur of (1) July 31, 2028, or (2) generation of all emissions reductions secured by the Secured Criteria Pollutant VERA Offsets required under this VERA, at which time the District shall so inform the Authority in writing.

ii. At any time prior to the events listed in Paragraph 5A.i, for any reason notwithstanding anything to the contrary in this VERA, but only after the Parties complete dispute resolution under Paragraph 6, either Party may by written notice to the other Party ("Termination Notice") terminate this Agreement; termination shall be effective upon the date the receiving party receives the Termination Notice and shall release the Parties from all VERA obligations to each other except as provided below and elsewhere in this Agreement. District shall refund to the Authority any funds in the High- Speed Rail Offset Funding Trust Account associated with CP 2-3 construction as of the date the District receives (or sends) the Termination Notice. Notwithstanding

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termination by Termination Notice by either Party or because the VERA end date of July 31, 2028, has been reached, District's obligations to oversee implementation of IIPFAs, to ensure that Secured Criteria Pollutants VERA Offsets are generated as set forth in Criteria Pollutant VERA Offsets Receipts, and to keep detailed records of the generation of Secured Criteria Pollutants VERA Offsets over the life of the IIPFAs, as required by Paragraph 2.4, shall remain effective for as long as necessary to ensure generation of all emissions reductions secured by the Secured Criteria Pollutant VERA Offsets regardless of termination by any means. In the event the Authority terminates this Agreement (unless the Authority terminates because the District materially breaches this Agreement or because funding for the construction of the CP 2-3 Portion is deleted or cancelled), or in the event the District terminates this Agreement because the Agreement Funding Maximum is not increased via VERA amendment despite the Parties' agreement that additional funding is necessary to satisfy the emissions-offset purposes of this VERA, the Authority shall consult with the District as the Authority develops a feasible alternative strategy to comply with the remainder of its Offset Obligation, which alternative strategy the Authority shall use best efforts to develop within ninety (90) days of such termination and regarding which the Authority thereafter shall obtain District's approval (which approval shall not be unreasonably withheld), which consultation and approval requirement shall survive such termination.

6. Dispute Resolution

In the event a dispute arises between the Parties about any provision in this Agreement or the implementation of this Agreement that cannot be resolved through discussions between the Parties or their authorized representatives, the following steps shall be taken.

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i. The Executive Officer of the Party alleging a dispute shall send a letter to the other Party's Executive Officer outlining the dispute and the action desired. The receiving Party shall respond in writing within twenty-one (21) days. Should either Party request, the Executive Officers shall meet by telephone or in person.

ii. If despite Executive Officer communications the Parties cannot resolve the dispute, the Parties shall mediate the dispute in good faith if one Party so requests in writing. Mediation shall be conducted by JAMS mediation services (or a substitute, if the Parties mutually agree) in Sacramento by a mediator mutually selected by the Parties. The Parties shall use their best efforts to schedule the mediation to take place no later than two (2) months after the date mediation is requested, subject to mediator availability. The Parties shall share equally the costs of mediation as invoiced by JAMS or substitute (unless the Parties agree otherwise on a case-by-case basis), but shall bear their own attorney's fees.

iii. If mediation does not resolve the dispute, either Party may commence litigation in a court of competent jurisdiction, subject to the provisions of Paragraph 19.

iv. Should the dispute be of an urgent nature, the aggrieved Party may commence litigation without first completing mediation. In such case, the Parties shall mediate and litigate concurrently, with mediation occurring pursuant to Paragraph 6.ii.

v. The Parties shall continue to perform their obligations under this VERA during the dispute resolution process, unless the dispute at issue would prejudice one Party if that Party continued to perform a particular obligation; in such case, the Parties shall attempt to make arrangements, including contingencies as necessary, to allow the Party to continue to perform the obligation during dispute resolution to allow the Party to perform the obligation in question without risk of prejudice.

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7. Representations, Covenants and Warranties

7.1. The Authority's Representations, Covenants and Warranties.

The Authority represents, covenants and warrants to District, as of the date of this Agreement, as follows:

i. The undersigned representative(s) of the Authority are duly authorized to execute, deliver and perform this Agreement, and upon the Authority's execution and delivery of this Agreement, this Agreement will have been duly authorized by the Authority.

ii. Upon execution and delivery of this Agreement by the Authority, the Authority's obligations under this Agreement shall, subject to Legislative appropriation and availability of funds and review and approval by the California Department of General Services, be legal, valid and binding obligations of the Authority, duly enforceable at law and in equity in accordance with the terms and conditions of this Agreement.

iii. There is no lawsuit, legal action, arbitration, legal or administrative proceeding, legislative, quasi-legislative or administrative action or claim existing, pending, threatened or anticipated which would render all or any portion of this Agreement invalid, void or unenforceable in accordance with the terms and conditions thereof, with the exception of pending and anticipated legal proceedings that could lead to suspension or stoppage of CP 2-3 construction and/or its funding which would suspend or stop the Authority's ability and need to fund emissions offsets for that suspended or stopped construction.

iv. Other than the execution and delivery of this Agreement by the undersigned representatives of Authority, and approval by the Board of Directors of the

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Authority (if and as required by Authority rules and delegations) and approval by DGS, there are no approvals, consents, confirmations, proceedings, or other actions required by Authority or any third party, entity or agency in order to enter into and carry out the terms, conditions and intent of the parties with respect to this Agreement, except as provided in Paragraph 7.1.ii.

v. Upon the approval of this Agreement by the Authority, the Chief Executive Officer of the Authority, or equivalent representative, or a delegate of such officer, has the authority to approve, deliver, verify, acknowledge and/or accept any communication, notice, notification, verification, and/or other document to be issued by Authority as reasonably necessary to implement, and if consistent with, the terms and conditions of this Agreement, without further approval of the Board of Directors of the Authority. This Section 7.1.v is a statement of existing authority, and does not grant any new or expanded authority.

7.2. District's Representations, Covenants and Warranties

District represents, covenants and warrants to the Authority, as of the date of this Agreement, as follows:

i. The undersigned representatives of District are duly authorized to execute, deliver and perform this Agreement, and upon District's execution and delivery of this Agreement, this Agreement will have been duly authorized by District.

ii. Upon execution and delivery of this Agreement by District, District's obligations under this Agreement shall be legal, valid and binding obligations of District, duly enforceable at law and in equity in accordance with the terms and conditions of this Agreement.

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iii. There is no lawsuit, legal action, arbitration, legal or administrative proceeding, legislative, quasi-legislative or administrative action or claim existing, pending, threatened or anticipated which would render all or any portion of this Agreement invalid, void or unenforceable in accordance with the terms and conditions thereof.

iv. Other than the execution and delivery of this Agreement by the undersigned representatives of District, and approval by the Governing Board of the District, there are no approvals, consents, confirmations, proceedings, or other actions required by District or any third party, entity or agency in order to enter into and carry out the terms, conditions and intent of the parties (except DGS approval per Paragraph 7.1.iv) with respect to this Agreement, except IIPFA Equipment User approval of IIPFAs.

v. The monies paid by the Authority under this Agreement shall be sufficient to ensure that the emission reduction contemplated by this Agreement shall occur, and District shall utilize such monies in such a manner as to ensure that such emission reductions shall occur.

vi. Upon the approval of this Agreement by the governing board of District, the Air Pollution Control Officer of District, or equivalent representative, or a delegate of such officer, shall have the authority to approve, deliver, verify, acknowledge and/or accept any communication, notice, notification, verification, and/or other document to be issued by District as reasonably necessary to implement, and if consistent with, the terms and conditions of this Agreement, without further approval of the Governing Board of District.

8. Indemnification

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i. The Authority agrees to indemnify, defend and hold harmless District for, from and in connection with any third party claims, losses and/or liabilities arising from or in connection with Authority's performance under this Agreement, excluding only such claims, losses and/or liabilities which result from or are in connection with District's sole negligence, act or omission.

ii. The District agrees to indemnify, defend and hold harmless the Authority, and its officers, agents and employees, for, from and in connection with any third party claims, losses and/or liabilities arising from or in connection with any IIPFA or equipment funded by it or the District's failure to perform its obligations under this Agreement, excluding only such claims, losses and/or liabilities which result from or are in connection with the Authority's sole negligence, act or omission.

9. Inurement

The Authority's rights and obligations under this Agreement, or applicable portions thereof, shall inure to the benefit of and be binding upon any government agency that may succeed to the Authority's responsibilities for the HST System construction work covered by this VERA. Upon any such succession, the rights and obligations of the Authority under this Agreement shall be transferred to the transferee thereof, and the Authority shall thereupon be released by District from all obligations and liabilities so assigned, except for such obligations and liabilities arising prior to such succession.

10. Assignment and Subcontracting

i. Neither Party shall have the right to assign all or any part of its rights and/or obligations under this Agreement without the other Party's written consent, which consent shall not be unreasonably withheld. In the event the other Party does give consent to any such assignment, the other Party, the third party assignee and the

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assigning Party shall enter into an amendment and novation of this Agreement which acknowledges the assignment and conforms the various provisions of this Agreement as may be required to be conformed in order to provide to the assignee the rights and benefits of this Agreement as if such assignee and its project were the original party and project contemplated in this Agreement.

ii. Neither Party may satisfy its obligations under this Agreement via a subcontract. IIPFAs are not subcontracts.

11. Recitals Incorporated

The recitals set forth herein above are hereby incorporated into this Agreement and acknowledged, agreed to and adopted by the Parties to this Agreement.

12. Further Assurances

The Authority and District agree to execute and deliver any documents and/or perform any acts which are reasonably necessary in order to carry out the intent of the parties with respect to this Agreement.

13. No Joint Venture or Partnership

District and the Authority agree that nothing contained in this Agreement or in any document executed in connection with this Agreement shall be construed as making District and the Authority joint venturers or partners.

14. Notices

Any notices or communications relating to this Agreement shall be given in writing and shall be deemed sufficiently given and served for all purposes when delivered, if (a) in person, (b) by facsimile or electronic mail (with the original delivered by other means set forth in this paragraph), (c) by generally recognized overnight courier or (d) by United States Mail, postage prepaid, to the respective addresses set

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forth below, or to such other addresses as the Parties may designate from time to time by providing written notice of the change to the other Party.

THE AUTHORITY	**DISTRICT**
Mark McLoughlin Director of Environmental Services 770 L Street, Suite 620, MS2 Sacramento, CA 95814 Ph: (916) 403-6934 Fax: (916) 322-0827 E-mail: mark.mcloughlin@hsr.ca.gov And Scott Rothenberg 770 L Street, Suite 620 MS2 Sacramento, CA 95814 (916) 403-6934 Fax: (916) 322-0827	Seyed Sadredin Executive Director/APCO 1990 E. Gettysburg Avenue Fresno, CA 93726 Ph: (559) 230-6000 Fax: (559) 230-6061 E-mail: seyed.sadredin@valleyair.org

15. Entire Agreement

The terms of this Agreement, together with all attached exhibits, are intended by the parties as the complete and final expression of their agreement with respect to such terms and exhibits and may not be contradicted by evidence of any prior or contemporaneous agreement. This Agreement specifically supersedes any prior written or oral agreements between the parties with respect to the subject matter of this Agreement.

