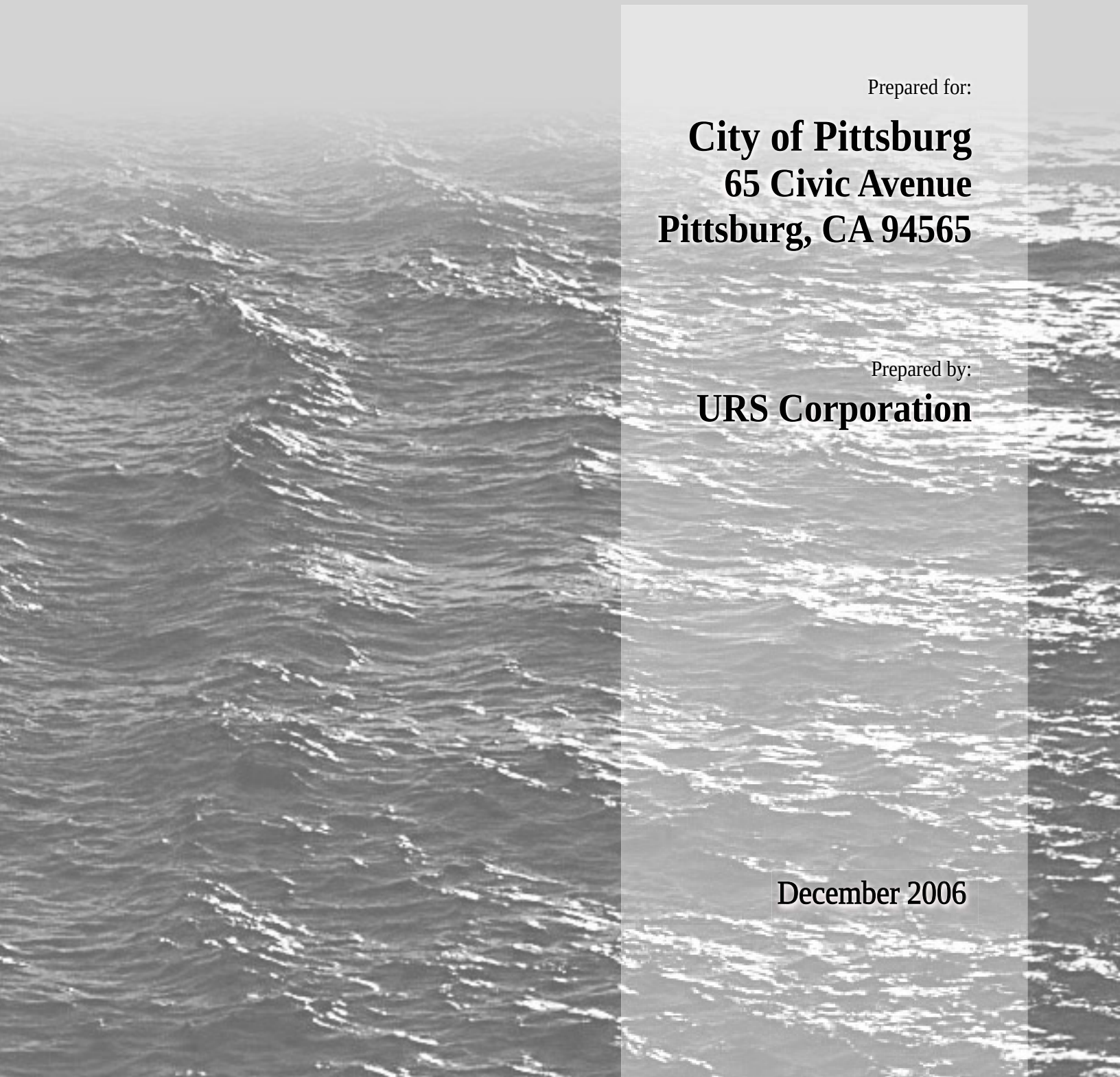
SCH #2004082096

ENVIRONMENTAL IMPACT REPORT ADDENDUM FOR THE PROPOSED TRANS BAY CABLE PROJECT



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1.1 INTRODUCTION AND SUMMARY OF ENVIRONMENTAL REVIEW STATUS

This Environmental Impact Report (EIR) Addendum evaluates the potential environmental impacts associated with several refinements and improvements to the proposed Trans Bay Cable Project (Project). The City of Pittsburg, California is the lead agency for compliance with the California Environmental Quality Act (CEQA).

The Final EIR was issued on October 16, 2006. The Final EIR was certified by the Pittsburg City Council on November 6, 2006. The Pittsburg City Council approved a Development Agreement pertaining to the portion of the Project in Pittsburg, and the Pittsburg Power Company Board of Directors approved two agreements related to the ultimate ownership and operation of the Project. The Pittsburg City Council also adopted the CEQA Findings and the Mitigation Monitoring and Reporting Program (MMRP) and approved an Amendment to the zoning overlay for a group of parcels on West Tenth Street in Pittsburg; the Amendment to the zoning overlay is necessary to allow the proposed Project facility in Pittsburg on the aforementioned parcels.

As discussed in the Draft and Final EIRs for the Project, the proposed Project is a 400 megawatt (MW) high voltage direct current (HVDC) transmission line consisting of installation of an approximately 53-mile-long HVDC cable system in San Francisco Bay and adjoining waterways, from a terminus in the City of Pittsburg in Contra Costa County to a terminus in the City of San Francisco in the vicinity of Potrero Point (refer to Figure 1-1). The Project is proposed to transmit electrical power from a converter station in Pittsburg to a converter station in San Francisco, providing a dedicated connection between the East Bay and San Francisco. This electrical power delivered to San Francisco would help meet the City of San Francisco's electrical demand projected for 2012 and beyond. The Project is designed to be a cost-effective, energy-efficient solution addressing San Francisco's need for additional transmission capacity, while improving transmission reliability and load-serving capability. The HVDC transmission line would provide San Francisco with a highly reliable, secure source of the electricity needed to service the load in San Francisco.

In summary, this EIR Addendum evaluates the potential environmental impacts of the following Project refinements and/or improvements:

- Adoption of Siemens Power Transmission & Distribution, Inc. (Siemens) "HVDC PLUS" technology for the converter stations to be constructed in San Francisco and Pittsburg
- Refinement of Prysmian's HVDC submarine cable design to accommodate the HVDC PLUS technology/design

The adoption of the HVDC PLUS technology into the Project design allows the proposed converter stations in San Francisco and Pittsburg to be smaller in size (site area and height substantially reduced – refer to Section 2.0 of this EIR Addendum for details).

Subsequent to preparation and certification of the Final EIR, it was determined by the Applicant (Trans Bay Cable LLC) that necessary land/property purchase agreements were unlikely to be successfully negotiated with the landowner for the western portion of the West Tenth Street Alternative 1 converter station site in Pittsburg. With the adoption of the HVDC PLUS converter station technology/design for the proposed Project, the proposed converter station in Pittsburg is now located on the eastern portion of the West Tenth Street Alternative 1 site as evaluated in the Draft and Final EIRs, and extending approximately 50 feet toward the south of that site.

The proposed Project refinements evaluated in this Addendum would reduce potential Project-related impacts (e.g., visual, noise, construction traffic, earthwork requirements, etc.) as presented in the Final EIR, and the proposed Project would not result in any unavoidable significant impacts.

The City of Pittsburg as CEQA Lead Agency has determined that an Addendum to the previously certified EIR is required pursuant to Section 15164 of the CEQA Guidelines in order to address the proposed Project refinements and improvements. The analysis in this EIR Addendum describes the proposed Project refinements (refer to Section 2.0) and focuses on those aspects of the Project refinements and modifications that have the potential to result in a significant impact. As applicable, the impact assessments presented in Section 3.0 of this Addendum identify any changes to the impact findings and/or mitigation measure requirements relative to findings in the certified Final EIR. In each case, the impact findings are unchanged, and in several cases, the previously-identified impacts are reduced in scope.

1.2 SUMMARY OF PROJECT REFINEMENTS AND IMPROVEMENTS

1.2.1 Overview

The general location of the proposed Project, including the converter stations in San Francisco and Pittsburg and the submarine HVDC cable route, is shown on Figure 1-1.

Two primary refinements to the proposed Project design are evaluated in this EIR Addendum relative to the description of the proposed Project presented in the Final EIR as issued on October 10, 2006 and certified by the Pittsburg City Council on November 6, 2006. These refinements are:

- Adoption of Siemens HVDC PLUS technology for the converter stations in San Francisco and Pittsburg (note: this proven technology only recently became commercially available via Siemens, after certification of the Final EIR)
- Refinement of Prysmian's submarine cable design to accommodate the HVDC PLUS technology/design

While Siemens has utilized HVDC Plus in a number of applications over the past several years, the technology has only recently become commercially available for possible inclusion in a project like Trans Bay Cable. After certification of the Final EIR, Trans Bay Cable LLC and Siemens representatives met extensively in Germany. At the conclusion of those meetings and extensive technical review, the Applicant determined that the HVDC PLUS converter station technology was commercially available and appropriate for the Project. Due to the now-current commercial availability and substantial environmental and economic advantages as compared with HVDC conventional design technology, the Applicant has determined that the Siemens HVDC PLUS design should be incorporated into the Project.

Siemens "HVDC PLUS" technology essentially involves the use of modular semiconductor and capacitor units to convert electricity between AC and DC, instead of the previous thyristor-based system. The adoption of this technology has the following advantages compared to the HVDC design evaluated in the Draft and Final EIRs for the proposed Project:

- Smaller footprint (i.e., approximately 3 to 4 acres needed for the converter station facilities versus the 5 to 6 acres needed for the conventional design evaluated in the Draft and Final EIRs; i.e., the required space is reduced by about 25 percent). In addition, less converter station equipment is located near the fenceline of the facility under the HVDC PLUS design.
- The Converter Building is only 35 feet tall versus the 64-foot-tall structures associated with the HVDC conventional design.
- The HVDC PLUS design evaluated in this EIR Addendum involves lightning arrestor poles that are 65 feet tall versus the 80-foot-tall poles that are associated with the conventional design evaluated in the Draft and Final EIRs; in addition, the number of poles required for the HVDC PLUS design is approximately one third of that required for the HVDC conventional design.
- The HVDC PLUS design avoids the need for the outdoor AC filters (noise source), static var compensators, and switched capacitor gear associated with the conventional design.
- The HVDC PLUS design involves smaller transformers (60 tons of oil) versus the HVDC conventional design (80 tons of oil).

- The HVDC PLUS design presented in this EIR Addendum avoids the need for an emergency generator with associated air emissions due to required periodic testing at each converter station.
- The HVDC PLUS design requires less materials, equipment deliveries, and earthwork and excavation to construct (estimated reduction of approximately 20 to 25 percent) relative to the conventional design evaluated in the Draft and Final EIRs.
- The HVDC PLUS design allows for reduced audible noise, reduced electric and magnetic fields below already low levels, and reduced mass of structures (i.e., reduced visual impacts) relative to the HVDC conventional design. The HVDC PLUS design has improved technical performance and is more reliable and compatible with respect to the interconnection with the AC grid (at PG&E's Potrero Substation) since it is less dependent on system voltage and frequency and it can generate or absorb reactive power.

1.2.2 San Francisco HWC (Mitigated) Site

As discussed in Section 1.1 of this EIR Addendum, the proposed converter station in San Francisco is located at the HWC (Mitigated) site as evaluated in the Draft (Section 4.0) and Final (Section 4.A) EIRs. The HVDC PLUS technology/converter station design allows the converter station at the San Francisco HWC (Mitigated) site to have a smaller footprint than the conventional design evaluated in the Draft and Final EIRs. The HWC (Mitigated) HVDC PLUS converter station site evaluated in this EIR Addendum is a subset of the San Francisco HWC (Mitigated) Converter Station site evaluated in the Final EIR. The HVDC PLUS technology/converter station design and layout also allows the converter station at the San Francisco HWC (Mitigated) site to have less equipment, be substantially lower in height, have a smaller footprint (thereby allowing for a 90-foot-wide buffer between the converter station fence line and the east side of Illinois Street), and to produce less noise (refer to Section 3.11 for more information).

1.2.3 Pittsburg West Tenth Street Site

The smaller HVDC PLUS converter station footprint allows the Pittsburg West Tenth Street Alternative 1 converter station evaluated in the Draft and Final EIRs to be shifted onto the eastern portion of the previously evaluated converter station site. The western portion of the previously evaluated Pittsburg West Tenth Street Alternative 1 site is no longer needed for the proposed Project, with the exception of a temporary construction access road. This change also allows the approximate 255-foot buffer between the screening/security wall located along the southern converter station boundary line and the north side of West Tenth Street to be potentially landscaped following construction to help visually screen the facility. Final determinations regarding the future land use of this buffer area have not been made at this time. Any landscaping of the buffer area would be subject to City of Pittsburg design

review approval. The converter station operational access road would be constructed along the western boundary of the buffer area. This buffer area was previously the southern part of the Pittsburg West Tenth Street Alternative 2 site.

1.2.4 Submarine Cable

Prysmian's refinement of the submarine HVDC cable design involves the use of two, 200 kV cables and a fiber optic cable bundled system versus the previously evaluated one 400 kV cable, one 12 kV return/ground cable, and a fiber optic cable bundled system. The overall diameter (approximately 10 inches) of the refined submarine cable bundle, the installation method (i.e., cable lay vessels and hydroplow), and operational characteristics are the same as that evaluated for the previous design in the Draft and Final EIRs. No unavoidable adverse significant environmental impacts have been identified for the refined cable design (or the cable design evaluated in the Draft and Final EIRs) related to construction or operation.

1.3 SUMMARY OF POTENTIALLY SIGNIFICANT IMPACT FINDINGS

The impact findings for the refined proposed Project utilizing the HVDC PLUS technology/converter station and submarine cable designs, including a listing of identified potentially significant impacts, proposed mitigation measures, and residual impact findings are as presented by resource topic in Table 1-1 of the Final EIR. Table 1-1 of the Final EIR is presented in this EIR Addendum with an additional column to document the changes to the impact significance findings and/or mitigation measures between the HVDC PLUS Project evaluated in this EIR Addendum relative to the proposed Project (HVDC conventional design) evaluated in the Draft and Final EIRs. The table presents the summary findings for the proposed Project in the following order: 1) San Francisco HWC (Mitigated) Converter Station site (as modified); 2) Pittsburg West Tenth Street Alternative 1 Converter Station site (as modified); and 3) Offshore Cable Route. Refer to Section 3.0 of this EIR Addendum for more information regarding the impact findings for the proposed Project utilizing the HVDC PLUS design.

While many impacts associated with implementation of the proposed Project are considered to be potentially significant, with implementation of the proposed mitigation measures no impacts would remain significant. The refinements and improvements that have been made to the proposed Project (i.e., utilization of the HVDC PLUS design) further reduce the impacts of the Project as presented in the Final EIR and present no new potentially significant impacts.

The resource topics addressed in this EIR Addendum and a summary of residual impact findings for the proposed Project follow.

Issue/Resource Topic	Resulting Level of Significance With Implementation of Mitigation[1]
Air Quality	Less than Significant
Geologic Resources and Soils	Less than Significant
Water Resources and Quality	Less than Significant
Terrestrial Biological Resources	Less than Significant
Marine Biological Resources	Less than Significant
Cultural Resources	Less than Significant
Land Use and Recreation	Less than Significant
Marine Transportation and Commercial Fishing	Less than Significant
Traffic and Transportation	Less than Significant
Noise and Vibration	Less than Significant
Public Services and Utilities	Less than Significant
Visual Resources/Aesthetics	Less than Significant
Hazardous Materials and Waste Management	Less than Significant
Paleontological Resources	Less than Significant

[1] Assessments of the relative differences in impacts (by resource topic) between the HVDC PLUS design and sites evaluated in this EIR Addendum and that HVDC conventional design and sites evaluated in the Draft and Final EIRs are presented in Table 1-1 and Section 3.0 of this Addendum.