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16. Amendments and Waivers

i. No addition to or modification of this Agreement shall be effective unless set forth in writing, signed by the Party against whom the addition or modification is sought to be enforced, and approved by the District's and Authority's respective governing boards if and as required by applicable law and then-extant Executive Officer delegations of authority. The Party benefited by any condition or obligation may waive the same, but such waiver shall not be enforceable by another Party unless made in writing and signed by the waiving Party.

ii. The Parties shall use Operating Memoranda, which shall be signed by both Parties, to formalize agreement as to matters which this Agreement requires or allows use of Operating Memoranda, or as to other matters where implementation detail requires further elaboration but is consistent with this Agreement.

17. Invalidity of Provisions

If any provision of this Agreement as applied to either Party or to any circumstance shall be adjudged by a court of competent jurisdiction to be void or unenforceable for any reason, the same shall in no way affect (to the maximum extent permissible by law) any other provision of this Agreement, the application of any such provision under circumstances different from those adjudicated by the court, or the validity or enforceability of this Agreement as a whole. The parties further agree to replace any such invalid, illegal or unenforceable portion with a valid and enforceable provision, which will achieve, to the maximum extent legally possible, the economic, business or other purposes of the invalid, illegal or unenforceable.

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18. Construction

Unless otherwise indicated, all paragraph references are to the paragraph of this Agreement and all references to days are to calendar days (unless otherwise specified). Whenever, under the terms of this Agreement the time for performance of a covenant or condition falls upon a Saturday, Sunday or California state holiday, the time for performance shall be extended to the next business day. The headings used in this Agreement are provided for convenience only and this Agreement shall be interpreted without reference to any headings. Wherever required by the context, the singular shall include the plural and vice versa, and the masculine gender shall include the feminine or neuter genders, or vice versa. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Facsimile or scanned (.pdf, .jpeg, etc.) images of signatures shall be treated as originals. The language in all parts of this Agreement shall be construed as a whole in accordance with its fair meaning, and shall not be construed against any Party solely by virtue of the fact that such Party or its counsel was primarily responsible for its preparation.

19. Governing Law

The rights and obligations of the parties and the interpretation and performance of this Agreement shall be governed in all respects by the laws of the State of California.

20. No Third-party Beneficiaries

Nothing in this Agreement, express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to it and their respective permitted successors and assigns, nor is anything in this Agreement intended to relieve or discharge any obligation of any third person to any

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Party hereto or give any third person any right of subrogation or action over or against any Party to this Agreement.

21. Attachments

The attachments to this Exhibit A Scope of Work shall be deemed to be a part of this Agreement and are fully incorporated herein by reference. All capitalized terms used in the attachments and not defined therein shall have the meaning as defined herein. The attachments are:

A-1: District Boundaries

A-2: High- Speed Rail Segments Map

A-3: Construction Package 2-3 Map

A-4: CP 2-3 Criteria Pollutants Estimate and Cost

A-5: Initial Deposit Invoice

A-6: Criteria Pollutant Offset Receipt

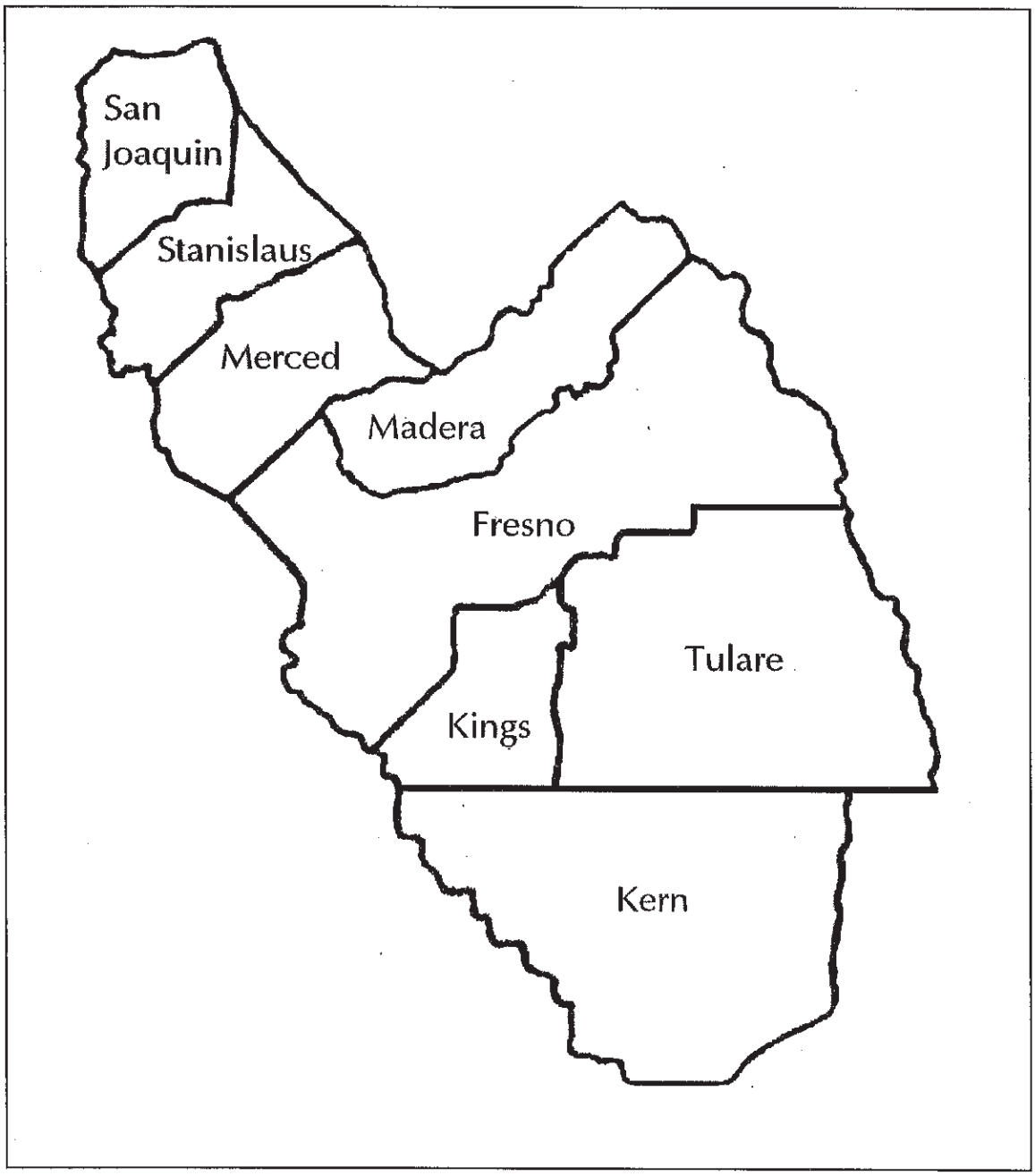
A-7: Construction Reporting Detail Information

A-8: Construction Report Format

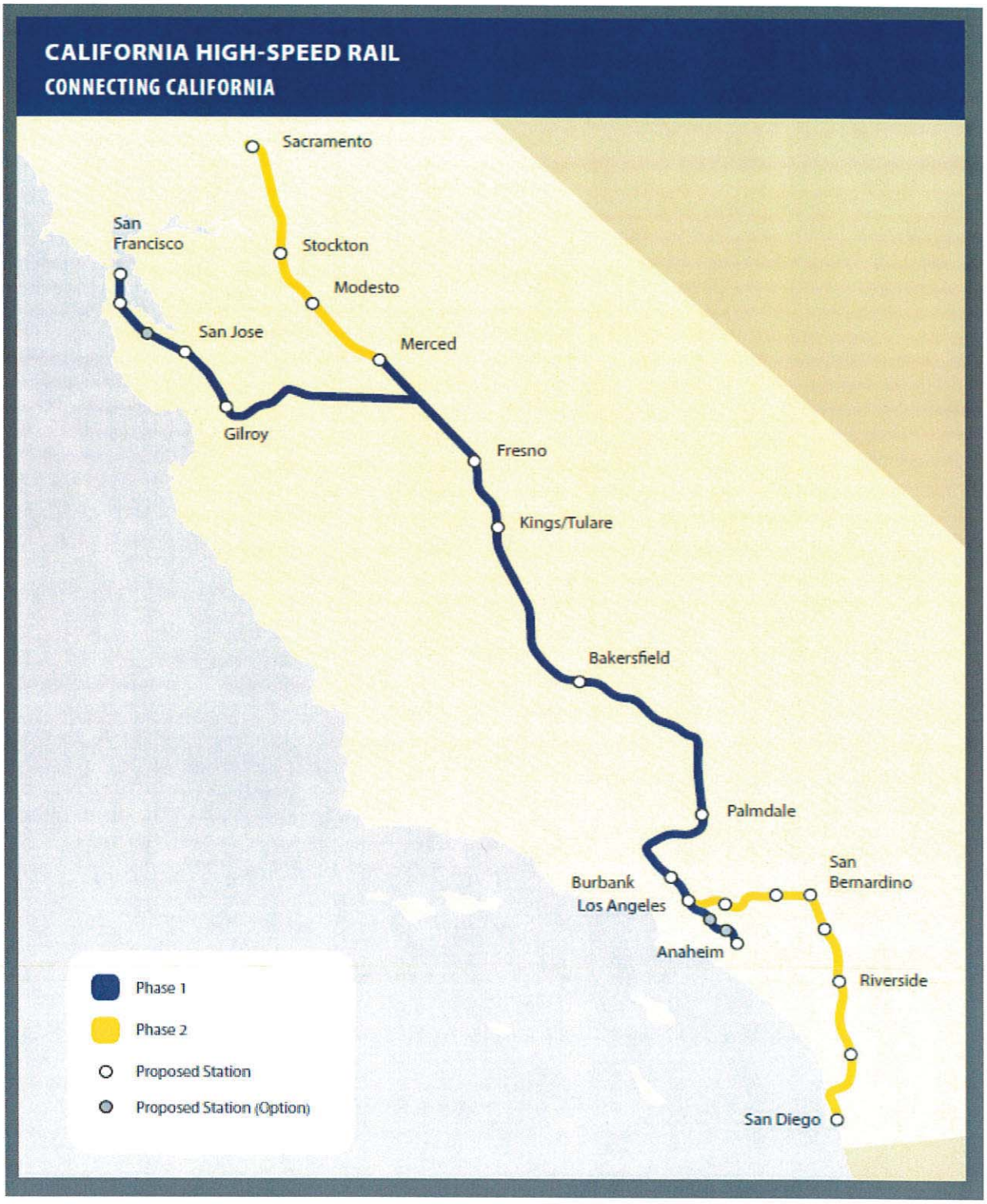
22. Force Majeure

The time within which any Party shall be required to perform under this Agreement shall be extended on a day-per-day basis for each day during which such performance is prevented or delayed by reason of events reasonably outside of the control of the performing Party, including, without limitation, acts of God, events of destruction, acts of war, civil insurrection, strikes, shortages, non-Party governmental delays, non-Party moratoria, civil litigation and the like, and/or delays caused by the other Party's act or omission.

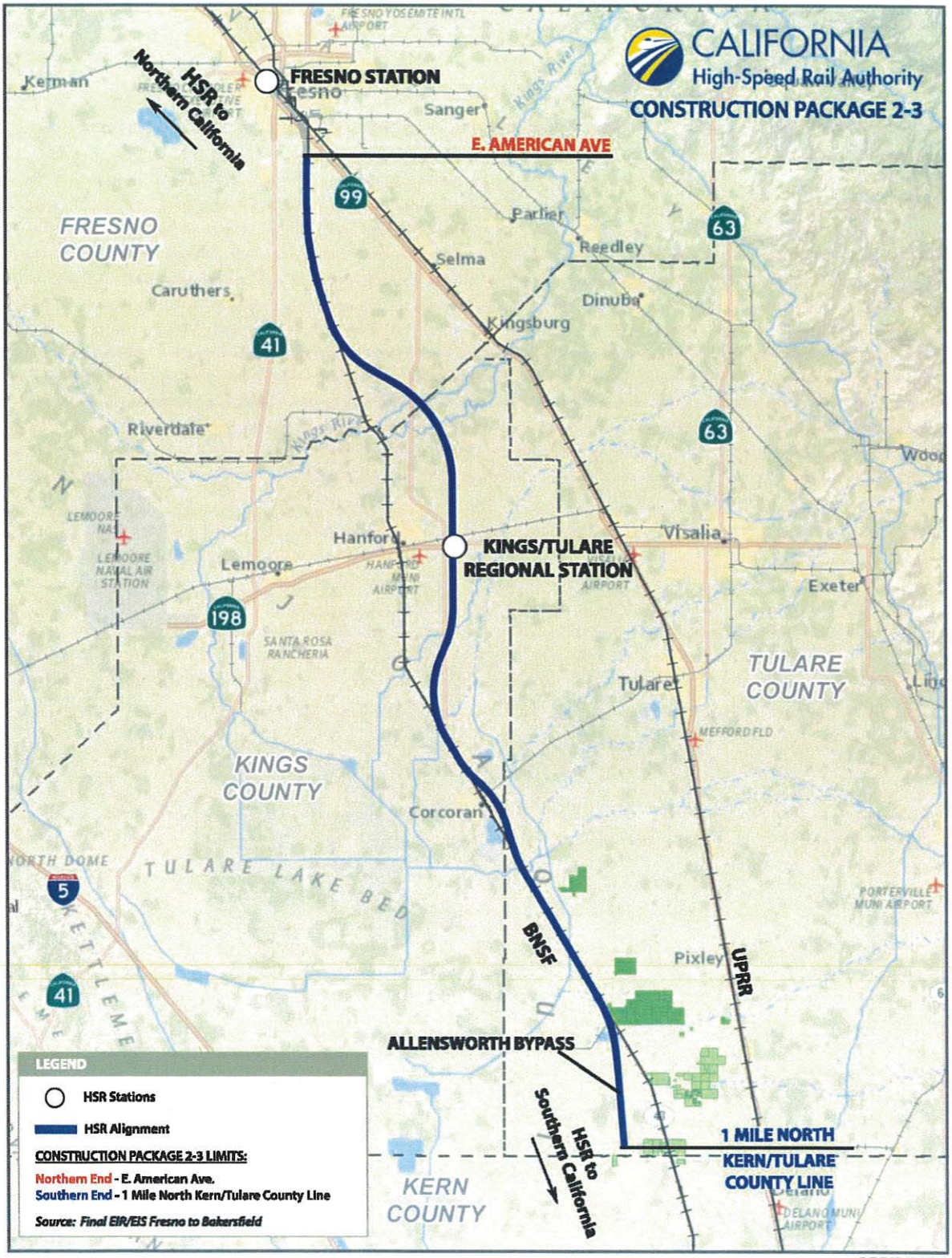
ATTACHMENT A-1
DISTRICT BOUNDARIES



ATTACHMENT A-2
HIGH SPEED RAIL SEGMENTS MAP



ATTACHMENT A-3
CONSTRUCTION PACKAGE 2-3 MAP



APRIL 2014

ATTACHMENT A-4

CP 2-3 OFFSET COST ESTIMATE

Pollutant	ROG/VOC	NOx	PM10*
Tons to be Reduced - 2015	33.82	574.84	72.55
Tons to be Reduced – 2016	16.68	124.84	32.43
Tons to be Reduced – 2017	0.50	5.58	6.07
Tons to be Reduced – 2018	0.53	13.55	12.17
Tons to be Reduced – 2019-2028	0	0	0
Total for CP 2-3	51.53	718.81	123.22
Cost per ton ($/Ton)	$9,350.00	$9,350.00	$9,011.00
Emission Offset Funds	**$481,806**	**$6,720,874**	**$1,110,336**
4% Administrative Cost (District Overhead)	$19,273	$268,835	$44,414
CP2-3 Offset Cost Estimate (including District Overhead)	**$8,645,538**		
Agreement Funding Maximum	**$10,806,923**		
***PM2.5 is included in PM10** **Note: The tons to be reduced are based on the Final EIR and the values are not expected to change moving forward.**			

ATTACHMENT A-5

INITIAL DEPOSIT INVOICE

INVOICE

San Joaquin Air Pollution Control District

Bill to Address
California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

Attn:

Invoice Date:
Invoice No.:

Project No:
Contract No:

For Initial Deposit as required by section 2.3 of the VERA Agreement _____ (District number) and _____ (Authority number)

Construction Emissions Offsets

Total Contract Value	$	-
Current Invoice		
Initial Deposit Amount		
Total Amount Due	$	-
Contract Authorization Remaining	$	-

_____
(Name/Title of person authorized to sign invoice)

Please Remit Payment to:
(San Joaquin Valley Air Pollution Control District)
(Address or other Bank Information)

ATTACHMENT A-6

CRITERIA POLLUTANT VERA OFFSETS RECEIPT

INVOICE
San Joaquin Valley Air Pollution Control District

Bill to Address
California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

Invoice Date:
Invoice No.:

Project No:
Attn: Contract No:

For Emissions Reductions Secured and Certified as Detailed in the Attached, under the Voluntary Emissions Reduction Agreement _____ (District number) and _____ (Authority number)

Total Contract Authorization Amount	$
Previous Invoices Total	$
Current Invoice (including 4% administrative cost)	$
Total all Invoices	$
Total Contract Authorization Remaining	$

_____
(Name/Title of person authorized to sign invoice)

Please Remit Payment to :
San Joaquin Valley Air Pollution Control District
(Address or other Bank information)

ATTACHMENT A-6

CRITERIA POLLUTANT VERA OFFSETS RECEIPT

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

CRITERIA POLLUTANT VERA OFFSET RECEIPT

THIS RECEIPT IS PRESENTED TO CALIFORNIA HIGH-SPEED RAIL AUTHORITY CERTIFYING THE EMISSION REDUCTIONS LISTED BELOW HAVE BEEN SECURED THROUGH THIS AGREEMENT.

CALIFORNIA High-Speed Rail Authority

HSR15-

AGREEMENT NUMBER	TOTAL PROJECT COST (INCLUDING ADMINISTRATIVE COST)	REPLACED EQUIPMENT TYPE	NEW EQUIPMENT TYPE	COST EFFECTIVENESS ($/TONS)
C-21000	$20,800.00	AGRICULTURAL TRACTOR	AGRICULTURAL TRACTOR	$3,291.51

YEAR	NOx REDUCTIONS (TONS)	PM_{10} REDUCTIONS (TONS) *	VOC REDUCTIONS (TONS)	TOTAL REDUCTIONS (TONS)
2015	2.65	0.15	0.43	3.23
2016	2.65	0.15	0.43	3.23
2017	2.65	0.15	0.43	3.23
2018	2.65	0.15	0.43	3.23
2019	2.65	0.15	0.43	3.23
2020	2.65	0.15	0.43	3.23
2021	2.65	0.15	0.43	3.23
2022	2.65	0.15	0.43	3.23
2023	2.65	0.15	0.43	3.23
2024	2.65	0.15	0.43	3.23
TOTAL	*26.5*	*1.50*	*4.30*	*32.3*

* $PM_{2.5}$ IS INCLUDED IN PM_{10}

ATTACHMENT A-7

CONSTRUCTION REPORTING INFORMATION

Contractor's Daily Record (From Authority's Environmental Mitigation Management and Assessment (EMMA) system)

- **Equipment (On- or Off-road)**
- **Serial Number**
- **Make, Model, Model Year**
- **Rated Horsepower**
- **Load Factor**
- **Fuel Type**
- **Hours Operated**
- **Construction Activity**

ATTACHMENT A-8
CONSTRUCTION REPORT FORMAT

On-site Sources (off-road equipment)

Step 1:

High Speed Rail Authority (HSRA) is to collect the following information associated with actual construction by construction activities: On-site off-road equipment, engine horsepower, engine model year, and total hours of operation by equipment type.

Step 2:

Upon completing step 1, HSRA is to quantify the actual construction emissions and prepare a Construction Report with the following content:

- Project Description and Location. Identify the following:
  - VERA Number 20150266/ Indirect Source Review (ISR) project number 20140107
  - Project/Segment Name (i.e - High Speed Rail project - Merced to Fresno; Fresno to Madera)
  - 3-month Reporting Period Evaluated
  - Date of Report
  - Construction Package Number (e.g.: CP1A)

- On-site Actual Construction Criteria Pollutants Emissions (NOx, VOC, PM10, PM2.5) in pounds
  - By equipment type
  - By model year
  - By horsepower

- Description of methodology used for the construction analysis (e.g.: CalEEMod, hand calculation with emission factors, etc.)

Off-site Sources (i.e. vehicles)

Step 1:

The Authority is to collect the following information associated with actual construction by construction activities: vehicle types (i.e – light auto, heavy duty trucks, etc, All construction vehicle trips, and associated total vehicle miles traveled by vehicle type.) by trip activity (i.e.: hauling, employee trips , etc.)

Step 2:

Upon completing step 1, HSRA is to quantify the actual construction emissions and include in the Construction Report with the following content:

- Project Description and Location. Identify the following:
  - VERA number 20150266
  - Project/Segment Name (i.e - High Speed Rail project - Merced to Fresno; Fresno to Madera)
  - 3-month Reporting Period Evaluated
  - Date of Report
  - Construction Package Number (e.g.: CP1A)

- Off-site Actual Construction Criteria Pollutants Emissions (i.e.: NOx, VOC, PM10, PM2.5) in pounds by type of trips:
  - Employee trips: VMT by vehicle model year
  - Hauling trips: VMT by vehicle model year
  - Delivery trips: VMT by vehicle model year

- Description of methodology used for the construction analysis (e.g.: CalEEMod, hand calculation with emission factors, etc.)