TABLE 1-1[1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
AIR-1: Fugitive Dust Emissions. The Project proposes to use fugitive dust suppression with water and other methods to control construction-related emissions. The use of chemical additives is not planned. Controlled worst-case fugitive dust is estimated to be 29 pounds per day; 0.32 tons per month; and 2.6 tons over the 27- to 30-month construction period for the San Francisco site. Without fugitive dust control measures the impact is considered potentially significant.	AIR-1: Fugitive Dust Controls. Best achievable control measures (BACM) shall be utilized during construction phases of the Project. Fugitive dust control measures are stipulated by BAAQMD Regulation 6 (BAAQMD, 1999) and shall include all of the following as applicable to the Project site: • Water all active construction areas at least twice daily • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) • Enclose, cover, water twice daily or apply (non-toxic) soil	Less than significant	None; fugitive dust emissions would be reduced for the HVDC PLUS design due to the smaller converter station footprint and reduced earthwork requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	binders to exposed stockpiles (dirt, sand, etc.) • Install sandbags or other erosion control measures to prevent silt runoff to public roadways • No vehicle shall exceed 10 miles per hour speed limit within the construction site • The construction site entrance shall be posted with visible speed limit signs • All construction vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering public roadways • Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station • All unpaved exits from the construction site shall be graveled to prevent track out to public roadways • All construction vehicles shall enter the construction site through the graveled roadways, unless an alternative route has been submitted to and approved for use by the City • At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways		
AIR-2: Equipment Exhaust Emissions. See Table 4.2-10 of the Draft EIR for emissions estimates for the San Francisco Converter Station site. The impact of these emissions would be considered to be potentially significant.	AIR-2: Exhaust Controls. The following controls pertaining to equipment emissions (BAAQMD, 1999) shall be implemented during construction to reduce emissions from construction equipment exhaust: • Use alternative fueled construction equipment, as practical. • Minimize idling time. • Maintain properly tuned equipment. • Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use. • All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur. • All diesel-fueled engines used in the construction of the facility shall have clearly visible tags showing that the engine meets the conditions set forth herein.	Less than significant	None; equipment exhaust emissions would be reduced for the HVDC PLUS converter station design due to the reduced construction requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	• All construction diesel engines, which have a rating of 100 horsepower (hp) or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-road Compression-ignition Engines as specified in California Code of Regulations, Title 13, section 2423(b)(1). In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" if, among other reasons: ▪ There is no available soot filter that has been certified by either the California Air Resources Board or U.S. Environmental Protection Agency for the engine in question. ▪ The construction equipment is intended to be on-site for ten (10) days or less. ▪ The City may grant relief from this requirement if the		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	construction contractor can demonstrate that they have made a good faith effort to comply with this requirement and that compliance is not possible. • The use of a soot filter may be terminated immediately if one of the following conditions exists, provided that the City is informed within ten (10) working days of the termination: ▪ The use of the soot filter is excessively reducing normal availability of the construction equipment due to increased time for maintenance, and/or reduced power output due to an excessive increase in backpressure. ▪ The soot filter is causing or is reasonably expected to cause significant engine damage. ▪ The soot filter is causing or is reasonably expected to cause a significant risk to workers or the public. ▪ Any other seriously detrimental cause which has the approval of the City prior to the termination being implemented. • All heavy earthmoving equipment and heavy duty construction related trucks with engines meeting the requirements of (c) above shall be properly maintained and		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	the engines tuned to the engine manufacturer's specifications. • All diesel heavy construction equipment shall not remain running idle for more than five minutes, to the extent practical.		
GEO-1: Soil Erosion and Compaction. Construction activities would lead to soil compaction and could lead to soil erosion. This impact is considered to be potentially significant.	GEO-1: Design Project for Erosion Control. Standard Best Management Practices (BMPs) shall be incorporated into the Storm Water Pollution Prevention Plans (SWPPPs) for construction and operation, and shall minimize onsite soil erosion and offsite sedimentation. Temporary erosion control measures shall be required during the construction period to help maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation.	Less than significant	None
GEO-2: Asbestos-containing Serpentine. The San Francisco site is potentially underlain with asbestos-containing soils and rocks. Asbestos could be released during construction phases at the San Francisco sites. Asbestos is a human health hazard when airborne. This is considered a potentially significant impact.	GEO-2: Controls for Excavation of Serpentine. Prior to Project construction, previously-prepared geotechnical reports and boring and trenching logs from the site would be reviewed to identify areas of serpentinite bedrock that would be disturbed during excavation and Project construction. An Asbestos Dust Mitigation Plan would be submitted to the Bay Area Air Quality Management District (BAAQMD) for approval in accordance with the *Final Regulation Order Asbestos Airborne Toxic Control Measure for*	Less than significant	None; this impact would be equal to or less than the HVDC Conventional design due to the reduced excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	Construction, Grading, Quarrying, and Surface Mining Operations.		
GEO-3: Strong Ground Shaking. There is a high risk of strong ground shaking in the event of a large earthquake in the area. This impact is considered potentially significant.	GEO-3: Design to Seismic Design Requirements. Due to the site's proximity to earthquake faults and the characteristics of the soil profile, a site-specific study shall be conducted to develop seismic design criteria. Project facilities shall be designed and constructed at a minimum to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 4. Additionally, to satisfy the provisions of the 2001 California Building Code, these facilities shall be designed to withstand ground motions equating to approximately a 500-year return period (10 percent probability of exceedance in 50 years). For design purposes, site-specific ground motions shall be calculated for all project sites.	Less than significant	None; the HVDC PLUS design is less susceptible to damage from seismic shaking due to the simpler, more compact design.
GEO-4: Liquefaction. There is a potential for liquefaction at the Project site. This impact is considered potentially significant.	GEO-4: Design Project for Liquefiable Deposits. A site-specific program of exploratory borings and accompanying laboratory testing shall be required in order to delineate potentially liquefiable materials beneath the construction area. Geotechnical investigations shall be required for consideration prior to foundation design and development of site-specific design criteria.	Less than significant	None; the potential for liquefaction to damage converter station facilities under the HVDC PLUS design is reduced due to the smaller, lighter transformers.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
GEO-5: Shrink-Swell/Subsidence. The proposed San Francisco HWC (Mitigated) Converter Station site is potentially underlain with expansive soils, which requires specific attention during grading to avoid future heaving and cracking of overlying materials. The potential for damage due to shrink-swell/subsidence to site facilities is potentially significant.	GEO-5: Design Project for Shrink-Swell/Subsistence. A program of site-specific exploratory borings and accompanying laboratory testing shall be required to delineate any potentially expansive materials underneath the proposed Project facility sites and to evaluate the potential for site subsidence and identify and implement appropriate design measures (e.g. pile supports or replacement of undesirable materials) in accordance with applicable codes.	Less than significant	None
WATER-1: Erosion and Contaminated Runoff. Erosion and contaminated runoff during construction and operation could significantly impact water quality within San Francisco Bay. This is considered a potentially significant impact.	WATER-1: Erosion Control and Contaminant Source Control. Apply for and comply with NPDES construction permit, and Industrial Activities General Permit. Requirements for the permits include submittal of a Notice of Intent, development of a Stormwater Pollution Prevention Plan (SWPPP), monitoring and inspections, and submittal of annual compliance reports.	Less than significant	None
WATER-2: Surface Water Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids and disruption of Bay bottom sediment at the sediment surface where the borehole emerges. This is considered a potentially significant impact.	WATER-2: Spill Prevention and Control Plan for HDD. Drilling shall be performed in accordance with a site-specific Spill Prevention and Control (SPCC) Plan for HDD Operations for Drill Fluids and Cuttings. Spill response measures included in this plan, should a spill occur, shall include reducing fluid pressures, thickening the fluid mixture, and/or adding pre-approved loss circulation materials (LCMs) to the mixture.	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
WATER-3: Groundwater Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids that would increase suspended material in groundwater. This would be considered a potentially significant impact.	WATER-3: Use of Pilot Hole and Reaming. HDD shall be performed using a pilot hole plus reaming technique to minimize the potential for impacts to groundwater. To prevent significant water quality impacts, drilling muds shall consist of naturally occurring materials such as water and bentonite clay, plus inert, non-toxic polymers. Both the drilling technique and early detection and response shall be used to minimize release of fluids to the environment. HDD shall start with completion of a small-diameter pilot hole. The pilot hole is gradually enlarged using reaming. This technique acts to prevent sudden loss of large volumes of drilling fluids. Early detection and rapid response shall be implemented to minimize loss of drilling fluids. In the event loss of drilling fluids is detected, natural LCMs such as cotton dust, cottonseed hulls, wood fiber, mica, and cedar fiber shall be added to the drilling fluid. Alternative actions that shall be considered and implemented, as required, include reduction in drilling pressure, thickening of the fluid mixture, and construction of spill control structures, pits, and silt fences onshore, or silt curtains offshore.	Less than significant	None
CUL-1: Disturbance of Archaeological Resources. Buried historical resources may exist on the site and	CUL-1a: Archeological Resource Testing. Due to the potential for buried cultural resources within the Mirant Potrero Power Plant	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
Mirant Potrero Power Plant site. Construction of the AC cable route from the converter station across the power plant property to the PG&E Potrero substation may disturb these resources. This is considered a potentially significant impact.	portion of the Project area, it is recommended that subsurface survey (i.e., testing) of the cable route across the plant utilizing mechanical exploratory borings be initiated prior to construction activities. The subsurface survey should be implemented as a means to determine the presence and extent of buried archaeological resources within the plant area as well as to evaluate the potential significance of any resources encountered. Identified remains would be evaluated against the NRHP/CRHR significance criteria. If the resources are not eligible for the NRHP/CRHR, then no further consideration of these resources would be required. If the resources are eligible for the NRHP/CRHR, additional mitigation measures may be required. The testing program would be documented within a technical report. The report would include the aforementioned resource evaluations, if any, and provide recommendations for the further management of cultural resources. Such recommendations could include data recovery excavations as well as the monitoring of all ground-disturbing activities associated with the project. CUL-1b: Archaeological Resource Data Recovery. Based upon the results of the testing program, it may be necessary that a data recovery excavation be implemented. CEQA stipulates that if		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	avoidance of the important archaeological resource is not feasible, a data recovery excavation may be warranted. When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the resource, shall be prepared and adopted prior to any excavation being undertaken. The development of this plan, as well as the implementation of field work, would be conducted in consultation with the SHPO, and, if the site is of aboriginal association, with the NAHC and local Native American community as well. CUL-1c: Archaeological Resource Construction Monitoring. Following completion of the archaeological testing efforts, it may be determined that construction monitoring is necessary to prevent significant impacts to important cultural resources. In the event monitoring is warranted, a qualified professional archaeologist shall be retained to observe all ground-disturbing activities associated with the Project. If archaeological materials are observed by the monitoring archaeologist, he/she would have the authority to halt all ground-disturbing activities within the vicinity of the exposed materials until the nature and significance of the find could be evaluated and mitigation measures implemented, if needed. The development of mitigation measures		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	would be conducted in consultation with SHPO and, if the site is of aboriginal association, with the NAHC and local Native American community as well.		
TRAFFIC-1: Cumulative Traffic Impacts. Project-related trips to and from the San Francisco Converter Station site would contribute to delays on the regional roadway system, a potentially significant impact.	TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts. Truck shipments on the regional roadway shall be scheduled for non-peak periods when delays are less prevalent, as practical. The construction contractor shall coordinate with Caltrans to identify appropriate routings and times for site deliveries and comply with Caltrans recommendations. This mitigation measure would successfully mitigate the Project's contribution to cumulative impacts occurring on the regional roadway system.	Less than significant	None; the Project's incremental contribution to cumulative traffic impacts would be reduced by an estimated 20-25 % under the HVDC PLUS design due to the smaller facility, which would require less equipment and material deliveries.
TRAFFIC-2: Oversized Loads. Oversized shipments would require a permit from Caltrans that identifies the permitted hours of operation and the size of the truck to transport the shipment on the regional roadway network. If the permit conditions were not followed adequately, this would constitute a potentially significant adverse impact.	TRAFFIC-2: Coordination of Oversized Loads. Coordination with Caltrans and local jurisdictions shall be conducted to ensure proper permitting for oversized loads, which shall be required in advance of construction.	Less than significant	None; oversized load impacts would be reduced under the HVDC PLUS design due to the smaller transformers (60 tons versus 80 tons of oil).
TRAFFIC-3: Temporary Street Closures Affecting Traffic, Bicycle, and Pedestrian Circulation. The	TRAFFIC-3: Signage for Temporary Street Closures. Any needed temporary closure of local streets in San Francisco will be	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
temporary closure of streets for Project-related construction would affect traffic circulation in the study area and may impede the delivery and access to businesses in the area and the use of the Bay Trail and bicycle circulation for short intervals. This impact is considered to be potentially significant.	mitigated by coordinating street closures with the San Francisco Department of Parking and Traffic (DPT) and, if appropriate, erecting signage that reroutes traffic onto neighboring streets. The coordination would account for providing continued access for emergency vehicles in the study area and ensure that the City of San Francisco's Emergency Operations Plan could be activated without impediment. With these mitigation measures, temporary construction impacts on traffic circulation would be mitigated to a less-than-significant level.		
TRAFFIC-4: Impacts on Metro East Light Rail Facility. If truck shipments were destined for the proposed laydown area (Western Pacific site) at the same time MUNI begins using 25th Street to dispatch light rail vehicles to Third Street, they could conflict with the most active light rail dispatch and return hours at the beginning and end of the peak periods. This is considered to be a potentially significant impact.	Mitigation Measure TRAFFIC-4: Reducing Impact on the Movement of MUNI Light Rail Vehicles into and out of the Metro East Maintenance Facility. The Project laydown area located at Pier 94/96 is the preferred laydown area. As indicated in Section 4.10.3.2.1 of the Draft EIR, Construction-related Impacts, truck deliveries to the Pier 94/96 laydown area would not produce significant impacts along Cargo Way and would avoid a potential conflict with the movement of MUNI light rail vehicles along 25th Street. If the Western Pacific site were used as an alternative laydown area, the Construction contractor will coordinate with MUNI, Port of San Francisco, and the Department of Parking and Traffic to minimize delays to MUNI Metro operation and to define times for scheduling of truck deliveries if the truck deliveries were	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	to occur during the peak period.		
PS-1: Construction Fire Hazards. Without appropriate precautions, construction activities requiring the use of flammable and combustible materials could create fire hazards. The potential to increase fire events could affect the level of service by the fire department to the surrounding area. This impact is considered potentially significant.	PS-1: Construction Fire Prevention. A Construction Fire Prevention and Protection Program shall be developed for the Project to be followed throughout all phases of construction. The program will specifically address: • General requirements • Responsibilities • Housekeeping • Employee alarm/communication system • Portable fire extinguishers • Fixed fire-fighting equipment • Fire control • Flammable and combustible liquid storage • Use and handling of flammable and combustible liquids • Dispensing and disposal of flammable and combustible liquids • Servicing and refueling areas • Training	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
PS-2: Existing Onshore Underground Utilities. Without appropriate precautions, installation of proposed underground utility lines could impact existing underground utilities and public service connections. This impact would be considered potentially significant.	PS-2: Utility Survey. Prior to any excavation work a survey shall be conducted to identify locations of subsurface utilities.	Less than significant	None
PS-3: Operations Fire Hazards. Without appropriate precautions, operations requiring the use of flammable and combustible materials could induce fire hazards. The potential to increase fire events could affect the level of service by the fire department to the surrounding area. This impact is considered potentially significant.	PS-3: Operations Fire Prevention. An Operations Fire Prevention and Protection Program shall be developed for the Project to be followed throughout all phases of operation. The program will specifically address: • Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material • Procedures in the event of fire • Fire alarm and protection equipment • System and equipment maintenance • Monthly inspections • Annual inspections • Fire-fighting demonstrations and training • Housekeeping practices	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	• Training		
VIS-1A: Converter Station Domination of View. Since the architectural design character of the building and the general character of proposed landscaping have not been identified in detail, there is the possibility of generating potentially significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from Warm Water Cove Park. While this impact has been classified as less than significant without design controls, it may still be adverse. This adversity can be lessened through the application of Mitigation Measures VIS-1Aa and VIS-1Ab.	VIS-1Aa: Plan Submittal Requirements for Building Materials and Colors. All major Project features, including buildings, structures, fencing, and sign backgrounds (excluding electric switch gear and related wires and cables, etc. which shall be galvanized gray as shown in the simulations) shall be painted with neutral tan or gray colors that will minimize the size and height of the facility, blend with adjacent structures and be compatible with natural landscapes where applicable. A specific painting plan shall be developed for approval by the agency with local jurisdiction to ensure that the proposed colors do not unduly contrast with the surrounding landscape colors. All treatments shall be in non-reflective colors. The painting plan shall be submitted sufficiently early to ensure that any pre-colored buildings, structures and linear facilities shall have colors approved and included in bid specifications for such buildings or structures. VIS-1Ab: Plan Submittal Requirements for Landscaping. A specific landscaping plan shall be prepared showing the location of proposed landscaping, the varieties and sizes of plants to be planted, and the proposed time of maturity for each species. Plants shall be selected from the approved species list prepared	Less than significant	None; this impact would be substantially reduced under the HVDC PLUS design due to smaller footprint (3 to 4 acres versus 5 to 6 acres for HVDC Conventional design), shorter buildings (35 feet versus 65 feet), shorter lightning arrestors (65 feet versus 80 feet) and reduced number, and the addition of the 90-foot-wide landscaped buffer east of Illinois Street.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	by the agencies with jurisdiction.		
VIS-2: Converter Station will Create Substantial Light and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by either residents of Potrero Hill or users of Warm Water Cove Park, which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare. While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.	VIS-2: Plan Submittal Requirements for Lighting. Except as required by security and worker-safety requirements, night lighting shall be hooded to direct illumination downward and inward toward the areas to be illuminated in order to minimize nighttime light and glare, backscatter to the nighttime sky, and visibility of lighting to public viewing areas. A specific lighting plan consistent with operational and safety needs and limiting the general lighting levels to a maximum reasonable level shall be submitted to each agency with jurisdiction for approval. The plan shall include provisions for timed and/or motion detection-controlled switches.	Less than significant	None; this impact would be reduced with the HVDC PLUS design due to the smaller footprint and smaller buildings requiring less lighting.
HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition. Structures on the converter station site contain or potentially contain ACMs and LBP. Improper removal or remediation of these materials could result in a potentially significant environmental impact	HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan. Complete ACM and LBP investigation and characterization on the converter station site to fill data gaps and to support development of worker safety procedures, in accordance with regulatory requirements to protect construction workers and the public. The ACM and LBP Abatement Plans shall be completed in compliance with application regulations based on	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	the historical and newly acquired ACM and LBP data. If ACM and LBP are confirmed to be present in concentrations above regulatory limits, the Project proponent shall use ACM- and LBP-certified removal contractors and trained asbestos and lead-based paint removal workers, conduct dust monitoring, and properly dispose of generated wastes offsite. The Project proponent shall also prepare a site Health and Safety Plan for this work.		
HAZ-2: Soil Removal. Soils removed during construction of the converter station and cable routes could be contaminated. Improper sampling, handling, analyzing, or characterizing of the soils could result in a potentially significant environmental impact. Soils at the site are likely to be contaminated with metals and either TPH or PAHs, depending on location. Portions of a naturally occurring subsurface serpentinite ridge may require excavation. Serpentinite contains naturally occurring asbestos and these soils, if disposed of offsite, would likely require disposal as California hazardous waste.	HAZ-2: Soil Removal Protocols. Previously uncharacterized soils that are stained or odiferous shall be segregated on plastic, sampled, and characterized for onsite use or offsite disposal. The Soil and Groundwater Management plans (SMP, GMP) shall detail storage, transportation, and disposal options for soil and groundwater excavated/extracted during the converter station construction. They would also specify dust monitoring needs for soil excavation and management. Previously characterized hazardous soils shall be loaded onto trucks for offsite disposal. Hazardous soil disposal requires that hazardous waste manifests accompany the waste. Hazardous waste transporters shall be required to haul hazardous soils to a Class I hazardous waste landfill. The personnel handling the hazardous soils are required to have met the OSHA hazardous	Less than significant	None; this impact would potentially be reduced under the HVDC PLUS design due to the smaller footprint and subsurface excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	work operations training requirements. A Health and Safety Plan shall be prepared for this work. Previously characterized non-hazardous soils shall be stockpiled for onsite or offsite reuse or offsite disposal, as needed.		
HAZ-3: Construction-phase Hazardous Materials Use. Hazardous materials would be used during construction activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.	HAZ-3: Reduction of Hazards During Construction Phase. The hazards presented by the use of hazardous materials during the construction phase are well understood, and the appropriate management controls to mitigate potential impacts shall be implemented. These controls include: 1) developing required management plans, e.g., a Spill Prevention, Control, and Countermeasure Plan (see HAZ-5 for more SPCC Plan details); 2) secondary containment; 3) separate storage of incompatible materials; and 4) proper training of personnel. Additionally, construction personnel shall be trained in safety and defensive emergency response procedures. Construction personnel shall also receive hazardous-waste-related training that focuses on recognition of potentially contaminated soil and/or groundwater that may be encountered during subsurface excavations for foundations or pipeline/cable trenches. If such contaminated soil or groundwater is suspected, contingency procedures shall be followed to protect worker safety and public	Less than significant	None; this impact would be reduced under the HVDC PLUS design due to the smaller facility requiring less hazardous materials (e.g., fuel) to construct.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	health. All vehicles and construction equipment shall be inspected to ensure that no fluids are leaking (e.g., oil, hydraulic fluid, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, clearly labeled containers. Hazardous materials that must be disposed of will be disposed of as hazardous waste in accordance with the appropriate regulations for storage, transportation, and disposal of hazardous waste.		
HAZ-4: Construction-phase Waste Streams. Improper storage and disposal of solid waste and hazardous construction wastes could result in a potentially significant environmental impact.	HAZ-4: Management of Construction-phase Waste Streams. The onsite management and offsite disposal procedures of solid wastes (including potentially contaminated soil) shall be in a Solid Waste Management Plan for the Project. Waste shall be stockpiled temporarily before disposal offsite. The local fire department and emergency management team shall be provided a list of the waste material expected to be generated and stored onsite. Hazardous wastes generated during construction shall be collected in hazardous waste accumulation containers near the point of generation and moved daily to the construction contractor's 90-day hazardous waste storage area at the converter station site. The accumulated waste shall be delivered to an	Less than significant	None; this impact would be reduced under the HVDC PLUS design due to the smaller facility, smaller footprint, and reduced excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	authorized waste management facility. The exact volume of hazardous wastes to be generated at the San Francisco Converter Station site cannot be estimated at this time, but the estimated amount of excavated soil that would need to be disposed of offsite is estimated at approximately 15,000 cubic yards for this converter station site. Even if this entire amount of excavated soil would need to be disposed of as hazardous waste, it would not exceed a significant portion of the available hazardous waste landfill capacity in California. The capacity details of various landfills for both non-hazardous and hazardous waste are detailed in Table 4.14-5 of the Draft EIR. The capacity and estimates for daily volumes of waste received were verified, as detailed in the personal communications provided in the references for this section.		
HAZ-5: Construction-phase Accidental Spills. An accidental spill or a release of hazardous materials could occur during construction. This impact is considered potentially significant.	HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasures. The following shall be implemented both to prevent spills from occurring and to minimize impacts in the event that they do occur: • All spills shall be cleaned up quickly and all workers shall be adequately trained to recognize the hazards associated with such spills.	Less than significant	None; the potential for this impact to occur would be reduced under the HVDC PLUS design due to the smaller construction requirements and commensurate reduction