EXHIBIT B
BUDGET DETAIL AND PAYMENT PROVISIONS

A. FUNDING REQUIREMENTS/BUDGET CONTINGENCY CLAUSES

1. It is mutually agreed that if the Legislature's Budget Act, Congressional Budget Act, of the current year (if amended or repealed) and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for commencing pursuit of work under this contract, this Agreement may be terminated in accordance with Section 5A of Exhibit A of this Agreement.

2. In addition, this Agreement is subject to any additional restrictions, limitations, conditions or any statute enacted by Congress or State Legislature that may affect the provisions, terms or funding of this Agreement in any manner.

3. If funding for any fiscal year is reduced or deleted by the Legislature's Budget Act or a Congressional Budget Act for purposes of this Agreement, the Authority shall have the option to terminate the Agreement in accordance with Section 5A.ii. of this Agreement, or to otherwise offer an Agreement Amendment to the Contractor in accordance with Section 16 of the Agreement to reflect the reduced amount.

B. INVOICING

1. Criteria Pollutant VERA Offsets Receipts shall include the Authority's Agreement number listed on the front page of this Agreement and shall be processed in accordance with Exhibit A, except that the Contractor shall send two copies of each such Receipt (in addition to what is required in Exhibit A) to:

California High-Speed Rail Authority
Attention: Financial Operations Section
770 L Street, Suite 620, MS 3
Sacramento, CA 95814

EXHIBIT C
GENERAL TERMS AND CONDITIONS

EXHIBIT C

GENERAL TERMS AND CONDITIONS

1. APPROVAL: This Agreement is of no force or effect until signed by both parties and approved by the Department of General Services, if required. Contractor may not commence performance until such approval has been obtained.

2. AMENDMENT: No amendment or variation of the terms of this Agreement shall be valid unless made in writing, signed by the parties and approved as required. No oral understanding or Agreement not incorporated in the Agreement is binding on any of the parties.

3. ASSIGNMENT: This Agreement is not assignable by the Contractor, either in whole or in part, without the consent of the State in the form of a formal written amendment.

4. AUDIT: Contractor agrees that the awarding department, the Department of General Services, the Bureau of State Audits, or their designated representative shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Agreement. Contractor agrees to maintain such records for possible audit for a minimum of three (3) years after final payment, unless a longer period of records retention is stipulated. Contractor agrees to allow the auditor(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, Contractor agrees to include a similar right of the State to audit records and interview staff in any subcontract and/or IIPFA related to performance of this Agreement. (Gov. Code §8546.7, Pub. Contract Code §10115 et seq., CCR Title 2, Section 1896).

5. INDEMNIFICATION: See Section 8 of Exhibit A.

6. DISPUTES: Contractor shall continue with the responsibilities under this Agreement during any dispute.

7. TERMINATION FOR CAUSE: The Authority may terminate this Agreement in accordance with Section 5A.ii.

8. INDEPENDENT CONTRACTOR: Contractor, and the agents and employees of Contractor, in the performance of this Agreement, shall act in an independent capacity and not as officers or employees or agents of the State.

9. RECYCLING CERTIFICATION: Not applicable because this Agreement does not involve the sale of products, materials, goods or supplies to the Authority.

10. NON-DISCRIMINATION CLAUSE: During the performance of this Agreement, Contractor and its subcontractors and/or IIPFA Equipment Users shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, physical disability (including HIV and AIDS),

EXHIBIT C
GENERAL TERMS AND CONDITIONS

mental disability, medical condition (e.g., cancer), age (over 40), marital status, denial of family care leave and denial of pregnancy disability leave. Contractor and subcontractors and/or IIPFA Equipment Users shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Contractor and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Gov. Code §12990 (a-f) et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full. Contractor and its subcontractors and/or IIPFA Equipment Users shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts and/or IIPFAs.

11. CERTIFICATION CLAUSES: The CONTRACTOR CERTIFICATION CLAUSES contained in the document CCC 307 are hereby incorporated by reference and made a part of this Agreement by this reference as if attached hereto.

12. TIMELINESS: Time is of the essence in this Agreement.

13. COMPENSATION: The consideration to be paid Contractor, as provided herein, shall be in compensation for all of Contractor's expenses incurred in the performance hereof, including travel, per diem, and taxes, unless otherwise expressly so provided.

14. GOVERNING LAW: This contract is governed by and shall be interpreted in accordance with the laws of the State of California.

15. ANTITRUST CLAIMS: The Contractor by signing this agreement hereby certifies that if these services or goods are obtained by means of a competitive bid, the Contractor shall comply with the requirements of the Government Codes Sections set out below.

a. The Government Code Chapter on Antitrust claims contains the following definitions:

1) "Public purchase" means a purchase by means of competitive bids of goods, services, or materials by the State or any of its political subdivisions or public agencies on whose behalf the Attorney General may bring an action pursuant to subdivision (c) of Section 16750 of the Business and Professions Code.
2) "Public purchasing body" means the State or the subdivision or agency making a public purchase. Government Code Section 4550.

b. In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the

EXHIBIT C
GENERAL TERMS AND CONDITIONS

Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder. Government Code Section 4552.

c. If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this chapter, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery. Government Code Section 4553.

d. Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action. See Government Code Section 4554.

16. CHILD SUPPORT COMPLIANCE ACT: For any Agreement in excess of $100,000, the contractor acknowledges in accordance with Public Contract Code 7110, that:

a. The contractor recognizes the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with section 5200) of Part 5 of Division 9 of the Family Code; and

b. The contractor, to the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of all new employees to the New Hire Registry maintained by the California Employment Development Department.

17. UNENFORCEABLE PROVISION: In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby.

18. PRIORITY HIRING CONSIDERATIONS: If this Contract includes services in excess of $200,000, the Contractor shall give priority consideration in filling vacancies in positions funded by the Contract to qualified recipients of aid under Welfare and Institutions Code Section 11200 in accordance with Pub. Contract Code §10353.

19. SMALL BUSINESS PARTICIPATION AND DVBE PARTICIPATION REPORTING REQUIREMENTS:

EXHIBIT C
GENERAL TERMS AND CONDITIONS

a. If for this Contract Contractor made a commitment to achieve small business participation, then Contractor must within 60 days of receiving final payment under this Contract (or within such other time period as may be specified elsewhere in this Contract) report to the awarding department the actual percentage of small business participation that was achieved. (Govt. Code § 14841.)

b. If for this Contract Contractor made a commitment to achieve disabled veteran business enterprise (DVBE) participation, then Contractor must within 60 days of receiving final payment under this Contract (or within such other time period as may be specified elsewhere in this Contract) certify in a report to the awarding department: (1) the total amount the prime Contractor received under the Contract; (2) the name and address of the DVBE(s) that participated in the performance of the Contract; (3) the amount each DVBE received from the prime Contractor; (4) that all payments under the Contract have been made to the DVBE; and (5) the actual percentage of DVBE participation that was achieved. A person or entity that knowingly provides false information shall be subject to a civil penalty for each violation. (Mil. & Vets. Code § 999.5(d); Govt. Code § 14841.)

20. LOSS LEADER:
If this contract involves the furnishing of equipment, materials, or supplies then the following statement is incorporated: It is unlawful for any person engaged in business within this state to sell or use any article or product as a "loss leader" as defined in Section 17030 of the Business and Professions Code. (PCC 10344(e).)

EXHIBIT D
SPECIAL TERMS AND CONDITIONS

1. AMENDMENT (CHANGE IN TERMS)

No amendment or variation of the terms of this agreement shall be valid unless made in writing, signed by the parties, and approved as required. No oral understanding or agreement not incorporated in agreement is binding on any of the parties.

The DISTRICT shall only commence work covered by an amendment after the amendment is executed and notification to proceed has been provided in writing by the AUTHORITY's Contract Manager.

2. DISPUTES

The Parties shall continue with their respective responsibilities under this Agreement during any work dispute.

3. DISTRICT'S DELIVERABLES UNDER EARLY TERMINATION

Upon termination, the DISTRICT shall provide all project-related documents and correspondence required as part of the Scope of Work (Exhibit A). Project-related documents shall include all documents that are in complete and final form and which have been accepted as complete by the AUTHORITY, or documents in draft and/or incomplete form for those deliverables, which are in progress by the DISTRICT and have not been accepted as complete.

4. RETENTION OF RECORD/AUDITS

For the purpose of determining compliance with Public Contract Code Section 10115, et seq. and Title 21, California Code of Regulations, Chapter 21, Section 2500 et seq., when applicable, and other matters connected with the performance of the Agreement pursuant to Government Code Section 8546.7, the DISTRICT, IIPFA Equipment Users, and the AUTHORITY shall maintain all books, documents, papers, accounting records, and other evidence pertaining to the performance of the Agreement, including but not limited to, the costs of administering the Agreement. All parties shall make such materials available at their respective offices at all reasonable times during the Agreement period and for three (3) years from the date of expenditure under this Agreement unless a longer period of records retention is stipulated. The AUTHORITY, the State Auditor, or any duly authorized representative having jurisdiction under any laws or regulations shall have access to any books, records, and documents of the DISTRICT that are pertinent to the Agreement for audits, examinations, excerpts, and transactions, and copies thereof shall be furnished if requested.

Any IIPFA in excess of $25,000.00, entered into as a result of this Agreement, shall contain all the provisions of this clause.

EXHIBIT D
SPECIAL TERMS AND CONDITIONS

5. AUDIT REVIEW PROCEDURES

Any dispute concerning a question of fact arising under an interim or post audit of this Agreement that is not disposed of by agreement shall be reviewed by the Contract Manager.

Not later than 30 days after issuance of an interim or final audit report, the DISTRICT may request a review by the Contract Manager of unresolved audit issues. The request for review will be submitted in writing to the Authority's Chief Executive Officer (CEO). The request must contain detailed information of the factors involved in the dispute as well as justifications for reversal. A meeting by the CEO will be scheduled if the Contract Manager concurs that further review is warranted. After the meeting, the Contract Manager will make recommendations to the CEO who will make the final decision for the AUTHORITY. The final decision will be made within three (3) months of receipt of the notification of dispute.

Neither the pendency of a dispute nor its consideration by AUTHORITY will excuse the DISTRICT from full and timely performance, in accordance with the terms of this clause.

6. IIPFAs

Nothing contained in this Agreement or otherwise, shall create any obligation of the Authority or State flowing or owing to any IIPFA Equipment User

7. CONFIDENTIALITY OF DATA

The parties acknowledge that this Agreement is subject to the California Public Records Act (Govt. Code Section 6250 et seq.), California Government Code Section 11019.9; and California Civil Code Section 1798 et seq. However, all financial, statistical, personal, technical, or other data and information relative to the AUTHORITY's operations, which is designated confidential by the AUTHORITY and made available to the DISTRICT in order to carry out this Agreement, shall be protected by the DISTRICT from unauthorized use and disclosure.

8. STATEMENT OF COMPLIANCE

The DISTRICT's signature affixed herein and dated shall constitute a certification under penalty of perjury under the laws of the State of California that the DISTRICT has, unless exempt, complied with the nondiscrimination program requirements of Government Code Section 12990 and Title 2, California Code of Regulations, Section 8103.

9. CONFLICT OF INTEREST

The DISTRICT hereby certifies that it does not now have nor shall it acquire any financial or business interest that would conflict with the performance of services under this Agreement.

10. REBATES, KICKBACKS OR OTHER UNLAWFUL CONSIDERATION

The DISTRICT warrants that this Agreement was not obtained or secured through rebates, kickbacks or other unlawful consideration either promised or paid to any AUTHORITY

EXHIBIT D
SPECIAL TERMS AND CONDITIONS

agency employee. For breach or violation of this warranty, the AUTHORITY shall have the right, in its discretion, to terminate this Agreement without liability, to pay only for the value of the work actually performed, or to deduct from this Agreement price or otherwise recover the full amount of such rebate, kickback or other unlawful consideration.

11. PROHIBITION OF EXPENDING STATE FUNDS FOR LOBBYING

The DISTRICT certifies, to the best of his or her knowledge and belief, that:

- No State appropriated funds have been paid or will be paid, by or on behalf of the DISTRICT, to any person for influencing or attempting to influence an officer or employee of any State agency, a Member of the State Legislature or United States Congress, an officer or employee of the Legislature or Congress, or any employee of a Member of the Legislature or Congress in connection with the awarding of any State agreement, the making of any State grant, the making of any State, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any State agreement, grant, loan, or cooperative agreement.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000.00 and not more than $100,000.00 for each such failure.

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

A. FEDERAL REQUIREMENTS

The Contractor understands that the Authority has received Federal funding from FRA that will be used to fund this Agreement. Accordingly, Contractor acknowledges that applicable federal laws, regulations, policies and related administrative practices, including as they may change over the life of this VERA, will govern the administration of that funding, which could affect this VERA and its requirements, whether or not they are specifically referenced herein. The Contractor shall ensure its IIPFAs include specific notice that Federal law requirements, regulations and policies may change and could affect reporting and other requirements of the IIPFA but would not affect funding in any IIPFA.

The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any reasonable Authority requests, which would cause the Authority to be in violation of FRA requirements.

B. ACCESS REQUIREMENTS FOR INDIVIDUALS WITH DISABILITIES

The Contractor agrees to comply with all applicable requirements regarding Access for Individuals with Disabilities contained in the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 et seq.; and Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794 ("Nondiscrimination under Federal grants and programs"). Contractor shall ensure IIPFAs include requirements to so comply.

C. ENVIRONMENTAL REQUIREMENTS

The Contractor and IIPFA Equipment Users shall comply with all applicable environmental requirements and regulations, as follows:

The Contractor will conduct work under this Agreement in compliance with the following laws, as modified from time to time, all of which are incorporated herein by reference:

1. Section 114 of the Clean Air Act, 42 U.S.C. 7414, and section 308 of the Federal Water Pollution Control Act, 33 U.S.C. 1318, and all regulations issued thereunder.

2. The Contractor certifies that no facilities that will be used to perform work under this Agreement are listed on the List of Violating Facilities maintained by the U.S. Environmental Protection Agency ("EPA"). The Contractor will notify the Authority as soon as it or any IIPFA Equipment User receives any communication from the EPA indicating that any facility which will be used to perform work pursuant to this Agreement is under consideration to be listed on the EPA's List of Violating Facilities; provided, however, that the Contractor's duty of notification hereunder shall extend only to those communications of which it is aware.

D. ENERGY CONSERVATION

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6421 et seq.).

E. FRAUD AND FALSE OR FRAUDULENT STATEMENTS, AND RELATED ACTS

1. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986 (6 C.F.R. 13), as amended, 31 U.S.C. § 3801 et seq., and USDOT regulations Program Fraud Civil Remedies (49 C.F.R. Part 31), apply to its actions under this Agreement. Upon execution of this Agreement, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the Agreement and or the FRA assisted project for which this Agreement is being made. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 as cited above on the Contractor to the extent the Federal Government deems appropriate.

2. The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FRA, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307 on the Contractor, to the extent the Federal Government deems appropriate.

3. The Contractor agrees to include the above two paragraphs in each IIPFA. It is further agreed that the paragraphs shall not be modified, except to identify the IIPFA Equipment User who will be subject to the provisions.

F. NO OBLIGATION BY THE FEDERAL GOVERNMENT

1. The Authority and the Contractor acknowledge and agree that, notwithstanding any concurrence by the federal government in or approval of this Agreement, absent the express written consent by the federal government, the federal government is not a party to this Agreement and shall not be subject to any obligations or liabilities to the Contractor or any IIPFA Equipment User.

2. The Contractor agrees to include the above paragraph in each IIPFA financed in whole or in part with federal assistance provided by FRA. It is further agreed that the paragraph shall not be modified, except to identify the IIPFA Equipment User who will be subject to its provisions.

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

G. DEBARMENT AND SUSPENSION

1. This Contract is a covered transaction for purposes of 2 C.F.R. 1200. As such, the Contractor is required to comply with applicable provisions of Executive Orders Nos. 12549 and 12689, "Debarment and Suspension," 31 U.S.C. § 6101 note, and U.S. DOT regulations, "Non-procurement Suspension and Debarment," 2 C.F.R. Part 1200, which adopt and supplement the provisions of U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Government-wide Debarment and Suspension (Non-procurement)," 2 CFR Part 180.

2. To the extent required by the aforementioned U.S. DOT regulations and U.S. OMB guidance, the Contractor must verify that each IIPFA Equipment User is not excluded or disqualified in accordance with said regulations by going to https://www.sam.gov/portal/public/SAM/ and using the Search Records function to search by party name to see if that party is Excluded. .

H. CIVIL RIGHTS

The following requirements apply to the Contract:

1. NONDISCRIMINATION

In accordance with Title VI of the Civil Rights Act, as amended; 42 U.S.C. § 2000d, Section 303 of the Age Discrimination Act of 1975, as amended; 42 U.S.C. § 6102, Section 202 of the Americans with Disabilities Act of 1990; 42 U.S.C. § 12132; and 49 U.S.C. § 306, the Contractor agrees that it will not discriminate against any individual because of race, color, religion, national origin, sex, age or disability in any activities leading up to or in performance of the Contract. In addition, the Contractor agrees to comply with applicable federal implementing regulations and other implementing requirements that FRA may issue.

2. EQUAL EMPLOYMENT OPPORTUNITY

The following equal employment opportunity requirements apply to the Contract:

3. RACE, COLOR, RELIGION, NATIONAL ORIGIN, SEX

In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, the Contractor agrees to comply with all applicable equal opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," including 41 C.F.R 60 et seq. (which implements Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable federal statutes, executive orders, regulations, and federal policies that may in the future

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

affect activities undertaken to implement this Agreement. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, sex, or age. Such action shall include the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FRA may issue.

AGE

In accordance with Section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FRA may issue.

DISABILITIES

In accordance with Section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FRA may issue.

The Contractor also agrees not to discriminate on the basis of drug abuse, in accordance with the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, alcohol abuse, in accordance with the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, and to comply with Sections 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§ 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records. In addition, the Contractor agrees to comply with applicable federal implementing regulations and other implementing requirements that FRA may issue.

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

I. ACCESS TO AND INSPECTION OF RECORDS

1. The Contractor agrees to provide the Authority, the Secretary of the U.S. Department of Transportation, the FRA Administrator, the Comptroller General of the United States, the appropriate Inspector General appointed under Section 3 or 8G of the United States Inspector General Act of 1978, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this Agreement for the purposes of making audits, examinations, excerpts, and transcriptions.

2. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed, and to permit interview by any of the foregoing parties of any officer or employee of Contractor.

3. The Contractor agrees to maintain all books, records, accounts, and reports required under this Agreement for a period of not less than seven years after the date of termination or expiration of this Agreement, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case the Contractor agrees to maintain same until the Authority, the FRA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 C.F.R. § 18.39(i)(11); see also ARRA Sections 902, 1514 and 1515.

J. DISADVANTAGED BUSINESS ENTERPRISES

1. The Authority encourages the Contractor to utilize small business concerns owned and controlled by socially and economically disadvantaged individuals (as that term is defined for certain USDOT agencies in Title VI) in carrying out this Agreement.

2. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of Title VI in the administration of this Agreement. Failure by the Contractor to carry out these requirements is a material breach of this Agreement, which may result in the termination of this Agreement or such other remedy as the Authority deems appropriate.

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING
AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

K. **ARRA-Funded Project**

Funding for this Agreement has been provided through the American Recovery and Reinvestment Act (ARRA) of 2009, Pub. L. 111-5. Contractor and IIPFA Equipment Users are subject to audit by appropriate federal or State entities.

L. **Recovery of Misspent Funds**

The Contractor agrees that if the Contractor or any IIPFA Equipment User uses any funds provided through this Agreement for purposes other than as required by this Agreement, the Authority may recover misspent funds following an audit. This provision is in addition to all other remedies available to the Authority under all applicable state and federal laws.

M. **Prohibition on Use of ARRA Funds**

The Contractor agrees in accordance with ARRA, Provision 1604, that none of the funds made available under this contract may be used for any casino or other gambling establishment, aquarium, zoo, golf course, or swimming pools.

N. **Whistleblower Protection**

The Contractor agrees that it shall comply with Section 1553 of the ARRA, which prohibits all non-federal contractors, including the State, and all contractors of the State, from discharging, demoting or otherwise discriminating against an employee for disclosures by the employee that the employee reasonably believes are evidence of any of the following:

1. Gross mismanagement of a contract relating to ARRA funds
2. A gross waste of ARRA funds
3. A substantial and specific danger to public health or safety related to the implementation or use of ARRA funds
4. An abuse of authority related to implementation or use of ARRA funds
5. A violation of law, rule, or regulation related to an agency contract (including the competition for or negotiation of a contract) awarded or issued relating to ARRA funds

The Contractor agrees that it shall post notice of the rights and remedies available to employees under Section 1553 of Title XV of Division A of the ARRA.

O. **False Claims Act**

The Contractor agrees that it shall promptly notify the Authority and shall refer to an appropriate federal inspector general any credible evidence that a principal, employee,

EXHIBIT E
CONDITIONS FOR CONTRACTS RECEIVING FEDERAL FUNDING
AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA)

agent, IIPFA Equipment User or other person has committed a false claim under the False Claims Act (31 U.S.C. §3729 et seq.) or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity, or similar misconduct involving ARRA funds.

P. **Reporting Requirements**

Pursuant to Section 1512(c) and other sections of the ARRA, the Authority must submit periodic reports to FRA about how ARRA funds are being spent, where, by whom, on what, etc. The Authority reasonably believes that the information required from the District set forth in Exhibit A, such as the information IIPFAs and the District's quarterly Status Reports must contain, will enable the Authority to meets its ARRA reporting requirements to FRA.