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	• A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the converter station shall be prepared in accordance with federal and state regulations. This plan must be prepared if petroleum products are stored onsite in ASTs with a capacity that equals or exceeds 55 gallons for a single tank or equals or exceeds 1,320 gallons aggregate for more than one tank. The SPCC Plan must be prepared before the delivery of petroleum products to the site. The SPCC Plan shall include information on spill response procedures and fuel storage. • Material Safety Data Sheets (MSDSs) for each chemical used during construction shall be kept onsite. Construction employees shall be informed of the location and content of the MSDSs, as required by OSHA's Hazard Communication Standard, Title 29 of the Code of Federal Regulations (CFR) Section 1910.1200. • In case of an accident, the City and County of San Francisco Fire Department shall be notified as the first responder. All other federal, state, and local notification requirements shall be followed for any release that exceeds the reportable quantity or threatens to have a significant impact.		in hazardous material usage.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	• The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the site and hazardous wastes leaving the site. All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger the issuance of a "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids. The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the site and hazardous wastes leaving the site.		
HAZ-6: Construction-phase Dust and Volatilization of Contaminants. Excavation of contaminated soil and generation of hazardous waste soils could result in construction dust and volatilization of contaminants that pose environmental and human health risks, particularly to construction workers. This impact is considered	HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants. Dust control measures (i.e., keeping the soil wet during excavation) shall be implemented during excavation and construction activities, and dust monitoring shall be performed. Suspected contaminated soil that is stockpiled on the site shall be covered daily with plastic to prevent volatilization of contaminants and to control dust. Contaminated soil may also be loaded directly	Less than significant	None; this impact would potentially be reduced under the HVDC PLUS design due to reduced earthwork and excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
potentially significant.	onto trucks for transport to an appropriate offsite disposal facility. The loaded soils shall be properly covered and manifested as necessary. Dust monitoring shall be performed during excavation and loading of hazardous soils. The accumulated waste will then be delivered to an authorized waste management facility. Dust monitoring shall confirm that the dust control measures are effectively protecting site workers and the public.		
HAZ-7: Contaminated Groundwater. The San Francisco Converter Station site is known to have contaminated groundwater. Groundwater may be encountered during construction and groundwater dewatering. The lead regulatory agency associated with the proposed Project may require control or remediation of the site groundwater for redevelopment of the property. Failure to control the contaminated groundwater flow could result in a potentially significant impact.	HAZ-7: Contaminated Groundwater Control. If groundwater was encountered during construction at the converter station site, the water shall be collected onsite in a tank or tanks, sampled, and analyzed. Based on the analytical data, the water shall be characterized for disposal by one of the following methods: • Used onsite for dust control. • Treated onsite and discharged under the authority of a general National Pollutant Discharge Elimination System (NPDES) permit. Treatment options would include, but are not limited to, filtration or filtration and treatment by granular-activated carbon (GAC). Treatment residuals would be sampled, analyzed, characterized, and disposed of offsite in compliance with applicable regulations. • Disposed of offsite at a commercial water treatment facility in	Less than significant	None; this impact would potentially be reduced due to shallower excavation depth requirements associated with the HVDC PLUS design.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	compliance with applicable regulations. If groundwater was encountered at the HWC (Mitigated) Converter Station site and it was found to be contaminated, it is possible that the RWQCB would require groundwater control as part of the development plan for the Project on that site. Potential groundwater-remedial strategies would depend on a number of factors including: site contaminants, evaluation of impacts to human health and the environment, and evaluation of the technical merits of available remedial strategies. The final selection would be made by the RWQCB. Potential groundwater control methodologies include installing a slurry wall around a portion or the entire contaminated site combined with groundwater pump and treatment and discharge of treated groundwater to a storm drain/sewer system under the authority of an NPDES permit. Other alternative technologies include in situ biological treatment and in situ oxidation or reduction, depending on the site-specific contaminants and hydrogeological conditions.		
HAZ-8: Operations-phase Hazardous Materials Usage. Hazardous materials shall be used during operations and maintenance activities. Misuse, inadequate storage, or improper disposal of these	HAZ-8: Control of Operations-phase Hazardous Materials. A Hazardous Materials Business Plan (HMBP) shall be developed and implemented prior to turnover of site management from the construction contractor to the operating company. All hazardous	Less than significant	None; this impact would be reduced due to the smaller facility and reduced maintenance

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
materials could result in a potentially significant environmental impact.	materials shall be handled and stored in accordance with applicable codes and regulations. Storage quantities of all hazardous materials shall be minimized, and non-hazardous materials shall be substituted for hazardous materials at the converter station to the extent practicable. Small-quantity chemicals used for maintenance tasks shall be kept in appropriate inflammable material or corrosive material storage lockers. Bulk chemicals shall be stored in ASTs, and all other chemicals shall be stored in their original shipping containers. Incompatible materials shall be stored in separate storage containment areas. Chemical storage areas and transfer areas shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater. Areas susceptible to potential leaks and/or spills shall be paved and bermed or otherwise secondarily contained. Specifically, the transformers and the diesel ASTs would have secondary containment. Periodic inspections shall be conducted to ensure that all containers are secure and properly marked. Piping and tanks will be protected from potential traffic hazards by concrete or other barriers. Hazardous materials will be delivered to the converter station periodically. Transportation of these materials shall comply with all applicable regulations of the U.S. Department		requirements associated with the HVDC PLUS design.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	of Transportation, the EPA, DTSC, the California Highway Patrol, and the State Fire Marshal. An HMBP shall be prepared prior to delivery of specified hazardous materials to the converter station in conformance with Title 19 of the California Code of Regulations (CCR) and California Health and Safety Code Section 25504. The HMBP requires facilities to develop the following information: • Facility map showing locations of hazardous materials and emergency response equipment • Hazardous materials inventory, including MSDSs for all hazardous materials stored and used onsite • Emergency contact information • Emergency response plans and procedures • Emergency notification procedures • Emergency response training for all employees		
HAZ-9: Operations-phase Waste Streams. Improper storage and disposal of operational wastes could result in a potentially significant environmental impact.	HAZ-9: Manage Waste Generation, Storage, and Disposal During Operations Phase. Before facility start-up, an application shall be made to DTSC for a hazardous waste generator number. The facility shall not treat, store, or dispose of hazardous waste in a manner that will cause the facility to be characterized as a	Less than significant	None; this impact would be reduced due to the smaller facility under the HVDC PLUS design generating less

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

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San Francisco HWC (Mitigated) Converter Station Site			
	treatment, storage and disposal facility (TSDF). A detailed waste management plan shall be prepared prior to start-up to ensure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of all hazardous materials and wastes. The waste management plan will include: • A description of each hazardous waste stream • Handling, transport, treatment, and disposal procedures for each waste • Preparedness, prevention, contingency, and emergency procedures • Personnel training Scrap materials such as paper, packing materials, glass, metal, and plastic shall be segregated and managed for recycling. Non-recyclable inert wastes shall be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill. Skimmed oil collected from equipment drains and other liquids from equipment shall be transported by an authorized carrier to a certified recycling facility.		operational waste.
HAZ-10: Operations-phase Accidental Spills. Non-	HAZ-10: Operations-phase Spill Prevention, Controls, and	Less than	None; the potential for this

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
compliance with regulatory requirements associated with storage, use, and containment of hazardous materials and/or petroleum hydrocarbons could result in accidental spills. The impact from accidental spills of these materials is considered potentially significant.	Countermeasures. The following shall be implemented during operations: • All workers shall be adequately trained to recognize the hazards associated with accidental spills. Training shall include ensuring that personnel who maintain the facility are adequately trained to recognize the hazards associated with such spills. Personnel who maintain the facility will be trained in the use of fire suppression equipment, evacuation, notification, and other defensive emergency response procedures. Maintenance personnel will also be trained in hazardous materials and hazardous waste awareness, handling, and management, as required for their level of responsibility. • The proper use of safety procedures and development and implementation of a project-specific SPCC Plan will help prevent such incidents. The SPCC Plan will include information on spill response procedures and fuel storage. • An MSDS will be kept onsite for each onsite chemical. • The programs to be implemented to protect worker health and safety shall also benefit public safety. Facility design shall include redundant controls and monitoring systems to	significant	impact to occur would be reduced due to elimination of the need for an emergency generator and its associated diesel fuel under the HVDC PLUS design versus the HVDC Conventional design.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	minimize the potential for conditions in which accidental spills could occur. Potential public health impacts associated with facilities operation will be mitigated by development and implementation of Emergency Response Plans, an SPCC Plan, secondary containment structures for oils and other hazardous materials, safety programs, and employee training.		
HAZ-11: Operations-phase Fire and Explosion Risk. Non-compliance with regulatory requirements associated with storage, use, and containment of flammable materials could result in a fire or explosion. The impact of a fire or explosion is considered potentially significant. If the onsite fire protection equipment could not address the fire, outside agencies would need to be called. This impact is considered potentially significant.	HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase. The flashpoints of transformer oil and diesel fuel are 295°F and 100°F, respectively, and the auto ignition points are 484°F and 494°F, respectively (Sax, 1992; MSDS for transformer oil; MSDS for diesel fuel). The National Fire Prevention Association (NFPA) assigns lubricating oils a fire hazard rating of 1, meaning that the materials "must be preheated before ignition can occur. Materials of these types require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur" (Siemens, 2006). The converter station shall have onsite fire protection systems (including emergency backup systems). During the detailed design phase of the proposed Project, potential fire protection designs	Less than significant	None; this potential impact would be reduced under the HVDC PLUS design due to the smaller transformer oil requirements and the elimination of the emergency generator/diesel fuel storage.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	and systems shall be reviewed with local agencies to finalize design details. In general, the fire protection system shall consist of automatic detection and firefighting equipment. The fire detection control panel will be located in the control room and will be connected to the control and protection system for remote annunciation. The fire alarm will be initiated automatically by smoke, heat, or flame detectors, or manually by push-button. A combination of detectors will be used, including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored. Audible alarms and flashing lights will be activated in the event of a fire. The equipment or area where the alarm is triggered will be indicated on the control panel. The firefighting equipment would initiate automatically, using water sprays and curtains or an appropriate gas-extinguishing agent. Fire detection and automatic firefighting equipment will be connected to a power supply within the fire-detection control panel, which will be connected to the mains via a power supply/battery charger unit with an internal 24-volt battery. A pump		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	house shall be included within the facility with 2 diesel fire-water pumps, each 225 kW.		
HAZ-12: Impacts from Seismic Activity. Failure to abide by the building code for Seismic Zone 4 could lead to damage to the facility and resulting spills of hazardous materials. This impact could be potentially significant.	HAZ-12: Manage Seismic Activity. To minimize seismic damage to the facility and the resulting hazardous materials spills, the designers and construction contractor shall follow the 2001 California Building Code for Seismic Zone 4. This action would reduce Impact HAZ-12 to a less-than-significant level.	Less than significant	None; the HVDC PLUS technology with its smaller, less complex design is considered to be less susceptible to damage from a seismic event/ strong ground shaking.
PALEO-1: Disturbance of Fossil Resources. There are no known significant fossil resources at this location. However, excavations associated with construction have the potential to penetrate into undisturbed *Qal* sediments, which could contain significant fossil resources. This impact would be considered potentially significant.	PALEO-1: Potential Fossil Resources Protection. The following measures shall be implemented: • Pre-construction meetings shall be held with key construction personnel to provide brief discussions pertaining to paleontological resource significance, visual identification, and discovery notification procedures. • Proposed construction areas containing geological units designated with a potentially moderate or high sensitivity rating shall be monitored by a professional paleontologist during construction, to insure that subsurface paleontological resources are adequately protected.	Less than significant	None; this potential impact would be reduced due to the smaller HVDC PLUS footprint and reduced earthwork/excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
San Francisco HWC (Mitigated) Converter Station Site			
	• If unique paleontological resources are discovered, all significant fossil material shall be collected, prepared, identified, and curated, and then placed into a state-designated scientific repository. • Salvage operations shall be conducted in accordance with professional paleontological (e.g., SVP) standards.		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
AIR-1: Fugitive Dust Emissions. The fugitive dust emissions impact (Impact AIR-1) described in Section 4.2.3.2.1 of the Draft EIR applies to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site. The Project proposes to use fugitive dust suppression with water and other methods to control construction-related emissions. The use of chemical additives is not planned. Controlled worst-case fugitive dust is estimated to be 39 pounds per day; 0.43 tons per month; and 3.4 tons over the 27- to 30-month construction period for the Pittsburg site. Without fugitive dust control measures the impact is considered to be potentially significant.	AIR-1: Fugitive Dust Controls. Mitigation Measure AIR-1 described in Section 4.2.3.2.1 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None; fugitive dust emissions would be reduced for the HVDC PLUS design due to the smaller converter station footprint and reduced earthwork requirements.
AIR-2: Equipment Exhaust Emissions. The equipment exhaust emissions impact (Impact AIR-2) described in Section 4.2.3.2.1 of the Draft EIR applies to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site. See Table 4.2-13 for emissions estimates for this site. Without mitigation measures this impact is considered to be potentially significant.	AIR-2: Exhaust Controls. Mitigation Measure AIR-2 described in Section 4.2.3.2.1 of the Draft EIR shall be applied to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None; equipment exhaust emissions would be reduced for the HVDC PLUS converter station design due to the reduced construction requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
GEO-1: Soil Erosion and Compaction. The soil erosion and compaction impact (Impact GEO-1) described in Section 4.3.3.2.1 of the Draft EIR applies to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	GEO-1: Design Project for Erosion Control. Mitigation Measure GEO-1 described in Section 4.3.3.2.1 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None
GEO-3: Strong Ground Shaking. The strong ground shaking impact (Impact GEO-2) described in Section 4.3.3.2.2 of the Draft EIR applies at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	GEO-3: Design to Seismic Design Requirements. Mitigation Measure GEO-3 described in Section 4.3.3.2.2 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None; the HVDC PLUS design is less susceptible to damage from seismic shaking due to the simpler, more compact design.
GEO-4: Liquefaction. The liquefaction impact (Impact GEO-4) described in Section 4.3.3.2.2 of the Draft EIR applies to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	GEO-4: Design Project for Liquefiable Deposits. Mitigation Measure GEO-4 described in Section 4.3.3.2.2 of the Draft EIR shall be applied to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None; the potential for liquefaction to damage converter station facilities under the HVDC PLUS design is reduced due to the smaller, lighter transformers.
GEO-5: Shrink-Swell/Subsidence. The proposed Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site is potentially underlain with	GEO-5: Design Project for Shrink-Swell/Subsidence. A program of site-specific exploratory borings and accompanying laboratory testing shall be required to delineate any potentially	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
expansive soils, which requires specific attention during grading to avoid future heaving and cracking of overlying materials. The potential for damage due to shrink-swell/subsidence to site facilities is potentially significant.	expansive materials underneath the proposed Project facility sites and to evaluate the potential for site subsidence and identify and implement appropriate design measures (e.g., pile supports or replacement of undesirable materials) in accordance with applicable codes.		
WATER-1: Erosion and Contaminated Runoff. The erosion control and runoff impact (Impact WATER-1) described in Section 4.4.3.2.1 of the Draft EIR applies at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	WATER-1: Erosion Control and Contaminant Source Control. Mitigation Measure WATER-1 described in Section 4.4.3.2.1 of the Draft EIR shall be applied for the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None
WATER-2: Surface Water Quality Impacts from HDD. Impact WATER-2 described in Section 4.4.3.2.1 of the Draft EIR applies at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	WATER-2: Spill Prevention and Control Plan for HDD. Mitigation Measure WATER-2 described in Section 4.4.3.2.1 of the Draft EIR shall be applied for the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None
WATER-3: Groundwater Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids that would increase suspended material in groundwater. This would be considered a potentially significant impact.	WATER-3: Use of Pilot Hole and Reaming. HDD shall be performed using a pilot hole plus reaming technique to minimize the potential for impacts to groundwater. To prevent significant water quality impacts, drilling muds shall consist of naturally occurring materials such as water and bentonite clay, plus inert, non-toxic polymers.	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	Both the drilling technique and early detection and response shall be used to minimize release of fluids to the environment. HDD shall start with completion of a small-diameter pilot hole. The pilot hole is gradually enlarged using reaming. This technique acts to prevent sudden loss of large volumes of drilling fluids. Early detection and rapid response shall be implemented to minimize loss of drilling fluids. In the event loss of drilling fluids is detected, natural LCMs such as cotton dust, cottonseed hulls, wood fiber, mica, and cedar fiber shall be added to the drilling fluid. Alternative actions that shall be considered and implemented, as required, include reduction in drilling pressure, thickening of the fluid mixture, and construction of spill control structures, pits, and silt fences onshore, or silt curtains offshore.		
WATER-8: Flooding. The northwest corner of the Pittsburg West Tenth Street Converter Station Alternative 1 site (temporary construction access road only) is located within the 100-year flood zone.	WATER-8: Flood Mitigation. Design the site to adequately minimize risk from 100-year flood. Typical measures that shall be incorporated into the project design include: • Ensure that pad elevations on newly constructed habitable buildings are a minimum of 1 foot above the 100-year floodplain, as determined by FEMA • Reduce the risk of localized and downstream flooding and	Less than significant	None; this potential impact does not apply to the HVDC PLUS converter station site (as it did for the HVDC conventional design site), but it does apply to the temporary