However, the District agrees to provide any additional information related to this Agreement and its implementation that the Authority needs to satisfy its reporting obligations to FRA under ARRA. The Authority agrees to compensate the District, if the District so requests, for any material additional time the District must spend (beyond the activities the District is required to perform under this Agreement absent the need to collect and report such additional information) to provide such additional information, at the District's staff-time rates the District then is charging similarly-situated third parties for its services (the District must document those rates and the additional time spent).

APPENDIX B: Fleet Tracking and Monthly Reporting Sheet

VERA Equipment - Off Road
1/1/2015 to 4/8/2015
SEE NOTES

Reporting Date	Contractor	Subcontractor	Category	Name	Misc ID	VIN	Model	Doors #	Fuel Type	ARB Equipment Type	Make	Rated Horsepower	Engine Tier	Model Year	Total Hours
1/31/2015	BOB	Subcontractor	Drill Rig	CME 55 300 Crawler			300 Crawler		Diesel	Bore/Drill Rigs	CME 55	110	Tier 3	2007	11.5

Reporting Date: *should be last day of the month of reporting (each row represents one month of data)*
ARB Equipment Type: *see table below, entries should match one of these categories from CARB*
Engine Tier: *should be one of the following: Tier 2, Tier 3, Tier 4 Interim, Tier 4 Phase Out, Tier 4 Alt NOx, Tier 4 Final*

VERA Equipment - On Road
1/1/2015 to 4/8/2015
SEE NOTES

Reporting Date	Contractor	Subcontractor	Category	Name	Misc ID	VIN	Model	Rated Horsepower	ARB Equipment Type	Make	Trip Type	Fuel Type	Model Year	Total Miles
1/31/2015	BOB	Subcontractor	Pick-up	Ford F150		1FTPW14525FA87803	F150	300	On-Road Truck	Ford	Hauling Trips	Gasoline	2005	270

Reporting Date: *should be last day of the month of reporting (each row represents one month of data)*
Trip Type *: should be one of the following: Employee Trips, Hauling Trips*
Fuel Type*: should be one of the following: Gasoline, Diesel*

APPENDIX C: Waste Management Area Map and Travel Routes

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
Source: CalRecycle (2016), HSRA (2015)
Imagery Source: Bing (Accessed 2016)

February 4, 2016

N

0 8 16
Miles

0 13 26
Kilometers

- Waste Management Areas
- Recycle Facilities
- CP2-3 Alignment
- Proposed Travel Route

Appendix C
Waste Management Area
Map and Travel Routes

CALIFORNIA High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

APPENDIX D: Construction and Demolition Debris Recovery Worksheet

Appendix D

California High Speed Rail Project CP 2-3
Construction and Demolition Debris Recovery Worksheet

SECTION 1

Work Segment (CP 2 or CP 3):	Reporting Period:
Work Being Performed:	
Contractor Name:	Email:
Contractor: Office Phone:	Cell Phone:
Work Being Performed:	
Preparer's Name:	
Preparer's Signature:	
Entered into EMMA by:	Date:

SECTION 2

Instructions for Section 2:

1. Enter the appropriate Diversion Activity Code (shown below) to indicate how the material will be recycled or re-used (column 2).
2. Enter total tons of material, by type, being processed (column 3).
3. Enter tons of material, by type, to be recycled (column 4).
4. Enter tons of material, by type, to be re-used (column 5).
5. Enter tons of material diverted as Mixed Debris. Mixed Debris is recycled material that is taken to a Mixed Debris facility and has not been separated.
6. Enter name of Recycling/Waste Management Facility used.
7. Enter name of Hauler (if different from contractor).
8. Total columns (totals A, B, C, and D).
9. Enter totals into diversion formula.

Note: Do not include hazardous waste in this report.

Diversion Code	Activity
1	Recycling of source-separate materials
2	On-site re-use of concrete or asphalt
3	Recycling of mixed debris at appropriate facility
4	Re-use of salvageable Items (on or off-site)
5	Reuse of dirt or mixed inerts (on or off-site)
6	Other Diversion - describe:

Worksheet

Type of Material	*Diversion Activity Code*	*Total Tons*	*Tons Recycled*	*Tons Re-used*	*Tons Diverted as Mixed Debris*	*Facility Used*	*Transporter*
Asphalt							
Concrete							
Bricks, Finished Stone							
Wallboard, Gypsum sheetrock							
Dimensional Lumber							
Fencing							
Wood scraps, landscape debris							
Scrap Metal							
Asphalt Shingles							
Paper							
Fixtures, hardware, doors, windows							
Carpet, padding							
Ceiling Tiles							
Mixed C&D Debris							
Soil							
Mixed Inerts							
Other materials (describe):							
		A	B	C	D		
Totals							

Diversion Rate Calculator:

Box B	+	Box C	+	Box D	=		÷	Box A	=		x 100	%	Diversion Rate

APPENDIX E: Example of Waste Facility Report

DRAGADOS/FLATIRON/SUKUT TEAM

12750 CALAVERAS ROAD, SUNOL
10/1/2015 to 10/31/2015

Premier Recycle Company
348 Phelan Avenue
San Jose, CA 95112
Main: **408-297-7910**
Fax: **408-297-7915**

Haul Date	Jobsite	Weight of Total Haul in Tons	Diverted Material (Tons)							Wgt of Landfill Material (Tons)
			Carpet	Metal	Concrete	Plastic	Sheetrock	Cardboard	Wood	
10/2/2015	12750 CALAVERAS ROAD, SUNO	7.25	0.00	0.00	0.73	0.00	0.00	0.00	5.80	0.73
10/2/2015	12750 CALAVERAS ROAD, SUNO	5.53	0.00	0.00	0.00	0.00	0.00	0.00	4.98	0.55
10/5/2015	12750 CALAVERAS ROAD, SUNO	3.57	0.00	0.00	0.00	0.00	0.00	0.00	3.21	0.36
10/12/2015	12750 CALAVERAS ROAD, SUNO	8.11	0.00	0.00	0.00	0.00	0.00	0.00	7.30	0.81
10/12/2015	12750 CALAVERAS ROAD, SUNO	2.46	0.00	0.00	0.00	0.00	0.00	0.00	2.21	0.25
10/12/2015	12750 CALAVERAS ROAD, SUNO	2.59	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.26
10/16/2015	12750 CALAVERAS ROAD, SUNO	7.40	0.00	0.00	0.00	0.00	0.00	0.00	5.92	1.48
10/16/2015	12750 CALAVERAS ROAD, SUNO	1.94	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.19
10/26/2015	12750 CALAVERAS ROAD, SUNO	5.53	0.00	0.00	0.00	0.00	0.00	0.00	4.42	1.11
10/26/2015	12750 CALAVERAS ROAD, SUNO	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90
10/30/2015	12750 CALAVERAS ROAD, SUNO	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.71	2.83
10/30/2015	12750 CALAVERAS ROAD, SUNO	4.08	0.00	0.00	0.00	0.00	0.00	0.00	3.67	0.41
Totals:		**53.79**	**0.00**	**0.00**	**0.73**	**0.00**	**0.00**	**0.00**	**43.20**	**9.87**

*Note: Wood category can consist of but is not limited to, wood shingles, wood paneling, greenwaste, scrap wood. Concrete category can consist of but is not limited to, clean concrete, dirt, tile, glass.

DRAGADOS/FLATIRON/SUKUT TEAM

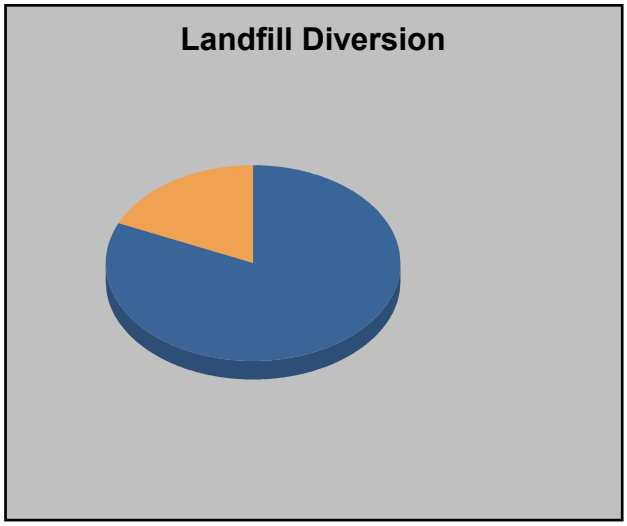
12750 CALAVERAS ROAD, SUNOL
10/1/2015 to 10/31/2015

Premier Recycle Company
348 Phelan Avenue
San Jose, CA 95112
Main: **408-297-7910**
Fax: **408-297-7915**

Jobsite Summary

12750 CALAVERAS ROAD, SUNOL

Total Hauled from Jobsite (Tons):	53.79
Diverted from Landfill (Tons):	43.92
Weight of Landfill Material (Tons):	9.87
Landfill Diversion%:	81.66



Weight of Landfill Material:	18.34	%
Diverted from Landfill:	81.66	%

*Note: Wood category can consist of but is not limited to, wood shingles, wood paneling, greenwaste, scrap wood. Concrete category can consist of but is not limited to, clean concrete, dirt, tile, glass.

APPENDIX F: Water Usage Tracking Log

Water Use Tracking Log
High Speed Rail CP 2 and CP 3

Reporting Date	Facility	Reporting Date	Reporting Period Start	Reporting Period End	Water Usage	Utility/Provider	Water Source

Water Use Tracking Log
High Speed Rail CP 2 and CP 3

Reporting Date	Contractor	Vehicle ID	VIN	Tank Capacity (gallons)	# of times filled	Water Usage (calculated)	Utility/Provider	Water Source
1/2/2016	Bob			500	1	500		Other Non-Potable Water
						0		
						0		
						0		
						0		
						0		
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						0		

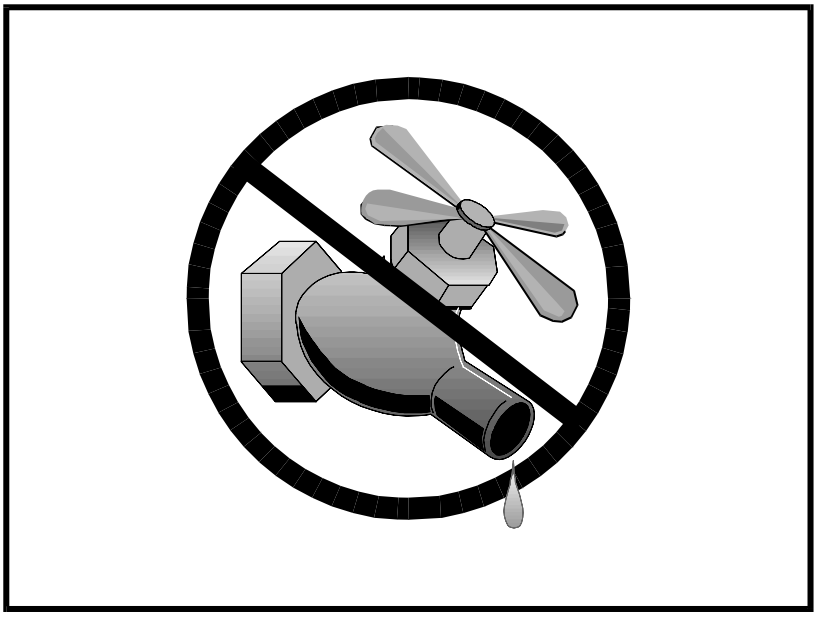
APPENDIX G: Energy Use Tracking Log

Energy Use Tracking Log
High Speed Rail CP 2 and CP 3

Reporting Date	Facility	Reporting Date	Reporting Period Start	Reporting Period End	Electricity Usage	Utility/Provider	Renewable % (as reported by Utility)

APPENDIX H: Water Quality Best Management Practices

Water Conservation Practices NS-1



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

- Direct construction water runoff to areas where it can soak into the ground or be collected and reused.
- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.
- Lock water tank valves to prevent unauthorized use.