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	runoff through the use of high infiltration measures, including the maximization of permeable landscape		construction access road that connects to the Mirant plant access road.
TRAFFIC-1: Cumulative Traffic Impacts. The Cumulative Traffic Impacts (Impact TRAFFIC-1) on the regional roadway system described in Section 4.10.3.2.1 of the Draft EIR applies to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts. Mitigation Measure TRAFFIC-1 described in Section 4.10.3.2.1 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site. No other significant cumulative transportation-related impacts would be expected to occur on local roads.	Less than significant	None; the Project's incremental contribution to cumulative traffic impacts would be reduced by an estimated 20-25 % under the HVDC PLUS design due to the smaller facility, which would require less equipment and material deliveries.
TRAFFIC-2: Oversized Loads. The Oversized Loads impact (Impact TRAFFIC-2) described in Section 4.10.3.2.1 of the Draft EIR applies to the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	TRAFFIC-2: Coordination of Oversized Loads. Mitigation Measure TRAFFIC-2 described in Section 4.10.3.2.1 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	Less than significant	None; oversized load impacts would be reduced under the HVDC PLUS design due to the smaller transformers (60 tons versus 80 tons of oil).

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
NOISE-1: Converter Station Operations Sound Levels. Sound levels from the operation of the West Tenth Street Alternative 1 (E/W) Converter Station would range from 55 to 74 dBA L_{dn} at the property lines, which is below the Pittsburg 75 dBA L_{dn} requirement. However, the applicant has committed to installing a noise wall around the southern, western, and eastern boundaries of the converter station site.	NOISE-1: Noise Barrier Installation for Converter Station. An acoustical barrier approximately 10 feet high would be erected around a portion of the converter station. If final design determined that an acoustical barrier were unnecessary, it shall not be required.	Less than significant	None; the operational noise level for the HVDC PLUS design at the property boundaries in Pittsburg would be reduced relative to the HVDC Conventional design evaluated in the Draft and Final EIRs.
PS-1: Construction-related Fire Hazards. The construction-related fire hazards impact (Impact PS-1) discussed in Section 4.12.3.2.1 of the Draft EIR applies at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	PS-1: Fire Water Service. Mitigation Measure PS-1 discussed in Section 4.12.3.2.1 of the Draft EIR shall be conducted at this site.	Less than significant	None
PS-2: Existing Underground Utilities. The underground utilities impact (Impact PS-2) discussed in Section 4.12.3.2.1 of the Draft EIR applies at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	PS-2: Utility Survey. Mitigation Measure PS-2 described in Section 4.12.3.2.1 of the Draft EIR shall be conducted at this site.	Less than significant	None
PS-3: Operations Fire Hazards. The operations fire hazards impact (Impact PS-3) discussed in Section	PS-3: Operations Fire Prevention. Mitigation Measure PS-3 discussed in Section 4.12.3.3.2 of the Draft EIR shall be	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
4.12.3.2.2 of the Draft EIR applies at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.	conducted at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site.		
VIS-1: Converter Station Domination of View. The Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station would be visible from West Tenth Street. Since the architectural design character of the building and the general character of proposed lighting have not been identified in detail, there is the possibility of generating significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from West Tenth Street. While this impact has been classified as less than significant, without design controls it could still be adverse. This adversity can be lessened through the application of mitigation measures VIS-1a and VIS-1b.	VIS-1a: Plan Submittal Requirements for Building Materials and Colors. Mitigation Measure VIS-1a described in Section 4.13.3.2 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site. Architectural design and site plans, plus a color and material palette, shall be reviewed and approved by the Pittsburg Planning Commission. Final architectural plans and conditions of approval shall be reviewed and signed off by the appropriate planning and building officials prior to operation of the Project. VIS-1b: Plan Submittal Requirements for Landscaping. Mitigation Measure VIS-1b described in Section 4.13.3.2 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site. Landscape design plans shall be reviewed and approved by the Pittsburg Planning Commission. Final landscape plans shall be reviewed and signed off by the appropriate planning and engineering officials prior to operation of the Project.	Less than significant	None; this impact would be substantially reduced under the HVDC PLUS design due to smaller footprint (3 to 4 acres versus 5 to 6 acres for HVDC Conventional design), shorter buildings (35 feet versus 65 feet), shorter lightning arrestors (65 feet versus 80 feet) and reduced number, and the addition of the 255-foot-wide (potentially landscaped) buffer area north of West Tenth Street.
VIS-2: Converter Station will Create Substantial Light	VIS-2: Plan Submittal Requirements for Lighting. Mitigation	Less than	None; this impact would

TABLE 1-1 (CONTINUED) [1,2]
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Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by travelers along the Pittsburg-Antioch Highway which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare. While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.	Measure VIS-2 described in Section 4.13.3.2 of the Draft EIR shall be applied at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site. Lighting plans shall be reviewed and approved by the Pittsburg Planning Commission. Final lighting plans shall be reviewed and signed off by the appropriate planning and building officials prior to operation of the Project.	significant	be reduced with the HVDC PLUS design due to the smaller footprint and smaller buildings requiring less lighting.
HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition. Existing structures on the converter station site contain or potentially contain ACMs and LBP. Improper removal or remediation of these materials could result in a potentially significant environmental impact.	HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan. Phase II ACM and LBP surveys on the converter station site shall be conducted to fill data gaps and to support development of worker safety procedures, in accordance with regulatory requirements to protect construction workers and the public. The ACM and LBP Abatement Plans shall be completed in compliance with applicable regulations based on the historical and newly acquired ACM and LBP data. If ACM and LBP	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	were confirmed to be present in concentrations above regulatory limits, the Project proponent shall use certified asbestos and lead-based paint removal workers, conduct dust monitoring, and dispose of generated wastes offsite. A site Health and Safety Plan shall also be prepared for this work.		
HAZ-2: Soil Removal. Soils removed during construction of the converter station and cable routes could be contaminated. Improper sampling, handling, analyzing, or characterizing of the soils could result in a potentially significant environmental impact.	HAZ-2: Soil Removal Protocols. Previously uncharacterized soils that are stained or odiferous shall be segregated on plastic, sampled, and characterized for onsite use or offsite disposal. The Soil and Groundwater Management Plans shall detail storage, transportation, and disposal options for soil and groundwater excavated/extracted during the converter station construction. The plans shall also specify dust monitoring needs for soil excavation and management. Previously characterized hazardous soils shall be loaded onto trucks for offsite disposal. Hazardous soil disposal requires that hazardous waste manifests accompany the waste. Hazardous waste transporters shall be required to haul hazardous soils to a hazardous waste landfill that can properly accept them. The personnel handling the hazardous soils are required to have met the OSHA hazardous work operations training requirements. A	Less than significant	None; this impact would potentially be reduced under the HVDC PLUS design due to the smaller footprint and subsurface excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	Health and Safety Plan shall be prepared for this work. Previously characterized non-hazardous soils shall be stockpiled for onsite or offsite reuse or offsite disposal, as needed.		
HAZ-3: Construction-phase Hazardous Materials Use. Hazardous materials would be used during construction activities. Misuse, inadequate storage, or improper disposal of these materials could result in a significant environmental impact.	HAZ-3: Reduction of Hazards During Construction Phase. The hazards presented by the use of hazardous materials during the construction phase are well understood, and the appropriate management controls to mitigate potential impacts shall be implemented. These controls include: 1) developing required management plans; 2) secondary containment; 3) separate storage of incompatible materials; and 4) proper training of personnel. Additionally, construction personnel shall be trained in safety and defensive emergency response procedures. Construction personnel shall also receive hazardous waste-related training that focuses on the recognition of potentially contaminated soil and/or groundwater that may be encountered during subsurface excavations for foundations or pipeline/cable trenches. If such contaminated soil or groundwater is suspected, contingency procedures shall be followed to protect worker safety and public health. All vehicles and construction equipment shall be inspected	Less than significant	None; this impact would be reduced under the HVDC PLUS design due to the smaller facility requiring less hazardous materials (e.g., fuel) to construct.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

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Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	to ensure that no fluids are leaking (e.g., oil, hydraulic fluid, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, clearly labeled containers. Hazardous materials that must be disposed of will be disposed of as hazardous waste in accordance with the appropriate regulations for storage, transportation, and disposal of hazardous waste.		
HAZ-4: Construction-phase Waste Streams. Improper storage and disposal of solid waste and hazardous construction wastes could result in a potentially significant environmental impact.	HAZ-4: Management of Construction-phase Waste Streams. The onsite management and offsite disposal procedures of solid wastes (including potentially contaminated soil) shall be detailed in a Solid Waste Management Plan for the Project. Waste shall be stockpiled temporarily before disposal offsite. The local fire departments and emergency management teams shall be provided a list of the waste material expected to be generated and stored onsite. Hazardous wastes generated during construction shall be collected in hazardous waste accumulation containers near the point of generation and moved daily to the construction contractor's 90-day hazardous waste storage area at the converter station site. The accumulated waste shall be delivered to an	Less than significant	None; this impact would be reduced under the HVDC PLUS design due to the smaller facility, smaller footprint, and reduced excavation requirements.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	authorized waste management facility. The exact volume of hazardous wastes to be generated at the converter station site cannot be estimated at this time, but the estimated amount of excavated soil that would need to be disposed of offsite is estimated at approximately 15,000 cubic yards for this converter station site. Even if this entire amount of excavated soil would need to be disposed of as hazardous waste, it would not exceed a significant portion of the available hazardous waste landfill capacity in California. The capacity details of various landfills for both non-hazardous and hazardous waste are detailed in Table 4.14-5, above. The capacity and estimates for daily volumes of waste received were verified, as detailed in the personal communications provided in the references for this section. Management of these wastes shall be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris, including covering daily to prevent wind dispersion, and weekly pickup of waste with disposal of non-hazardous wastes at local Class III landfills.		

TABLE 1-1 (CONTINUED) [1,2]
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Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
HAZ-5: Construction-phase Accidental Spills. An accidental spill or a release of hazardous materials could occur during construction. This impact is considered potentially significant.	HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasures. The following shall be implemented both to prevent spills from occurring and to minimize impacts in the event that they do occur: • All spills shall be cleaned up quickly and all workers shall be adequately trained to recognize the hazards associated with such spills. • A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the converter station shall be prepared in accordance with federal and state regulations. This plan must be prepared if petroleum products are stored onsite in ASTs with a capacity that equals or exceeds 55 gallons for a single tank or equals or exceeds 1,320 gallons for more than one tank. The SPCC Plan must be prepared before the delivery of petroleum products to the site. The SPCC Plan shall include information on spill response procedures and fuel storage. • A Hazardous Materials Business Plan shall be prepared to detail locations and volumes of hazardous materials kept on site. Copies of the HMBP shall be provided to the local Fire Department as provided by the regulations.	Less than significant	None; the potential for this impact to occur would be reduced under the HVDC PLUS design due to the smaller construction requirements and commensurate reduction in hazardous material usage.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	• Material Safety Data Sheets (MSDSs) for each chemical used during construction shall be kept onsite. Construction employees shall be informed of the location and content of the MSDSs, as required by OSHA's Hazard Communication Standard, Title 29 of the Code of Federal Regulations (CFR) Section 1910.1200. • In case of an accident, the CCCFPD shall be notified as the first responder. All other federal, state, and local notification requirements shall be followed for any release that exceeds the reportable quantity or threatens to have a significant impact. • The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the sites and hazardous wastes leaving the sites. • All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	the issuance of "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids.		
HAZ-6: Construction-phase Dust and Volatilization of Contaminants. Excavation of contaminated soil and the generation of hazardous waste soils could result in construction dust and volatilization of contaminants that pose environmental and human health risks, particularly to construction workers. This impact is considered potentially significant.	HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants. Dust control measures (i.e., keeping the soil wet during excavation) shall be implemented during excavation and construction activities, and dust monitoring shall be performed. Suspected contaminated soil that is stockpiled on the sites shall be covered daily with plastic to prevent volatilization of contaminants and to control dust. Contaminated soil may also be loaded directly onto trucks for transport to an appropriate offsite disposal facility. The loaded soils shall be properly covered and manifested as necessary. Dust monitoring shall be performed during excavation and loading of hazardous soils. The accumulated waste shall then be delivered to an authorized waste management facility. Dust monitoring shall confirm that the dust control measures are effectively protecting site workers and the public.	Less than significant	None; this impact would potentially be reduced under the HVDC PLUS design due to reduced earthwork and excavation requirements.
HAZ-7: Contaminated Groundwater. The converter station site may have contaminated groundwater. This	HAZ-7: Contaminated Groundwater Control. If groundwater is encountered during construction at the converter station site, the	Less than significant	None; this impact would potentially be reduced due