Costs

The cost is small to none compared to the benefits of conserving water.

Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.
- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.
- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Outdoor Storage of Raw Materials SC-33

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

Raw materials, by-products, finished products, containers, and material storage areas exposed to rain and/or runoff can pollute stormwater. Stormwater can become contaminated when materials wash off or dissolve into water or are added to runoff by spills and leaks. Improper storage of these materials can result in accidental spills and the release of materials. To prevent or reduce the discharge of pollutants to stormwater from material delivery and storage, pollution prevention and source control measures, such as minimizing the storage of hazardous materials on-site, enclosing or covering materials, storing materials in a designated area, installing secondary containment, conducting regular inspections, preventing stormwater runon and runoff, and training employees and subcontractors must be implemented.

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	
Bacteria	
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Approach

Pollution Prevention

- Employee education is paramount for successful BMP implementation.
- Minimize inventory of raw materials.
- Keep an accurate, up-to-date inventory of the materials delivered and stored on-site.
- Try to keep chemicals in their original containers, and keep them well labeled.

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Suggested Protocols

General

- Store all materials inside. If this is not feasible, then all outside storage areas should be covered with a roof, and bermed, or enclosed to prevent stormwater contact. At the very minimum, a temporary waterproof covering made of polyethylene, polypropylene or hypalon should be used over all materials stored outside.
- Cover and contain the stockpiles of raw materials to prevent stormwater from running into the covered piles. The covers must be in place at all times when work with the stockpiles is not occurring. (applicable to small stockpiles only).
- If the stockpiles are so large that they cannot feasibly be covered and contained, implement erosion control practices at the perimeter of your site and at any catch basins to prevent erosion of the stockpiled material off site,
- Keep liquids in a designated area on a paved impervious surface within a secondary containment.
- Keep outdoor storage containers in good condition.
- Keep storage areas clean and dry.
- Design paved areas to be sloped in a manner that minimizes the pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or groundwater, such as compost, logs, and wood chips. A minimum slope of 1.5 percent is recommended.
- Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, pilferage, or any unauthorized use.
- Cover wood products treated with chromated copper arsenate, ammonical copper zinc arsenate, creosote, or pentachlorophenol with tarps or store indoors.

Raw Material Containment

- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items in secondary containers if applicable.
- Prevent the run-on of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the stockpile areas, by placing a curb along the perimeter of the area. The area inside the curb should slope to a drain. Liquids should be drained to the sanitary sewer if allowed. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Tanks should be bermed or surrounded by a secondary containment system.
- Release accumulated stormwater in petroleum storage areas prior to the next storm. At a minimum, water should pass through an oil/water separator and, if allowed, discharged to a sanitary sewer.

Inspection

- Conduct regular inspections of storage areas so that leaks and spills are detected as soon as possible.
- Conduct routine inspections and check for external corrosion of material containers. Also check for structural failure, spills and overfills due to operator error, failure of piping system.
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
- Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.

Training

- Employees should be well trained in proper material storage.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- Have employees trained in spill containment and cleanup present during loading/unloading of dangerous waste, liquid chemicals and other potentially hazardous materials.

Other Considerations

- Storage sheds often must meet building and fire code requirements. Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code and the National Electric Code.
- Space limitations may preclude storing some materials indoors.
- Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain. Storage sheds often must meet building and fire code requirements.
- The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.

SC-33 Outdoor Storage of Raw Materials

Requirements

Costs

- Costs will vary depending on the size of the facility and the necessary controls. They should be low except where large areas may have to be covered.

Maintenance

- Accurate and up-to-date inventories should be kept of all stored materials.
- Berms and curbs may require periodic repair and patching.
- Parking lots or other surfaces near bulk materials storage areas should be swept periodically to remove debris blown or washed from storage area.
- Sweep paved storage areas regularly for collection and disposal of loose solid materials, do not hose down the area to a storm drain or conveyance ditch.
- Keep outdoor storage areas in good condition (e.g. repair roofs, floors, etc. to limit releases to runoff).

Supplemental Information

Further Detail of the BMP

Raw Material Containment

Paved areas should be sloped in a manner that minimize the pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or groundwater, such as compost, logs, and wood chips. A minimum slope of 1.5 percent is recommended.

- Curbing should be placed along the perimeter of the area to prevent the runon of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the stockpile areas.
- The storm drainage system should be designed to minimize the use of catch basins in the interior of the area as they tend to rapidly fill with manufacturing material.
- The area should be sloped to drain stormwater to the perimeter where it can be collected or to internal drainage alleyways where material is not stockpiled.
- If the raw material, by-product, or product is a liquid, more information for outside storage of liquids can be found under SC-31, Outdoor Container Storage.

Examples

The "doghouse" design has been used to store small liquid containers. The roof and flooring design prevent contact with direct rain or runoff. The doghouse has two solid structural walls and two canvas covered walls. The flooring is wire mesh about secondary containment. The unit has been used successively at Lockheed Missile and Space Company in Sunnyvale.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To-Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Waste Handling & Disposal SC-34

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing runon and runoff.

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Approach

Pollution Prevention

- Reduction in the amount of waste generated can be accomplished using the following source controls such as:
  - Production planning and sequencing
  - Process or equipment modification
  - Raw material substitution or elimination
  - Loss prevention and housekeeping
  - Waste segregation and separation
  - Close loop recycling
- Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- Recycle materials whenever possible.

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Suggested Protocols

General

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater runon and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Check storage containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.
- Inspect solid waste containers for structural damage or leaks regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Place waste containers under cover if possible.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be

disposed of in solid waste containers (see chemical/ hazardous waste collection section below).

- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.

Good Housekeeping

- Use all of the product before disposing of the container.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g. sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil storm drains on the facility's property with prohibitive message regarding waste disposal.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers protected from vandalism, and in compliance with fire and hazardous waste codes.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Runon/Runoff Prevention

- Prevent stormwater runon from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent the waste materials from directly contacting rain.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropyleneor hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Inspection

- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Check waste management areas for leaking containers or spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

Training

- Train staff pollution prevention measures and proper disposal methods.
- Train employees and contractors proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- Vehicles transporting waste should have spill prevention equipment that can prevent spills during transport. The spill prevention equipment includes:
  - Vehicles equipped with baffles for liquid waste
  - Trucks with sealed gates and spill guards for solid waste

Other Considerations

- Hazardous waste cannot be re-used or recycled; it must be disposed of by a licensed hazardous waste hauler.

Requirements

Costs

- Capital and operation and maintenance costs will vary substantially depending on the size of the facility and the types of waste handled. Costs should be low if there is an inventory program in place.

Maintenance

- None except for maintaining equipment for material tracking program.

Supplemental Information

Further Detail of the BMP

Land Treatment System

- Minimize the runoff of polluted stormwater from land application of municipal waste on-site by:
  - Choosing a site where slopes are under 6%, the soil is permeable, there is a low water table, it is located away from wetlands or marshes, there is a closed drainage system.
  - Avoiding application of waste to the site when it is raining or when the ground is saturated with water.
  - Growing vegetation on land disposal areas to stabilize soils and reduce the volume of surface water runoff from the site.
  - Maintaining adequate barriers between the land application site and the receiving waters. Planted strips are particularly good.
  - Using erosion control techniques such as mulching and matting, filter fences, straw bales, diversion terracing, and sediment basins.
  - Performing routine maintenance to ensure the erosion control or site stabilization measures are working.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Associations (BASMAA). On-line: http://www.basmaa.org

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

CASQA California Stormwater Quality Association

- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

SC-43 Parking/Storage Area Maintenance

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Safer Alternative Products SC-61

Descriptions

Promote the use of less harmful products. Alternatives exist for most product classes including chemical fertilizers, pesticides, cleaning solutions, janitorial chemicals, automotive and paint products, and consumables (batteries, fluorescent lamps).

Approach

Develop a comprehensive program based on:

- The "Precautionary Principle," which is an alternative to the "Risk Assessment" model that says it's acceptable to use a potentially harmful product until physical evidence of its harmful effects are established and deemed too costly from an environmental or public health perspective. For instance, a risk assessment approach might say it's acceptable to use a pesticide until there is direct proof of an environmental impact. The Precautionary Principle approach is used to evaluate whether a given product is safe, whether it is really necessary, and whether alternative products would perform just as well.
- Environmentally Preferable Purchasing Program to minimize the purchase of products containing hazardous ingredients used in the facility's custodial services, fleet maintenance, and facility maintenance in favor of using alternate products that pose less risk to employees and to the environment.
- Integrated Pest Management (IPM) or Less-Toxic Pesticide Program, which uses a pest management approach that minimizes the use of toxic chemicals and gets rid of pests by methods that pose a lower risk to employees, the public, and the environment.
- Energy Efficiency Program including no-cost and low-cost energy conservation and efficiency actions that can reduce both energy consumption and electricity bills, along with long-term energy efficiency investments.

Consider the following mechanisms for developing and implementing a comprehensive program:

- Policies
- Procedures
  - Standard operating procedures (SOPs)
  - Purchasing guidelines and procedures

Objectives

- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑
Oxygen Demanding	

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- Bid packages (services and supplies)

- Materials
  - Preferred or approved product and supplier lists
  - Product and supplier evaluation criteria
  - Training sessions and manuals
  - Fact sheets for employees

Training

- Employees who handle potentially harmful materials in the use of safer alternatives.
- Purchasing departments should be encouraged to procure less hazardous materials and products that contain little or no harmful substances or TMDL pollutants.

Regulations

This BMP has no regulatory requirements. Existing regulations already encourage facilities to reduce the use of hazardous materials through incentives such as reduced:

- Specialized equipment storage and handling requirements,
- Stormwater runoff sampling requirements,
- Training and licensing requirements, and
- Record keeping and reporting requirements.

Equipment

- There are no major equipment requirements to this BMP.

Limitations

- Alternative products may not be available, suitable, or effective in every case.

Requirements

Costs

- The primary cost is for staff time to: 1) develop new policies and procedures and 2) educate purchasing departments and employees who handle potentially harmful materials about the availability, procurement, and use of safer alternatives.
- Some alternative products may be slightly more expensive than conventional products.

Supplemental Information

Employees and contractors / service providers can both be educated about safer alternatives by using information developed by a number of organizations including the references and resources listed below.

The following discussion provides some general information on safer alternatives. More specific information on particular hazardous materials and the available alternatives may be found in the references and resources listed below.

- Automotive products – Less toxic alternatives are not available for many automotive products, especially engine fluids. But there are alternatives to grease lubricants, car polishes, degreasers, and windshield washer solution. Rerefined motor oil is also available.
- Vehicle/Trailer lubrication – Fifth wheel bearings on trucks require routine lubrication. Adhesive lubricants are available to replace typical chassis grease.
- Cleaners – Vegetables-based or citrus-based soaps are available to replace petroleum-based soaps/detergents.
- Paint products – Water-based paints, wood preservatives, stains, and finishes are available.
- Pesticides – Specific alternative products or methods exist to control most insects, fungi, and weeds.
- Chemical Fertilizers – Compost and soil amendments are natural alternatives.
- Consumables – Manufacturers have either reduced or are in the process of reducing the amount of heavy metals in consumables such as batteries and fluorescent lamps. All fluorescent lamps contain mercury, however low-mercury containing lamps are now available from most hardware and lighting stores. Fluorescent lamps are also more energy efficient than the average incandescent lamp.
- Janitorial chemicals – Even biodegradable soap can harm fish and wildlife before it biodegrades. Biodegradable does not mean non-toxic. Safer products and procedures are available for floor stripping and cleaning, as well as carpet, glass, metal, and restroom cleaning and disinfecting.

Examples

There are a number of business and trade associations, and communities with effective programs. Some of the more prominent are listed below in the references and resources section.

References and Resources

Note: Many of these references provide alternative products for materials that typically are used inside and disposed to the sanitary sewer as well as alternatives to products that usually end up in the storm drain.

General Sustainable Practices and Pollution Prevention Including Pollutant-Specific Information

California Department of Toxic Substances Control (www.dtsc.ca.gov)

California Integrated Waste Management Board (www.ciwmb.ca.gov)

City of Santa Monica (www.santa-monica.org/environment)

City of Palo Alto (www.city.palo-alto.ca.us/cleanbay)

City and County of San Francisco, Department of the Environment (www.ci.sf.ca.us/sfenvironment)

Earth 911 (www.earth911.org/master.asp)

Environmental Finance Center Region IX (www.greenstart.org/efc9)

Flex Your Power (www.flexyourpower.ca.gov)

GreenBiz.com (www.greenbiz.com)

Green Business Program (www.abag.org/bayarea/enviro/gbus/gb.html)

Pacific Industrial and Business Association (www.piba.org)

Sacramento Clean Water Business Partners (www.sacstormwater.org)

USEPA BMP fact sheet – Alternative products (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/poll_2.cfm)

USEPA Region IX Pollution Prevention Program (www.epa.gov/region09/p2)

Western Regional Pollution Prevention Network (www.westp2net.org)

Metals (mercury, copper)

National Electrical Manufacturers Association - Environment, Health and Safety (www.nema.org)

Sustainable Conservation (www.suscon.org)

- Auto Recycling Project
- Brake Pad Partnership

Pesticides and Chemical Fertilizers

Bio-Integral Resource Center (www.birc.org)

California Department of Pesticide Regulation (www.cdpr.ca.gov)

University of California Statewide IPM Program (www.ipm.ucdavis.edu/default.html)

Dioxins

Bay Area Dioxins Project (http://dioxin.abag.ca.gov/)

Waste Handling and Disposal SC-75

Objectives

- Cover
- Contain
- Educate
- Reduce/Reuse

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

It is important to control litter to eliminate trash and other materials in stormwater runoff. Waste reduction is a major component of waste management and should be encouraged through training and public outreach. Management of waste once it is collected may involve reuse, recycling, or proper disposal.

Approach

Pollution Prevention

- Reuse products when possible.
- Encourage recycling programs with recycling bins, used oil collection, etc.

Suggested Protocols

Solid Waste Collection

- Implement procedures, where applicable, to collect, transport, and dispose of solid waste at appropriate disposal facilities in accordance with applicable federal, state, and local laws and regulations.
- Include properly designed trash storage areas. If feasible provide cover over trash storage areas.
- Regularly inspect solid waste containers for structural damage. Repair or replace damaged containers as necessary.

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- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.
- Refer to SC-34 Waste Handling and Disposal for more information regarding solid waste facilities.

Waste Reduction and Recycling

- Recycle wastes whenever possible. Many types of waste can be recycled, recycling options for each waste type are limited. All gasoline, antifreeze, waste oil, and lead-acid batteries can be recycled. Latex and oil-based paint can be reused, as well as recycled. Materials that cannot be reused or recycled should either be incinerated or disposed of at a properly permitted landfill.
- Recycling is always preferable to disposal of unwanted materials.
- Recycling bins for glass, metal, newspaper, plastic bottles and other recyclable household solid wastes should be provided at public facilities and/or for residential curbside collection.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Clean out and cover litter receptacles frequently to prevent spillage.

Illegal Dumping

Substances illegally dumped on streets and into the storm drain system and creeks include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clipping, and pet wastes.

- Post "No Dumping" signs with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Landscaping and beautification efforts of hot spots might also discourage future dumping.
- See SC-74 Drainage System Maintenance, and SC-10 Non-Stormwater Discharges.

Requirements

Costs

- The costs for a solid waste source control program vary depending on the type of method. The cost of a community education program or a plan to increase the number of trash receptacles can be very minimal. Costs for structural controls such as trash racks, bar screens, and silt traps can be quite costly ranging from $250,000 to $900,000.

- A collection facility or curbside collection for used oil may result in significant costs. Commercial locations (automobile service stations, quick oil change centers, etc.) as collection points eliminate hauling and recycling costs.

- Collection and disposal of hazardous waste can be very expensive and requires trained operators; laboratory and detection equipment; and extensive record keeping including dates, types, and quantities.

- Use of volunteer work forces can lower storm drain stenciling program costs. Stenciling kits require procurement of durable/disposable items. The stenciling program can aid in the cataloging of the storm drain system. One municipality from the state of Washington has estimated that stenciling kits cost approximately $50 each. Stencils may cost about $8 each including the die cost on an order of 1,000. Re-orders cost about $1/stencil. Stencil designs may be available from other communities. Stencil kits should be provided on a loan basis to volunteer groups free of charge with the understanding that kit remnants are to be returned.

Maintenance

- The primary staff demand for stenciling programs is for program setup to provide marketing and training. Ongoing/follow-up staff time is minimal because of volunteer services.

- Staffing requirements are minimal for oil recycling programs if collection/recycling is contracted out to a used oil hauler/recycler or required at commercial locations.

- Staff requirements for maintaining good housekeeping BMPs at waste handling sites is minimal.

Supplemental Information

Further Detail of the BMP

Waste Reduction

An approach to reduce stormwater pollution from waste handling and disposal is to assess activities and reduce waste generation. The assessment is designed to find situations where waste can be eliminated or reduced and emissions and environmental damage can be minimized. The assessment involves collecting process specific information, setting pollution prevention targets, and developing, screening and selecting waste reduction options for further study. Starting a waste reduction program is economically beneficial because of reduced raw material purchases and lower waste disposal fees.

References and Resources

Best Management Practices Program for Pollution Prevention, City and County of San Francisco, Uribe & Associates, Oakland, California, 1990.

Harvard University. 2002. Solid Waste Container Best Management Practices – Fact Sheet On-Line Resources – Environmental Health and Safety.

Model Urban Runoff Program: A How-To-Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998. (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Vegetated Swale TC-30

Maintenance Concerns, Objectives, and Goals

- Channelization
- Vegetation/Landscape Maintenance
- Vector Control
- Aesthetics
- Hydraulic and Removal Efficacy

General Description

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade. They trap particulate pollutants (suspended solids and trace metals), promote infiltration, and reduce the flow velocity of stormwater runoff. Vegetated swales can serve as part of a stormwater drainage system and can replace curbs, gutters and storm sewer systems. Therefore, swales are best suited for residential, industrial, and commercial areas with low flow and smaller populations.

Targeted Constituents

✓	Sediment	▲
✓	Nutrients	●
✓	Trash	●
✓	Metals	▲
✓	Bacteria	●
✓	Oil and Grease	▲
✓	Organics	▲
✓	Oxygen Demanding	▲

Legend ***(Removal Effectiveness)***

● Low ■ High

▲ Medium

Inspection/Maintenance Considerations

It is important to consider that a thick vegetative cover is needed for vegetated swales to function properly. Usually, swales require little more than normal landscape maintenance activities such as irrigation and mowing to maintain pollutant removal efficiency. Swales can become a nuisance due to mosquito breeding in standing water if obstructions develop (e.g., debris accumulation, invasive vegetation) and/or if proper drainage slopes are not implemented and maintained. The application of fertilizers and pesticides should be minimized.

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Inspection Activities	Suggested Frequency
■ Inspect after seeding and after first major storms for any damages.	Post construction
■ Inspect for signs of erosion, damage to vegetation, channelization of flow, debris and litter, and areas of sediment accumulation. Perform inspections at the beginning and end of the wet season. Additional inspections after periods of heavy runoff are desirable.	Semi-annual
■ Inspect level spreader for clogging, grass along side slopes for erosion and formation of rills or gullies, and sand/soil bed for erosion problems.	Annual
Maintenance Activities	**Suggested Frequency**
■ Mow grass to maintain a height of 3–4 inches, for safety, aesthetic, or other purposes. Litter should always be removed prior to mowing. Clippings should be composted. ■ Irrigate swale during dry season (April through October) or when necessary to maintain the vegetation. ■ Provide weed control, if necessary to control invasive species.	As needed (frequent, seasonally)
■ Remove litter, branches, rocks blockages, and other debris and dispose of properly. ■ Maintain inlet flow spreader (if applicable). ■ Repair any damaged areas within a channel identified during inspections. Erosion rills or gullies should be corrected as needed. Bare areas should be replanted as necessary.	Semi-annual
■ Declog the pea gravel diaphragm, if necessary. ■ Correct erosion problems in the sand/soil bed of dry swales. ■ Plant an alternative grass species if the original grass cover has not been successfully established. Reseed and apply mulch to damaged areas.	Annual (as needed)
■ Remove all accumulated sediment that may obstruct flow through the swale. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 in. at any spot, or covers vegetation, or once it has accumulated to 10% of the original design volume. Replace the grass areas damaged in the process. ■ Rototill or cultivate the surface of the sand/soil bed of dry swales if the swale does not draw down within 48 hours.	As needed (infrequent)

Additional Information

Recent research (Colwell et al., 2000) indicates that grass height and mowing frequency have little impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.