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
groundwater may be encountered during excavation, construction dewatering, or other subgrade activities. Control or remediation of the site groundwater may be a requirement for redevelopment of the property by the lead regulatory agency for the proposed Project. Failure to properly treat and/or dispose of water collected during dewatering activities or to control the contaminated groundwater flow could result in a potentially significant impact to the site or to downgradient sites and/or water bodies.	water shall be collected onsite in a tank or tanks, sampled, and analyzed. Based on the analytical data, the water shall be characterized for disposal by one of the following methods: • Used onsite for dust control • Treated onsite and discharged under the authority of a general National Pollutant Discharge Elimination System (NPDES) permit (Treatment options would include, but are not limited to, filtration or filtration and treatment by granular-activated carbon [GAC]. Treatment residuals would be sampled, analyzed, characterized, and disposed of offsite in compliance with applicable regulations.) • Disposed of offsite at a commercial water treatment facility in compliance with applicable regulations If groundwater was encountered at the Pittsburg West Tenth Street Alternative 1 (E/W) Converter Station site and it was found to be contaminated, it is possible that the Regional Water Quality Control Board would require groundwater control as part of the development plan for the Project on the site. Contamination at the Pittsburg West Tenth Street Alternative 1 (E/W) site, if any, would likely be caused by offsite sources which would probably not		to shallower excavation depth requirements associated with the HVDC PLUS design.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	require onsite remedial action. Potential groundwater-remedial strategies would depend on a number of factors including: site contaminants, evaluation of impacts to human health and the environment, and evaluation of the technical merits of available remedial strategies. Based on these factors the final selection would be negotiated between the RWQCB and TBC. Potential remedial options provided herein are for informational purposes only. Potential groundwater control methodologies include installing a slurry wall around a portion or the entire contaminated site combined with groundwater pump and treatment and discharge of treated groundwater to a storm drain/sewer system under the authority of an NPDES permit. Other alternative technologies include in-situ biological treatment and in-situ oxidation or reduction, depending on the site-specific contaminants and hydrogeological conditions.		
HAZ-8: Operations-phase Hazardous Materials Usage. Hazardous materials shall be used during operations and maintenance activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.	HAZ-8: Control of Operations-phase Hazardous Materials. A Hazardous Materials Business Plan (HMBP) shall be developed and implemented prior to turnover of site management from the construction contractor to the operating company. All hazardous materials shall be handled and stored in accordance with applicable codes and regulations. Storage quantities of all	Less than significant	None; this impact would be reduced due to the smaller facility and reduced maintenance requirements associated with the HVDC PLUS

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	hazardous materials shall be minimized, and non-hazardous materials shall be substituted for hazardous materials at the converter station to the extent practicable. Small-quantity chemicals used for maintenance tasks shall be kept in appropriate inflammable material or corrosive material storage lockers. Bulk chemicals shall be stored in ASTs, and all other chemicals shall be stored in their original shipping containers. Incompatible materials shall be stored in separate storage containment areas. Chemical storage areas and transfer areas shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater. Areas susceptible to potential leaks and/or spills shall be paved and bermed or otherwise secondarily contained. Specifically, the transformers and the diesel ASTs would have secondary containment. Periodic inspections shall be conducted to ensure that all containers are secure and properly marked. Piping and tanks will be protected from potential traffic hazards by concrete or other barriers. Hazardous materials will be delivered to the converter station periodically. Transportation of these materials shall comply with all applicable regulations of the U.S. Department of Transportation, the EPA, DTSC, the California Highway Patrol,		design.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	and the State Fire Marshal. An HMBP shall be prepared prior to delivery of specified hazardous materials to the converter station in conformance with Title 19 of the California Code of Regulations (CCR) and California Health and Safety Code Section 25504. The HMBP requires facilities to develop the following information: • Facility map showing locations of hazardous materials and emergency response equipment • Hazardous materials inventory, including MSDSs for all hazardous materials stored and used onsite • Emergency contact information • Emergency response plans and procedures • Emergency notification procedures • Emergency response training for all employees		
HAZ-9: Operations-phase Waste Streams. Improper storage and disposal of operational wastes could result in a significant environmental impact. This impact is considered potentially significant.	HAZ-9: Manage Waste Generation, Storage, and Disposal During Operations Phase. Before facility start-up, an application shall be made to DTSC for a hazardous waste generator number. The facility shall not treat, store, or dispose of hazardous waste in a manner that will cause the facility to be characterized as a	Less than significant	None; this impact would be reduced due to the smaller facility under the HVDC PLUS design generating less

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	treatment, storage and disposal facility (TSDF). A detailed waste management plan shall be prepared prior to start-up to ensure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of all hazardous materials and wastes. The waste management plan will include: • A description of each hazardous waste stream • Handling, transport, treatment, and disposal procedures for each waste • Preparedness, prevention, contingency, and emergency procedures • Personnel training Scrap materials such as paper, packing materials, glass, metal, and plastic shall be segregated and managed for recycling. Non-recyclable inert wastes shall be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill. Skimmed oil collected from equipment drains and other liquids from equipment shall be transported by an authorized carrier to a certified recycling facility.		operational waste.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
HAZ-10: Operations-phase Accidental Spills. Non-compliance with regulatory requirements associated with storage, use, and containment of hazardous materials and/or petroleum hydrocarbons could result in accidental spills. The impact from accidental spills of these materials is considered potentially significant.	HAZ-10: Operations-phase Spill Prevention, Controls, and Countermeasures. The following shall be implemented during operations: • All workers shall be adequately trained to recognize the hazards associated with accidental spills. Training shall include ensuring that personnel who maintain the facility are adequately trained to recognize the hazards associated with such spills. Personnel who maintain the facility will be trained in the use of fire suppression equipment, evacuation, notification, and other defensive emergency response procedures. Maintenance personnel will also be trained in hazardous materials and hazardous waste awareness, handling, and management as required for their level of responsibility. • The proper use of safety procedures and development and implementation of a project-specific SPCC Plan will help prevent such incidents. The SPCC Plan will include information on spill response procedures and fuel storage. • An MSDS will be kept onsite for each onsite chemical.	Less than significant	None; the potential for this impact to occur would be reduced due to elimination of the need for an emergency generator and its associated diesel fuel under the HVDC PLUS design versus the HVDC Conventional design.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	• The programs to be implemented to protect worker health and safety shall also benefit public safety. Facility design shall include redundant controls and monitoring systems to minimize the potential for conditions in which accidental spills could occur. Potential public health impacts associated with facilities operation will be mitigated by development and implementation of Emergency Response Plans, an SPCC Plan, secondary containment structures for oils and other hazardous materials, safety programs, and employee training.		
HAZ-11: Operations-phase Fire and Explosion Risk. Non-compliance with regulatory requirements associated with storage, use, and containment of flammable materials could result in a fire or explosion. If the onsite fire protection equipment could not address the fire, outside agencies would need to be called. This impact is considered potentially significant. The impact of a fire or explosion is considered potentially significant.	HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase. The flashpoints of transformer oil and diesel fuel are 295°F and 100°F, respectively, and the auto ignition points are 484°F and 494°F, respectively (Sax, 1992; MSDS for transformer oil; MSDS for diesel fuel). The National Fire Prevention Association (NFPA) assigns lubricating oils a fire hazard rating of 1, meaning that the materials "must be preheated before ignition can occur. Materials of these types require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur"	Less than significant	None; this potential impact would be reduced under the HVDC PLUS design due to the smaller transformer oil requirements and the elimination of the emergency generator/diesel fuel storage.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	(Siemens, 2006). The converter station shall have onsite fire protection systems (including emergency backup systems). During the detailed design phase of the proposed Project, potential fire protection designs and systems shall be reviewed with local agencies to finalize design details. In general, the fire protection system shall consist of automatic detection and firefighting equipment. The fire detection control panel shall be located in the control room and shall be connected to the control and protection system for remote annunciation. The fire alarm shall be initiated automatically by smoke, heat, or flame detectors; or manually by push-button. A combination of detectors shall be used, including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored. Audible alarms and flashing lights shall be activated in the event of a fire. The equipment or area where the alarm is triggered shall be indicated on the control panel. The firefighting equipment would initiate automatically, using water sprays and curtains or an		

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Pittsburg West Tenth Street Alternative 1 (As Modified) Converter Station Site			
	appropriate gas-extinguishing agent. Fire detection and automatic firefighting equipment shall be connected to a power supply within the fire-detection control panel, which will be connected to the mains via a power supply/battery charger unit with an internal 24-volt battery. A pump house shall be included within the facility with 2 diesel fire-water pumps, each 225 kW.		
HAZ-12: Impacts from Seismic Activity. Failure to abide by the building code for Seismic Zone 4 could lead to damage to the facilities and resulting spills of hazardous materials. This impact could be potentially significant.	HAZ-12: Manage Seismic Activity. To minimize seismic damage to the facilities with resulting hazardous materials spills, the designers and construction contractor shall follow the 2001 California Building Code for Seismic Zone 4. This action would reduce Impact HAZ-12 to a less-than-significant level.	Less than significant	None; the HVDC PLUS technology with its smaller, less complex design is considered to be less susceptible to damage from a seismic event/ strong ground shaking.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Offshore Cable Route			
AIR-3: Marine Construction – Criteria Pollutants. Based on Project marine emissions rates in comparison to background levels, the air quality impacts of criteria pollutant emissions of the marine construction phase are considered to be potentially significant. Based on Project marine emissions rates in comparison to background levels, the air quality impacts of criteria pollutant emissions of the marine construction phase are considered to be potentially significant.	AIR-3: Marine Vessel Emission Controls. The following shall be implemented to control emissions from vessels owned by Prysmian: • Use California diesel, Purinox, biodiesel, or other fuel (whichever is feasible and would result in lowest emissions) • Minimize diesel engine fuel usage as much as possible • Use shore-side power when docked instead of running engines, where feasible	Less than significant	None
AIR-4: Marine Construction – Toxic Air Contaminants. Although there are no established impact significance criteria set forth by BAAQMD, the diesel PM emissions from marine construction may be potentially significant.	AIR-4: Implement Mitigation AIR-3. Implement Mitigation Measure AIR-3.	Less than significant	None
WATER-5: Water Quality Impacts from Cable Laying Operation. Nearshore and offshore sediment in the Potrero area is contaminated with elevated levels of PAHs. Disturbance of these sediments could result in substantial water quality impacts. This would be considered a potentially significant impact.	WATER-5: Avoidance of Sediment Contamination. To avoid potential known nearshore and offshore sediment contamination, the HDD shall be completed as far offshore as is feasible and remote from RMP station CB012S near Potrero Point in San Francisco. Hydroplow or equivalent technology activities shall also avoid known contamination in the area of station CB012S. Confirmation sediment sampling shall be performed at the location where the HDD emerges into the Bay and the results would be	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Offshore Cable Route			
	considered and addressed prior to commencement of construction near this location.		
WATER-7: Water Quality Impacts from Vessel Fuel Spills. Water quality degradation from vessel fuel spills would likely not be significant in light of its low probability and the past record. However, a potentially significant spill could still occur. This event would constitute a potentially significant impact.	WATER-7: Vessel Fuel Spill Response Plan. All vessel operators associated with the proposed Project shall update their contingency plans and continue to use emergency response services for pollution incidents. Review of updates and modifications to plans shall be done under the USCG's regular oversight of oil spill contingency plans. The work of updating and expanding the spill response plans shall be based on NOAA's Environmental Sensitivity Index (ESI), which involves the systematic compilation in a standardized format of information related to coastal shoreline sensitivity, biological resources, and human uses.	Less than significant	None
CUL-3: Offshore Cable Route Archaeological Resources. Submerged and buried archaeological resources have been identified along the offshore DC cable route. Disturbance of these historical resources is considered a potentially significant impact.	CUL-3a: Archaeological Resources Geophysical Survey. A geophysical remote-sensing survey shall be conducted along the offshore cable route to detect any potential submerged or sub-bottom archaeological resources. Depending on the geographic or bathymetric setting, an appropriate remote-sensing field survey could include deployment of a side scan sonar, sub-bottom profiler, and magnetometer to help detect these resources. The results of the geophysical survey will be reviewed by a qualified marine archaeologist and a report documenting these efforts and	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Offshore Cable Route			
	interpreting the results shall be produced. CUL-3b: Archaeological Resources Avoidance. Potential submerged and/or buried archaeological resources detected through the geophysical survey shall be avoided unless they can satisfactorily be determined to not represent archaeological resources (e.g., modern debris, existing infrastructure) as documented in the technical report. CUL-3c: Archaeological Resources Supplemental Underwater Investigation. If it is infeasible to avoid potential submerged and/or buried archaeological resources, follow-up diver survey or Remote Operated Vehicle investigations might be required to positively identify the targets. If targets are determined to be archaeological resources, they should be evaluated against the NRHP/CRHR significance criteria. If the resources are not eligible for the NRHP/CRHR, then no further consideration of these resources is required. If the resources are eligible for the NRHP/CRHR, Data Recovery (Mitigation Measure CUL-1b) may be required.		
LU-4: Increased Vessel Traffic. Project construction activities would temporarily increase vessel traffic in the Bay. Recreational users of the Bay could experience a temporary increased risk from additional vessel traffic. This	LU-4a: Vessel Crew Procedures. Marine crews shall watch for navigational hazards (i.e., during periods of high use by recreational boaters including windsurfers within the vicinity of selected terminal locations; during periods of high recreational use, such as weekends	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Offshore Cable Route			
impact is considered to be potentially significant.	or race events; or when weather hazards exist) to reduce the risk of incidents involving construction vessels and recreational users in the Bay. LU-4b: Coast Guard Coordination. Construction crew management shall coordinate construction activities with the USCG Safety Branch to ensure that no marine recreational events conflicts arise. The Project coordinator would include information to the USCG which would issue a Local Notice to Mariners. In addition, each affected harbor district will be made aware of the timing of water-based Project activities such as the cable laying operations. Applicable navigation rules will be enforced including the Cable Act of 1992 (47 CFR §76) which states that other vessels must maintain a 1.15 mile (1-nm) separation from a vessel laying or repairing an undersea cable.		
LU-5: Potential Conflict with Local Plans and Policies. Cable installation is not expected to conflict with local jurisdictions plans or policies. Based on available feedback, no apparent conflict in land use plans or policies would occur with installation of the submarine cable. However, Contra Costa County has indicated that their agency would incur some level of responsibility and could require	LU-5: Local Plans and Policies Coordination. The Project proponent shall coordinate with the City of Martinez and Contra Costa County to provide adequate notification and gain the appropriate permits and authorization required for installation of the submarine cable.	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Offshore Cable Route			
relocation of utilities where necessary. In addition, the City of Martinez requires a Conditional Use Permit for installation of the offshore cable. Not obtaining appropriate planning permits or coordinating with local agencies would be considered a potentially significant impact.			
MTRANS-1: Vessel Navigation Hazards. For the duration of construction, the vessels engaged in cable laying would present a potential hazard to navigation on the Bay. The cable-laying vessels themselves would be "restricted in their ability to maneuver." This means that the nature of the vessels themselves or of their operations limits their ability to take actions to avoid collisions that would be expected of otherwise fully maneuverable vessels. Vessels are by definition restricted in their ability to maneuver when engaged in lying, servicing, or picking up a navigational mark, submarine cable, or pipeline. Statutory navigation rules define the responsibilities of vessels restricted in their ability to maneuver, and of other vessels operating in their vicinity, all aimed at preventing collisions or other incidents. Non-compliance with these rules would be considered to result in a potentially significant impact.	MTRANS-1a: Project Registration, Information and Pilotage. Large construction vessels like the C/S Giulio Verne and any support vessels shall be required to notify the VTS at the beginning and end of each transit, and would be monitored continuously. The USCG would also notify operators of vessels in the area of the construction activities via Notices to Mariners. To ensure safe entrance into the Bay, all ships operating under foreign registry, like the Giulio Verne, are required to have a San Francisco Bar Pilot navigate the ship into the Bay. MTRANS-1b: Compliance with Navigation Rules. The vessels involved in cable laying shall be required to identify themselves and operate in accordance with the COLREGS. The applicable navigation rules for San Francisco Bay shall regulate the cable laying operations and are designed to prevent collisions. Within the Bay, the operators of all vessels engaged in the Project shall have the legal responsibility to preclude hazardous situations, according	Less than significant	None

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Mitigation Measure(s)	Resulting Level of Significance	Change in Impact Finding and/or Mitigation Measures for HVDC PLUS (Addendum) Versus HVDC Conventional (Final EIR)[3]
Offshore Cable Route			
	to the applicable navigation rules MTRANS-1c: Precautionary Area. A safety precautionary area shall be established around the construction vessels, and will be identified via the USCG Notice to Mariners to make vessels operating in the area aware of Project activities. All cable-laying vessels shall also operate in accordance with the applicable navigation rules including the Cable Act of 1992. MTRANS-1d: Publication of Cable Location. The planned location of the cable has been reviewed with the US Army Corps of Engineers, at local bottom depths as indicated by soundings on current navigation charts. The project proponent/construction contractor shall document the specific as-built location of the submarine cable for its entire length and shall provide GPS coordinates for critical waypoints of the cable alignment as required by the USACE and NOAA for inclusion on San Francisco Bay navigational charts and in the applicable volume(s) of the U.S. Coast Pilot. All cable-laying vessels shall also operate in accordance with the applicable navigation rules including the Cable Act of 1992.		

[1] Note: the impacts and mitigation measures presented in this table reflect mitigating refinements made to the Project between the Draft and Final EIRs, and consider the Project refinements associated with the adoption of HVDC PLUS technology/design following certification of the Final EIR.

TABLE 1-1 (CONTINUED) [1,2]
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

[2] The following acronyms were used in the table above and are defined herein:

ACM:	Asbestos-containing materials
ASTs:	Above-ground storage tanks
BAAQMD:	Bay Area Air Quality Management District
Caltrans:	California Department of Transportation
CCCFPD:	Contra Costa County Fire Protection District
COLREGS:	International Rules for Preventing Collision at Sea
DTSC:	Department of Toxic Substances Control
FEMA:	Federal Emergency Management Agency
LBM:	Lead-based paint
MUNI:	San Francisco Municipal Railway
NAHC:	Native American Heritage Commission
NOAA:	National Oceanic and Atmospheric Administration
NPDES:	National Pollutant Discharge Elimination System
NRHP/CRHR:	National Register of Historic Places/California Register of Historic Places
OSHA:	Occupational Health and Safety Administration
PAHs:	Polyaromatic Hydrocarbons
ppm:	parts per million
RMP:	Regional Monitoring Program
RWQCB:	Regional Water Quality Control Board
SHPO:	State Historic Preservation Officer
SVP:	Society of Vertebrate Paleontology
TPH:	Total petroleum hydrocarbons
USACE:	United States Army Corps of Engineers
USCG:	United States Coast Guard
VTS:	Vessel Traffic Services

[3] Note: The flooding hazard (Impact WATER-8) that applied to the northwest corner of the Pittsburg West Tenth Street Alternative 1 site as evaluated in the Draft and Final EIRs does not apply to the modified site (shifted to east) evaluated in this EIR Addendum, but does apply to the temporary construction access road along the northerly portion of the property.

PROPOSED 400 MW DC CABLE ROUTE

MIRANT ALTERNATIVE

PG&E PITTSBURG SUBSTATION

PROPOSED WEST TENTH STREET ALTERNATIVE

EXPANDED STUDY CORRIDOR TO ALLOW FLEXIBILITY FOR BART CROSSING

PG&E POTRERO SUBSTATION

MIRANT ALTERNATIVE

PROPOSED SF CONVERTER STATION, HWC (MITIGATED)

0 1 2 3 4 5 Miles

0 1 2 3 4 5 Kilometers

1 inch equals 3 miles 1:190,080

NAD 1983 UTM Zone 10N

PETALUMA POINT* MARE ISLAND* BENICIA* VINE HILL* HONKER BAY* ANTIOCH NORTH*

NOVATO* Novato Vallejo Rodeo Crockett Hercules Pinole Martinez West Pittsburg Pittsburg Antioch

Lucas Valley-Marinwood Santa Venetia China Camp SP Fairfax SAN RAFAEL* San Anselmo Ross Kentfield Larkspur Corte Madera Mill Valley Strawberry Tamalpais-Homestead Valley Mount Tamalpais SP Tiburon Belvedere POINT BONITA* Sausalito SAN FRANCISCO NORTH* Golden Gate NRA

SAN QUENTIN* Richmond RICHMOND* Point Pinole Regional Shoreline Tara Hills Bayview-Montalvin Pinole El Sobrante San Pablo East Richmond Heights Wildcat Canyon Regional Park Miller/Knox Regional Park El Cerrito Kensington Albany Berkeley Emeryville East Shore State Park (SS) OAKLAND WEST* OAKLAND EAST* Piedmont

BRIONES VALLEY* WALNUT CREEK* Pacheco Concord CLAYTON* Clayton Pleasant Hill Briones Regional Park John Muir NHS Lafayette Reservoir Rec Area Orinda Lafayette Walnut Creek Mount Diablo SP LAS TRAMPAS RIDGE* Moraga Town LAS TRAMPAS REGIONAL WILDERNESS Alamo Danville San Ramon DIABLO Blackhawk

ANTIOCH SOUTH* Oakley Brentwood BLACK DIAMOND MINES REG PRESER

SAN LEANDRO* HAYWARD* Castro Valley San Leandro Ashland

HUNTERS POINT* SAN FRANCISCO SOUTH* Daly City Brisbane

Oakland Alameda

TREASURE ISLAND NAVAL STA OAKLAND ARMY BASE OAKLAND NAVAL SUPPLY CTR ALAMEDA NAVAL AIR STA

Redwood Regional Park ANTHONY CHABOT REGIONAL PARK

Concord Naval Weapons Station

Carquinez Strait Shoreline Benicia SRA Benicia JOICE ISLAND ST GAME REFUGE SUISUN BAY SAN PABLO BAY SAN FRANCISCO BAY

Marin County Sonoma County Solano County Contra Costa County San Francisco County Alameda County San Mateo County Napa County Sacramento County

DC 0 DC 10 DC 20 DC 30 DC 40 DC 50 DC 52.7

Legend

- 7.5 Minute USGS Quad Index
- Existing Substations
- Existing Transmission Line
  - 115 kV
  - 230 kV
  - 500 kV
- DC 0 -Proposed 400 MW High Voltage Direct Current Cable Route -10 Milepost/Endpoint -Yellow Study Corridor (Width 500 m - 250 m Each Side of DC Routes within Water Body)
- Alternate 400 MW High Voltage Direct Current Cable Route
- Proposed Alternating Current Cable Route (San Francisco 115 kV/Pittsburg 230 kV)
- Interstate
- US Route
- State Route
- Other Roads
- Railroad
- BART (Bay Area Rapid Transit)
- County Boundary
- City Limits/ Census Designated Place
- Department of Defense
- Local or State Park
- National Park

SOURCE: U.S. Geological Survey National Elevation Dataset (NED) 1 arc second, Platts PowerMap 1st Quarter 2003 release, California Resources Agency Legacy Project 2005, Census TIGER® 2000 Data, ESRI Data & Maps 2003 CD-ROM.

TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 1-1. GENERAL LOCATION MAP	EIR Addendum	December 2006

T:\Trans_Bay_Cable_Project_EIR\deliverables\AddendumEIR\Figure 1-1 GENERAL LOCATION MAP.mxd

2.1 INTRODUCTION

This section of the EIR Addendum describes the technical refinements and improvements that are planned to be made to the Trans Bay Cable Project (Project) associated with the decision to adopt Siemens HVDC PLUS technology and design components into the proposed Project design for the converter stations in San Francisco and Pittsburg. The Siemens HVDC PLUS technology only recently became commercially available and was not available for consideration in the Draft and Final EIRs for this Project.

The technology associated with the Siemens HVDC PLUS system is proven, reliable, and capable of meeting all of the Project objectives and goals consistent with the California Independent System Operator's (CAISO) approval of the Project on September 8, 2005. The Siemens PLUS technology/converter station design is also compatible with the necessary interconnections to the PG&E substations in Pittsburg and San Francisco. The physical advantages of the Siemens HVDC PLUS design (e.g., smaller footprint, lower building heights, less operational noise, etc.) relative to the Siemens "conventional" HVDC design evaluated in the Draft and Final EIRs were summarized previously in Section 1.0 of this EIR Addendum. Section 3.0 of this EIR Addendum provides additional analysis and documentation showing that the potentially significant environmental impacts of the now adopted Siemens HVDC PLUS technology/design are in all cases equal to or less than those identified in the Draft and Final EIRs.

The balance of this section is organized as follows:

- 2.2 – Project Objectives
- 2.3 – HVDC PLUS Technology/Converter Stations
- 2.4 – Submarine Cable Design and Installation
- 2.5 – San Francisco Converter Station
- 2.6 – Pittsburg Converter Station

2.2 PROJECT OBJECTIVES

The purpose and need for the proposed Project, including the Project objectives, are as described in Section 2.3 (Purpose and Need for Project) of the Draft EIR and Section 3.2 (Project Objectives) of the Final EIR.

2.3 HVDC PLUS TECHNOLOGY/CONVERTER STATIONS

2.3.1 Overview

The Siemens HVDC PLUS (IGBT Technology) is an innovative application in the field of HVDC transmission systems. As opposed to the conventional HVDC, its design provides technical as well as economical advantages. The HVDC PLUS terminology is used for a HVDC transmission system which is based on Voltage Sourced Converter (VSC) Insulated Gate Bipolar Transistor (IGBT) technology. The extension "PLUS" stands for Power Link Universal Systems. Some important attributes are:

- Ability to feed AC systems with low short circuit power as well as passive networks with no local power generation.
- Continuously adjustable reactive power support to the area's AC transmission system. This system capability supports control of the AC bus voltage and improved system stability. Active and reactive power exchange can be controlled independently from each other within the total power rating of a station.

These features make HVDC PLUS a desirable alternative to conventional thyristor-based HVDC systems such as that evaluated in the Draft and Final EIRs. A conventional HVDC can only operate in AC systems with appropriate short-circuit power and additional measures are needed to achieve reliable operation. An HVDC PLUS converter is equipped with IGBT semiconductor devices that can be turned on and off in a controlled manner.

Thyristor converters as used in conventional HVDC systems always require reactive power, which reduces the amount of useable electrical power available. The reactive power demand varies according to the useable power transferred. Additional power components such as switched capacitor banks or Static Var Compensators (SVC) have been used to supply the reactive power demand of the converter station. In a HVDC PLUS system, each of the stations can control useable and reactive power flow independently from each other within the total MVA power ratings. Thus, the HVDC PLUS technology/design not only can transmit more useable power from one AC network to another one but also offers the possibility of controlling the AC bus voltage and improving the AC system stability.

2.3.2 Converter Station Components

The Trans Bay Cable Project, with the adoption of HVDC PLUS technology, has a power rating of 400 MW, which is the same power rating as the conventional HVDC design evaluated in the Draft and Final EIRs. This power transfer is achieved with DC voltages of ±200 kV and a DC current of 1,000 Amps (A) respectively. The transmission system consists of two stations–the San Francisco Converter Station and the Pittsburg Converter Station,

connected by a submarine/onshore HVDC cable system as previously proposed and assessed in the Draft and Final EIRs.

The planned Trans Bay Cable HVDC PLUS converter stations consist of the following primary components (common for both converter stations):

- AC Feeder (with Circuit Breaker, Disconnect Switches, Measuring Equipment, etc.)
- Single-phase transformer with tertiary winding for Station Auxiliary Power Supply
- Voltage Sourced Converter with ±200 kV Insulated Gate Bipolar Transistor valve groups and air-core Phase Reactors
- High voltage DC circuit
- Auxiliary Systems
- Cooling Systems (closed circuit)
- Control and Protection Systems

The core of the HVDC PLUS converter stations is the IGBT based converter where the conversion from AC to DC (i.e., Pittsburg Converter Station) and vice-versa (i.e., San Francisco Converter Station) takes place. Power Modules are made up of Insulated Gate Bipolar Transistors and form part of the Voltage Sourced Converter. Two DC Outputs are produced–one with +200 kV and one at -200 kV. Both outputs feed the High Voltage DC circuit. The IGBT equipment is enclosed in a conventional steel frame building, providing shielding, noise reduction, and other protection schemes.

With the proposed HVDC PLUS converter station design, the converter transformers are located in the AC Yard and do not penetrate the converter building with bushings. The transformers adjust the voltage at the AC busbar of the converter station to the required entry voltage of the converter. In addition, the transformers are equipped with a tertiary winding supplying the station auxiliary power for all systems.

The Control and Protection System contains all control and protection components, including measuring equipment, monitoring, as well as interface systems for communication. The main functions of the HVDC control system are to ensure operational safety and reliable energy transmission which operates in a highly efficient manner and flexible energy flow that responds to sudden changes in demand thus contributing to network stability.

With the proposed HVDC PLUS converter station design, all control and protection systems that contribute to the availability of energy are configured redundantly. This covers any potential single fault in the control and protection equipment without loss of power.

Refer to Sections 2.5 (San Francisco Converter Station) and 2.6 (Pittsburg Converter Station) for more information regarding the planned converter station layouts, components, and physical appearance.

2.4 SUBMARINE CABLE DESIGN AND INSTALLATION

In order to accommodate the HVDC PLUS converter station design addressed in this EIR Addendum, the design of the submarine HVDC cable system bundle between Pittsburg and San Francisco has been modified. The carrying capacity of the submarine cable is still 400 MW as evaluated in the Draft and Final EIRs, however, the planned cable design now consists of two, 200 kV cables (one positive, one negative) and a fiber optic communication cable (refer to Figure 2.4-1). The HVDC submarine cable system design addressed in the Draft and Final EIRs consisted of one 400 kV cable, one 12 kV return (ground) line, and a fiber optic cable. The HVDC submarine cable system would still be approximately 10 inches in diameter and would be bundled prior to burial at a target depth of 3 to 6 feet below the bottom of the Bay using a hydroplow deployed from a cable laying vessel as described in the Draft and Final EIRs. The submarine cable route and construction methods are as evaluated in the Draft and Final EIRs. The operational characteristics (e.g., electric and magnetic fields and heat) would be essentially the same as those described in the Draft and Final EIRs.

2.5 SAN FRANCISCO CONVERTER STATION

The planned converter station location in San Francisco is the San Francisco HWC (Mitigated) Converter Station site is a subset of the San Francisco HWC (Mitigated) site as evaluated in the Draft and Final EIRs and Section 1.2.2 of this EIR Addendum. The HVDC PLUS converter station design allows for a smaller footprint, fewer components, and lower building/structure heights than the conventional HVDC converter station design evaluated in the Draft and Final EIRs.

The San Francisco HWC (Mitigated) HVDC PLUS site and layout are shown on Figures 2.5-1 and 2.5-2, respectively. Figure 2.5-1 also shows the onshore DC and AC cable routings which are essentially the same as those evaluated in the Draft and Final EIRs. An elevation view of the HVDC PLUS layout at this site is shown on Figure 2.5-3 and photosimulations are shown on Figures 2.5-4 through 2.5-7.

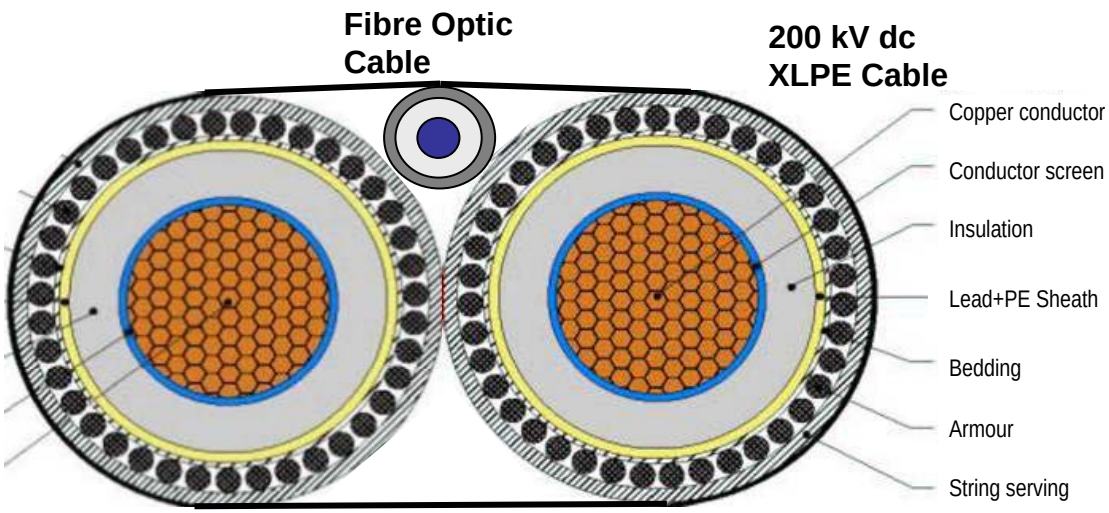
2.6 PITTSBURG CONVERTER STATION

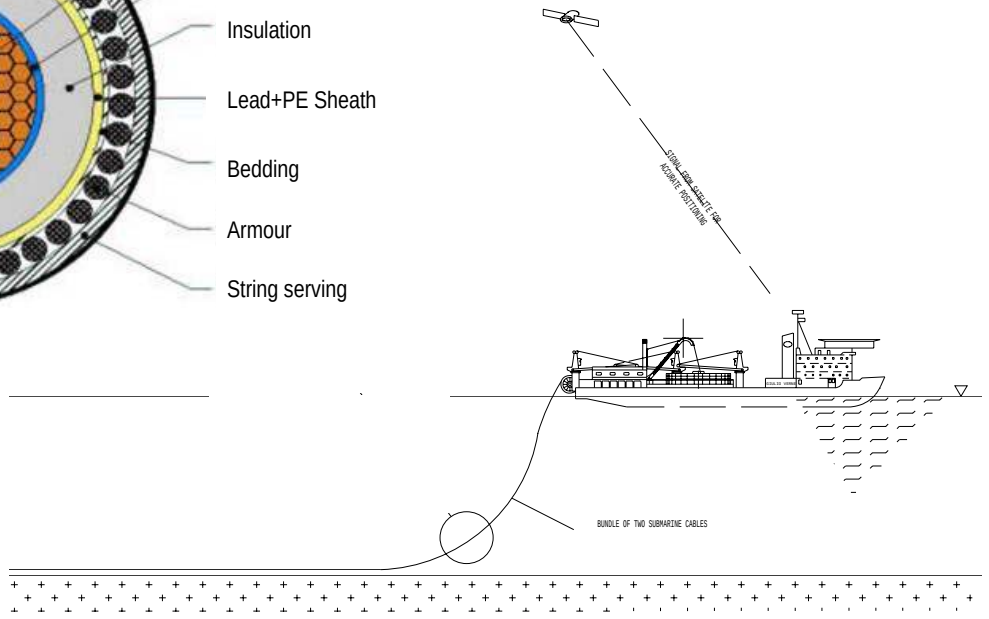
The planned converter station location in Pittsburg is the Pittsburg West Tenth Street Alternative 1 site evaluated in the Draft and Final EIRs, as modified. The smaller HVDC PLUS converter station footprint allows the Pittsburg West Tenth Street Alternative 1 converter station layout evaluated in the Draft and Final EIRs to be shifted onto the eastern portion of the previously evaluated converter station site. This change also allows for an

approximate 255-foot buffer (part of the previously evaluated Pittsburg West Tenth Street Alternative 2 site) between the new screening/security wall located along the southern converter station boundary line and the north side of West Tenth Street, which may be landscaped consistent with design review requirements to help visually screen the facility. The converter station operational access road would be constructed along the western boundary of the buffer area.

The Pittsburg West Tenth Street Alternative HVDC PLUS site and layout are shown on Figures 2.6-1 and 2.6-2, respectively. A temporary construction access road (30 feet wide) would be constructed along the northerly portion of the previously assessed Pittsburg West Tenth Street Alternative 1 site (refer to Figures 2.6-1 and 2.6-2). Figure 2.6-1 also shows the onshore DC and AC cable routings which are essentially the same as those evaluated in the Draft and Final EIRs. An elevation view of the HVDC PLUS layout at this site is shown on Figure 2.6-3. A photosimulation with landscaping in the buffer area is shown on Figure 2.6-4, and a photosimulation without landscaping is shown on Figure 2.6-5.

Bundle Configuration*



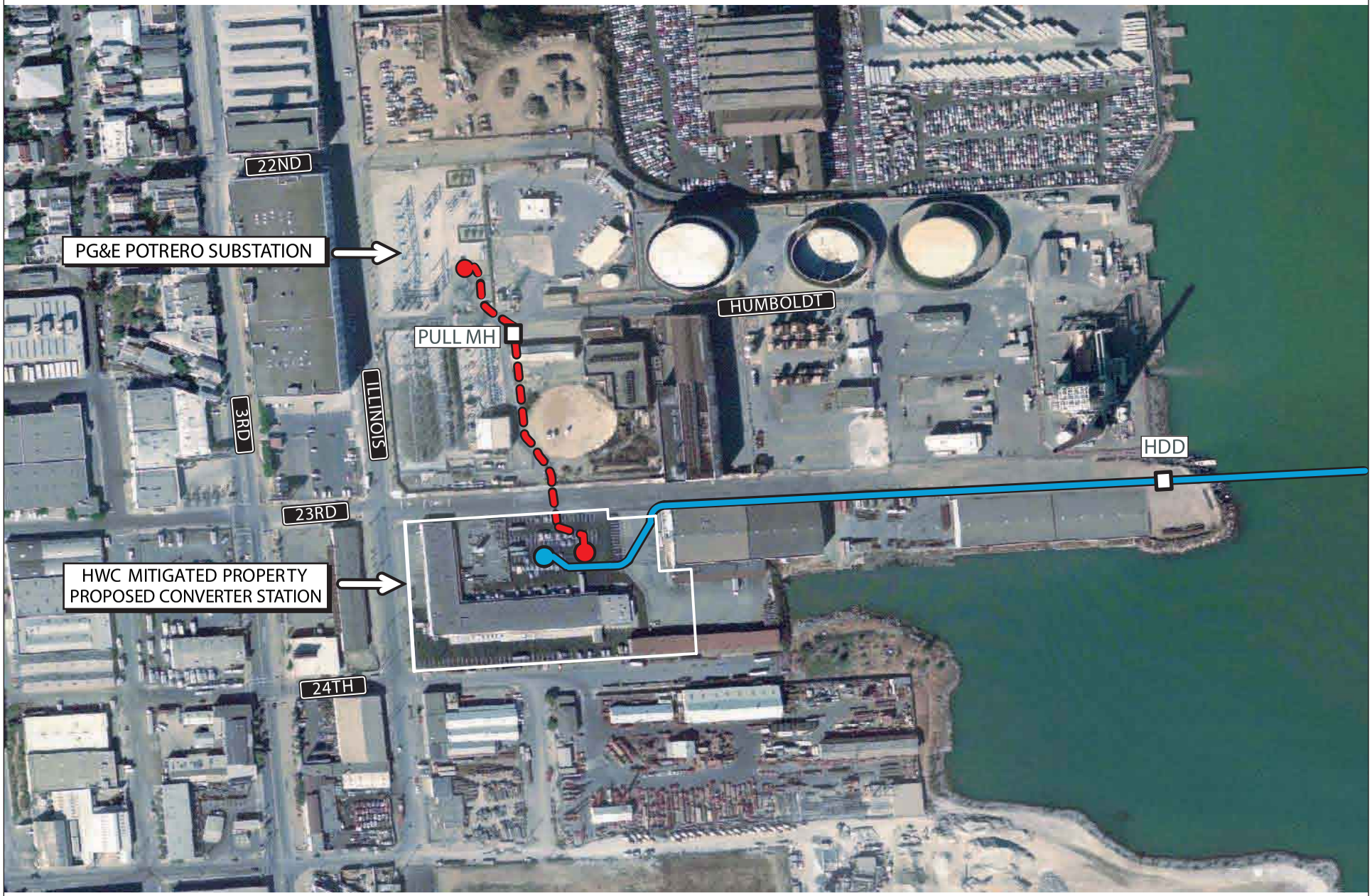


The cables will be simultaneously installed in a Bundle configuration, fastened together with ropes and straps applied before approaching the laying sheave.

* The width of the proposed buried cable system is approximately 10 inches

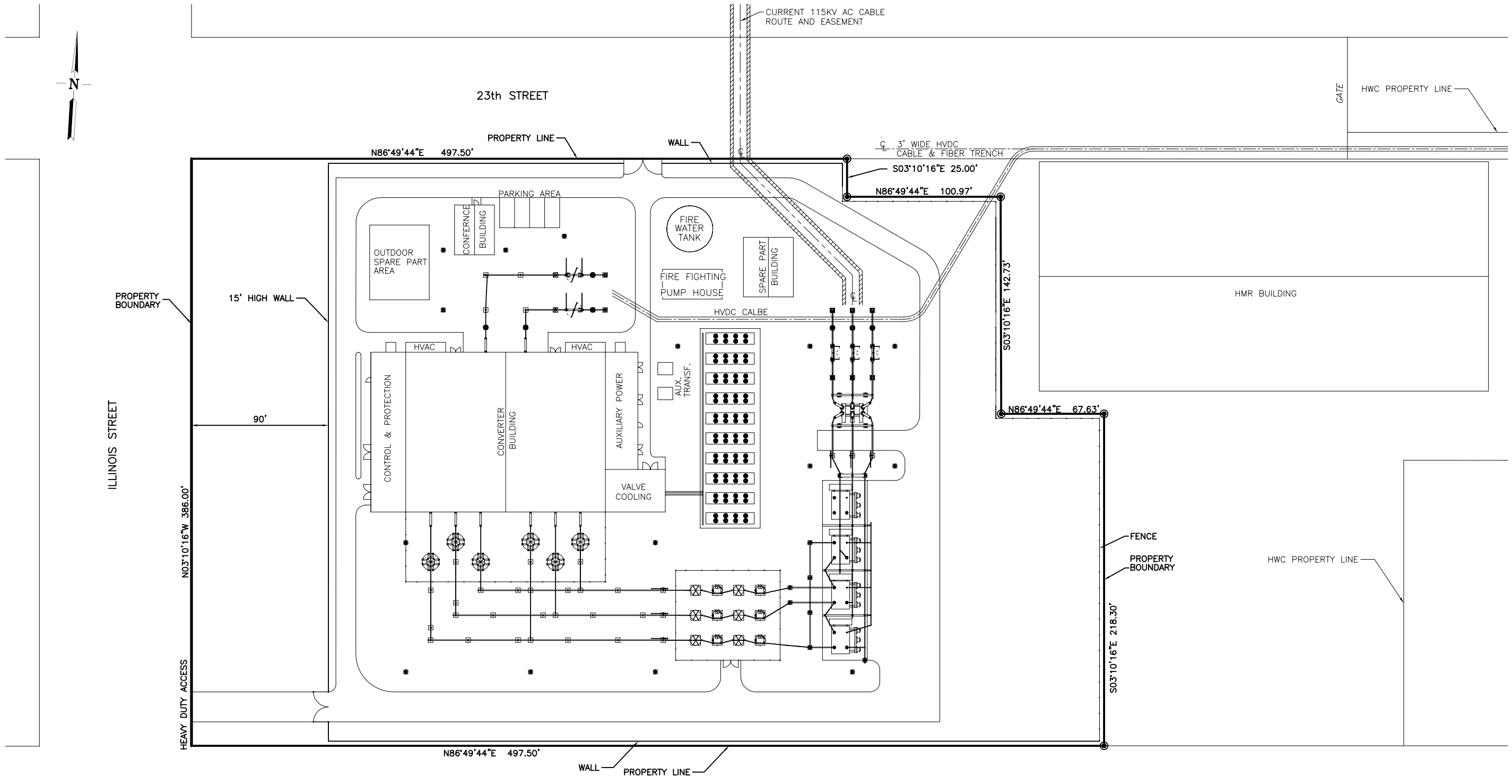
TRANS BAY CABLE PROJECT EIR	Figure 2.4-1. TYPICAL CONFIGURATION FOR SUBMARINE CABLE (HVDC PLUS)	2006

T/Ladd/TransBayCable/8-06Deliverable/1205-314(rev1206)



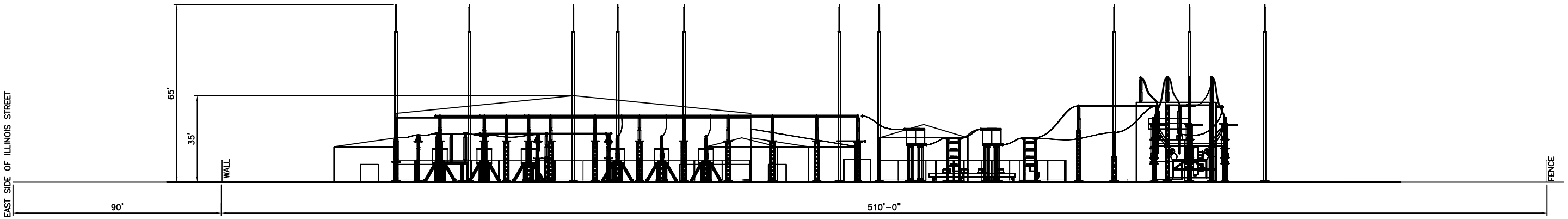
TRANS BAY CABLE PROJECT EIR	Figure 2.5-1. SAN FRANCISCO CONVERTER STATION SITE (HWC MITIGATED HVDC PLUS)	**DEC. 12,** 2006

T/Ladd/TransBayCable/10-06Deliverable/1205-318 (rev12-06)



TRANS BAY CABLE PROJECT EIR	Figure 2.5-2. SAN FRANCISCO CONVERTER STATION PLAN VIEW (HWC MITIGATED HVDC PLUS)	**DEC. 12,** 2006

T/Ladd/TransBayCable/8-06Deliverable/1205-344(rev12-06)



ELEVATION VIEW
(LOOKING NORTH)

TRANS BAY CABLE PROJECT EIR	Figure 2.5-3. SAN FRANCISCO CONVERTER STATION ELEVATION VIEW (HWC MITIGATED HVDC PLUS)	**DEC. 12,** 2006

T/Ladd/TransBayCable/8-06Deliverable/106-014(rev12-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.5-4. PHOTOSIMULATION OF SAN FRANCISCO CONVERTER STATION (HWC [MITIGATED] HVDC PLUS - VIEW FROM 23RD AND ILLINOIS STREET)	**DEC. 12,** 2006

T/Ladd/TransBayCable/10-06Deliverable/106-014(rev12-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.5-5. PHOTOSIMULATION OF SAN FRANCISO CONVERTER STATION (HWC [MITIGATED] HVDC PLUS - VIEW FROM POTRERO HILL)	**DEC. 12,** 2006

T/Ladd/TransBayCable/8-06Deliverable/106-014(rev12-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.5-6. PHOTOSIMULATION OF SAN FRANCISCO CONVERTER STATION (HWC [MITIGATED] HVDC PLUS - VIEW FROM WARM WATER COVE PARK)	**DEC. 12,** 2006

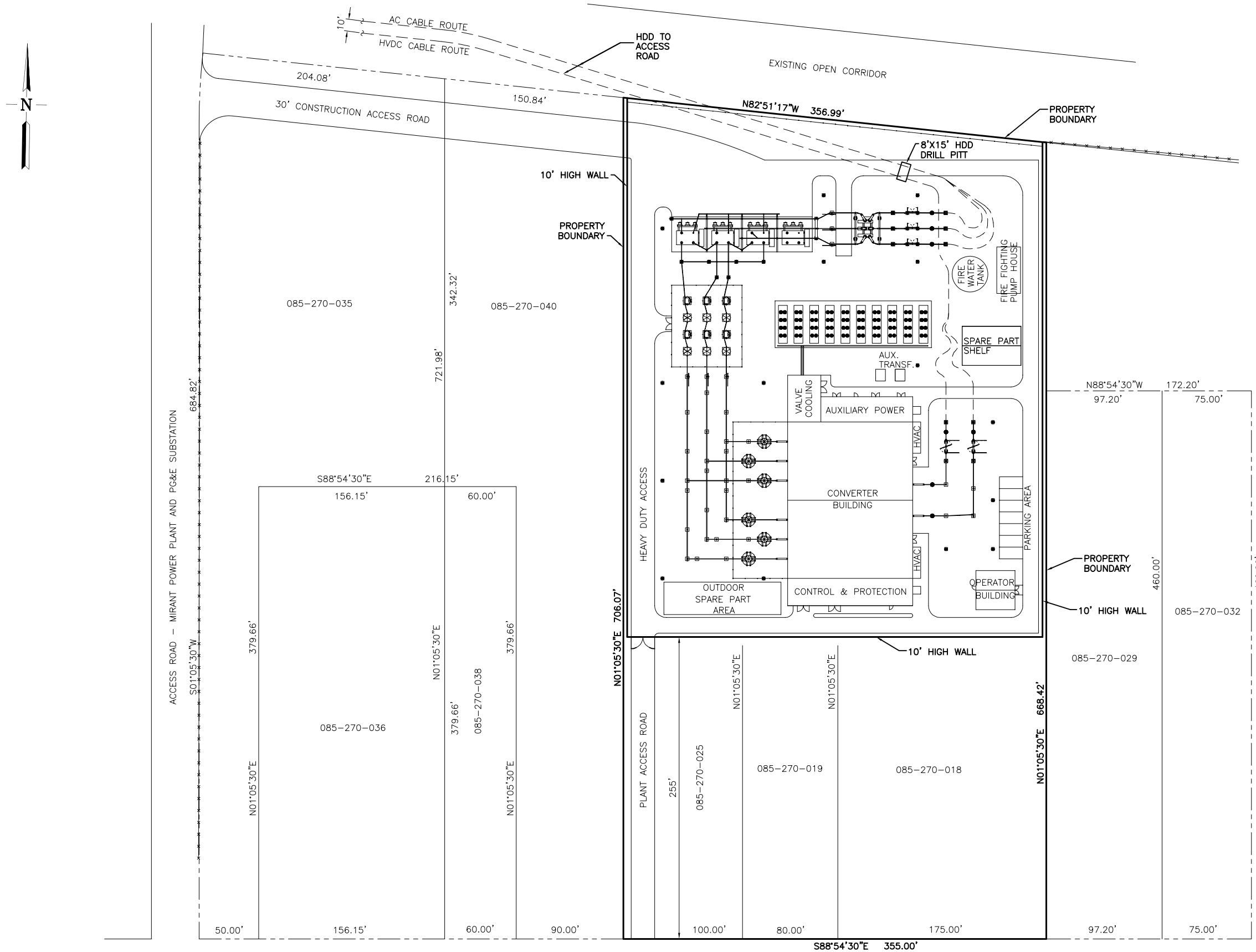
T/Ladd/TransBayCable/8-06Deliverable/106-014(rev12-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.5-7 PHOTOSIMULATION OF SAN FRANCISCO CONVERTER STATION (HWC [MITIGATED] HVDC PLUS - VIEW FROM 24TH AND ILLINOIS STREET)	**DEC. 12,** 2006

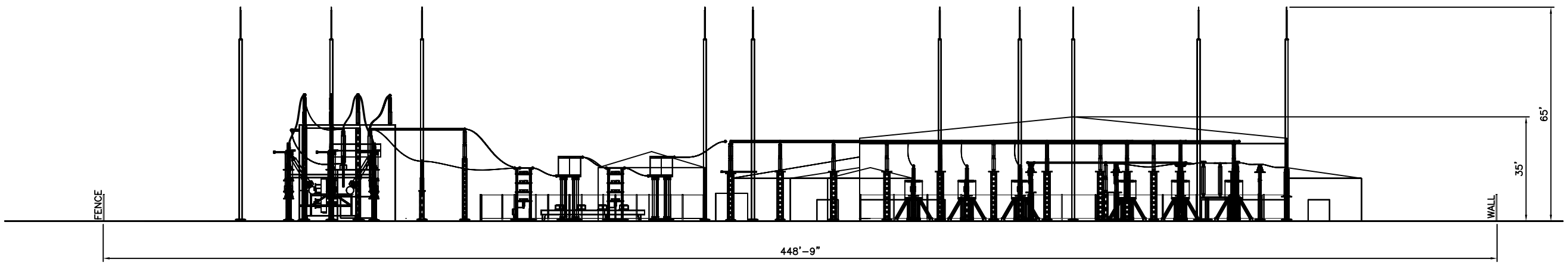
T/Ladd/TransBayCable/8-06Deliverable/106-043A(rev11-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.6-1. PITTSBURG CONVERTER STATION SITE (WEST TENTH STREET HVDC PLUS)	DEC. 05, 2006

T/Ladd/TransBayCable/10-06Deliverable/1205-318 (rev12-06)



TRANS BAY CABLE PROJECT EIR	Figure 2.6-2. PITTSBURG CONVERTER STATION PLAN VIEW (WEST TENTH STREET HVDC PLUS)	**DEC. 12,** 2006



ELEVATION VIEW
(LOOKING EAST)

TRANS BAY CABLE PROJECT EIR	Figure 2.6-3. PITTSBURG CONVERTER STATION ELEVATION VIEW (WEST TENTH STREET HVDC PLUS)	**DEC. 01,** 2006

T/Ladd/TransBayCable/8-06Deliverable/106-014(rev12-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.6-4. PHOTOSIMULATION OF PITTSBURG CONVERTER STATION (WEST TENTH STREET HVDC PLUS - VIEW FROM WEST TENTH STREET WITH LANDSCAPED BUFFER)	**DEC. 12,** 2006

T/Ladd/TransBayCable/8-06Deliverable/106-014(rev12-06)

TRANS BAY CABLE PROJECT EIR	Figure 2.6-5. PHOTOSIMULATION OF PITTSBURG CONVERTER STATION (WEST TENTH STREET HVDC PLUS - VIEW FROM WEST TENTH STREET WITHOUT LANDSCAPED BUFFER)	**DEC. 12,** 2006

3.1 INTRODUCTION

This EIR Addendum focuses on aspects of the proposed HVDC PLUS converter station technology/design that have the potential to result in new or different significant environmental impacts relative to the previously proposed HVDC "conventional" design as evaluated in the Draft and Final EIRs. As discussed in Sections 1.0 and 2.0 of this EIR Addendum, the HVDC PLUS technology/converter station design allows the converter stations to be smaller in size (both footprint and height) in both San Francisco and Pittsburg. The proposed San Francisco HWC (Mitigated) Converter Station site is now a subset of what was evaluated in Section 4.A and Table 6-1 of the Final EIR. The proposed Pittsburg West Tenth Street Converter Station site consists of a modified Pittsburg West Tenth Street Alternative 1 as evaluated in the Draft and Final EIRs, extending approximately 50 feet south of the original configuration. As discussed in Section 1.2.1 of this EIR Addendum, the adoption of the Siemens HVDC "PLUS" technology/converter station design has multiple advantages compared to the HVDC "conventional" design evaluated in the Draft and Final EIRs. The HVDC PLUS design requires less equipment and materials, equipment deliveries, and earthwork to construct (estimated reduction of approximately 20 to 25 percent) relative to the HVDC "conventional" design evaluated in the Draft and Final EIRs. In addition, the HVDC PLUS converter stations are smaller (i.e., less visibly apparent) and would generate less noise during Project operations than the HVDC "conventional" design. The proposed HVDC PLUS technology/converter station design would result in less impacts than those identified in the Final EIR as discussed herein and in Table 1-1 of this EIR Addendum.

The impact findings and mitigation measures requirements presented in the Final EIR, as certified by the City of Pittsburg, are generally the same for the refined Trans Bay Cable Project utilizing HVDC PLUS technology/design (refer to Table 1-1 of this EIR Addendum) except as itemized in the following subsections.

Brief environmental assessments that focus on the differences between the proposed HVDC PLUS design and site modifications in San Francisco and Pittsburg relative to HVDC conventional design and sites evaluated in the Final EIR follow for these environmental resource topics:

- Air Quality
- Geologic Resources and Soils
- Water Resources and Quality
- Terrestrial Biological Resources
- Marine Biological Resources
- Cultural Resources

- Land Use and Recreation
- Marine Transportation and Commercial Fishing
- Traffic and Transportation
- Noise and Vibration
- Public Services and Utilities
- Visual Resources/Aesthetics
- Hazardous Materials and Waste Management
- Paleontological Resources

All identified impacts are less than significant with mitigation and are equal to or typically less than those identified in the Draft and Final EIRs for the HVDC conventional design.

3.2 AIR QUALITY

With implementation of Mitigation Measures AIR-1, AIR-2, AIR-3, and AIR-4 (refer to Table 1-1 of this EIR Addendum), Impacts AIR-1, AIR-2, AIR-3, and AIR-4 would all be reduced to a less than significant level. With adoption of the HVDC PLUS converter station design/layout, construction emissions would be reduced by an estimated 20 to 25 percent relative to "conventional" HVDC at the converter station sites in San Francisco and Pittsburg due to the smaller footprint, the need for less equipment and materials (including truck deliveries), the need for less grading and subsurface excavation, and the shorter duration and/or intensity of the onshore construction phase. In addition, with the proposed HVDC PLUS converter station design there is no longer a need for an emergency backup generator during the operational phase. The operational emission estimates associated with required periodic testing of the diesel-fueled emergency generator (refer to Table 4.2-11 of the Draft EIR) are no longer applicable in San Francisco or Pittsburg. The operational emissions associated with the Project would now be limited to the two diesel fire pumps, and the emission estimates presented in Table 4.2-11 of the Draft EIR would be reduced by approximately 66 percent (i.e., estimates based on combined 1,350 kilowatts [kW] of output; the elimination of the emergency generator would reduce the output by 900 kW, or about 66 percent).

3.3 GEOLOGIC RESOURCES AND SOILS

With implementation of Mitigation Measures GEO-1, GEO-2, GEO-3, GEO-4, and GEO-5, Impacts GEO-1 through GEO-5 (refer to Table 1-1 of this EIR Addendum) would all be reduced to a less than significant level. As discussed previously, with the adoption of the HVDC PLUS design the amount of grading and excavation at the San Francisco and

Pittsburg converter station sites would be reduced, thereby reducing soil disturbance and erosion relative to the HVDC conventional design converter stations evaluated in the Draft and Final EIRs. In addition, the smaller HVDC PLUS converter station design (i.e., smaller footprint, less equipment, shorter structure heights) would reduce the facility's potential susceptibility to damage associated with strong ground shaking. The HVDC PLUS converter stations in San Francisco and Pittsburg would still be designed to conform with the Uniform Building Code requirements for Seismic Zone 4 as well as the provisions of the 2001 California Building Code.

3.4 WATER RESOURCES AND QUALITY

With implementation of Mitigation Measures WATER-1 through WATER-7, Impacts WATER-1 through WATER-7 would be reduced to a less than significant level (refer to Table 1-1 of this EIR Addendum). Impact WATER-8 (Flooding) applied to the northwest corner of the Pittsburg West Tenth Street Alternative 1 site as evaluated in the Draft and Final EIRs. With the adoption of the HVDC PLUS converter station design/layout, the location of the Pittsburg HVDC PLUS converter station on the eastern portion of the previously evaluated converter station site would avoid the Federal Emergency Management Agency (FEMA) designated 100-year floodplain, thus Impact WATER-8 (Flooding) no longer applies to the converter station. However, Impact WATER-8 does apply to a portion of the proposed temporary access road on the northerly portion of the property which connects the converter station site to the Mirant Power Plant access road. With implementation of Mitigation Measure WATER-8 (Flood Mitigation), this potentially significant impact would be reduced to a less-than-significant level.

3.5 TERRESTRIAL BIOLOGY

Construction of the proposed HVDC PLUS converter station at the San Francisco HWC (Mitigated) site would not potentially impact any terrestrial biological resources. Construction of the proposed HVDC PLUS converter station at the Pittsburg West Tenth Street Alternative 1 site, as modified, would also not potentially impact any terrestrial biological resources. However, construction of the proposed onshore AC/DC cable routes for the Pittsburg West Tenth Street site has the potential to impact sensitive biological resources (wetland, and potential Giant Garter Snake and Western Pond Turtle habitat associated with the wetland to the north of the Pittsburg West Tenth Street Converter Station site). With the adoption of HDD or Comparable Technology for AC/DC cable installation into the proposed Project in this area, impacts would be avoided.

3.6 MARINE BIOLOGICAL RESOURCES

No potentially significant impacts to marine biological resources are associated with the proposed HVDC PLUS Project, including consideration of the modified submarine cable design (refer to Section 2.4 for more information).

3.7 CULTURAL RESOURCES

3.7.1 Introduction

Construction of the proposed Project at the Pittsburg West Tenth Street Alternative 1 Converter Station site, as modified, would not potentially impact any cultural resources (archeological or historic resources). With implementation of Mitigation Measures CUL-3a through -3c, potentially significant impacts to archaeological resources (e.g., shipwrecks) associated with installation of the proposed HVDC submarine cable (Impact CUL-3) would be reduced to a less than significant level.

3.7.2 San Francisco HWC (Mitigated) Converter Station Site

Implementation of the proposed San Francisco converter station at the HWC (Mitigated) site has the potential to significantly impact buried archaeological resources (Impact CUL-1) as did the formerly proposed HWC (Mitigated) site. With implementation of Mitigation Measure CUL-1a through -1c, this potentially significant impact would be reduced to a less than significant level.

3.8 LAND USE AND RECREATION

3.8.1 San Francisco Converter Station

Section 4.A.8 (Land Use and Recreation) of the Final EIR addresses the environmental setting and environmental impacts of the San Francisco HWC (Mitigated) Converter Station site. No potentially significant impacts were identified in the Final EIR relative to Land Use and Recreation. The proposed refined proposed Project utilizing HVDC PLUS technology/design would increase the distances between the HWC (Mitigated) converter station facilities and potentially sensitive land uses (refer to Table 4.A.8-1 of the Final EIR) by approximately 90 feet. The HVDC PLUS design (i.e., versus conventional design evaluated in the Draft and Final EIRs) would allow the maximum converter station building height to be reduced from 64 to 35 feet, and the overall station footprint would be substantially reduced. Additionally, the approximate 90-foot buffer between the converter station boundary and the east side of Illinois Street associated with the HVDC PLUS design at this site would be landscaped, thereby increasing land use compatibility with the potential

future mixed-used residential contemplated in the Draft Central Waterfront Neighborhood Plan.

In summary, the proposed Project refinements associated with utilization of the HVDC PLUS technology/design would be positive from a land use compatibility standpoint, and no potentially significant impacts relative to land use and recreation have been identified.

3.8.2 Pittsburg Converter Station

Section 5.4.8 (Land Use and Recreation) of the Draft EIR describes the environmental setting, environmental impacts, and mitigation measures for the Pittsburg West Tenth Street Alternative 1 site, which is identified as the proposed Pittsburg converter station site (as modified) in the Final EIR. Utilization of the HVDC PLUS converter station technology/design as assessed in this EIR Addendum allows for a smaller converter station footprint. The converter station site now encompasses only the eastern portion of the previously assessed Alternative 1 site plus a small portion (approximately 50 feet southward from the southern boundary of the previous Alternative 1 site) into what was the Pittsburg West Tenth Street Alternative 2 site as evaluated in the Draft and Final EIRs. The approximately 255-foot buffer area between the southern HVDC PLUS converter station boundary (modified Alternative 1 site) and the north side of West Tenth Street would potentially be landscaped following construction. An operational phase access road between the converter station and West Tenth Street would be constructed on the westernmost portion of Parcel 25 (refer to Figure 2.6-2 of this Addendum).

From a land use perspective, the key differences between the HVDC PLUS converter station layout on the Pittsburg West Tenth Street Alternative 1 site (modified) as assessed in this EIR Addendum and the West Tenth Street Alternative 1 site addressed in the Draft and Final EIRs are as follows:

- The Pittsburg West Tenth Street Alternative 1 facility location (modified) is approximately 400 feet north of the closest residential area (i.e., potentially sensitive land uses), which is south of West Tenth Street off Enterprise Street; the West Tenth Street Alternative 1 and 2 sites as assessed in the Draft and Final EIRs were 450 and 150 feet away from these residences, respectively (refer to Table 5.4.8-1 in the Draft EIR).
- The Pittsburg West Tenth Street Alternative 1 site (modified) includes an approximate 255-foot buffer between the southern converter station fence line and West Tenth Street; this area would potentially be landscaped to City of Pittsburg standards although final determinations regarding the future land use of this area have not been determined at this time.
- The westernmost portion of the Pittsburg West Tenth Street buffer area would be used for an operational access road.

- The proposed HVDC PLUS converter station design conforms with the conditions (e.g., 65-foot maximum building structure height and 250-foot setback from West Tenth Street) of the Pittsburg West Tenth Street zoning overlay amendment that was approved and adopted by the Pittsburg City Council on November 20, 2006.

In summary, the utilization of the HVDC PLUS technology/converter station design at the West Tenth Street site would not result in any identified potentially significant land use- or recreation-related impacts.

3.9 MARINE TRANSPORTATION AND COMMERCIAL FISHING

The adoption of the HVDC PLUS design for the converter stations in San Francisco and Pittsburg, including consideration of the modified HVDC submarine cable design as well as moving the San Francisco converter station from the HWC (Mitigated) site to the Mirant site would have no effect on the impact findings presented in the Draft and Final EIRs relative to marine transportation and commercial fishing (refer to Table 1-1 of this EIR Addendum).

3.10 TRAFFIC AND TRANSPORTATION

As discussed in Section 1.2.1 of this EIR Addendum, adoption of the HVDC PLUS converter station design requires an estimated 20 to 25 percent less materials and equipment deliveries relative to the HVDC conventional design evaluated in the Draft and Final EIRs. In addition, the overall intensity and/or duration of the construction phase would be reduced due to the smaller, less complex design associated with the HVDC PLUS technology.

The aforementioned aspects of the proposed HVDC PLUS design/layouts all contribute to reduced traffic and transportation related impacts from the Project relative to the HVDC conventional design evaluated in the Draft and Final EIRs.

Site access for the San Francisco HWC (Mitigated) HVDC PLUS Converter Station would be via 23rd Street and via Illinois Street (refer to Figure 2.5-2 of this Addendum) near the intersection with 24th Street, as was evaluated in the Final EIR (Section 4.A.10).

Site access during the operational phase for the Pittsburg West Tenth Street Alternative 1 site, as modified, would be via West Tenth Street (refer to Figures 2.6-1 and 2.6-2 of this Addendum) similar to the previously considered site except that the road would be situated further to the east for the HVDC PLUS site. Construction access to the Pittsburg West Tenth Street Alternative 1 site as evaluated in the Draft and Final EIRs involved use of the Mirant Pittsburg Power Plant access road as does this EIR Addendum although an extension would need to be constructed to the east to the modified site. None of these Project modifications would result in any new potentially significant traffic related impacts.

With implementation of Mitigation Measures TRAFFIC-1 through TRAFFIC-4, Impacts TRAFFIC-1 through TRAFFIC-4 would all be reduced to less than significant levels.

3.11 NOISE AND VIBRATION

3.11.1 San Francisco Converter Station

Section 4.A.11 (Noise and Vibration) of the Final EIR addresses the environmental setting and environmental impacts of the San Francisco HWC (Mitigated) Converter Station site. No potentially significant impacts were identified in the Final EIR relative to noise and vibration at this site. In addition, no potentially significant impacts related to noise and vibration are identified in this EIR Addendum for the HVDC PLUS design/layout.

The proposed Project utilizing HVDC PLUS technology/design would increase the distances between the HWC (Mitigated) Converter Station facilities and potentially sensitive receptors (refer to Table 4.A.11-1 of the Final EIR) by approximately 90 feet for the short-term pile driving portion of the construction phase as well as the operational phase due to the added 90-foot setback east of Illinois Street. The non-pile driving construction activities associated with demolition of existing buildings would still occur on the east side of Illinois Street in the area that would become an approximate 90-foot, landscaped buffer zone between Illinois Street and the converter station.

Section 4.A.11 of the Final EIR concluded that there were no potentially significant noise or vibration impacts associated with the HWC (Mitigated) site. With adoption of the HVDC PLUS technology/design, including the added 90-foot buffer from Illinois Street and the inherent lower operational noise levels associated with the HVDC PLUS converter station design, Project-related noise and vibration impacts would be reduced beyond those identified in the Final EIR. The following sections address construction and operational noise and vibration impacts for the HVDC PLUS design versus the conventional HVDC design evaluated in the final EIR.

3.11.1.1 Construction-related Impacts

Ambient noise measurement locations utilized to assess the HWC (Mitigated) site utilizing HVDC PLUS technology/design are the same as those presented in Section 4.11 of the Draft EIR for the previously proposed HWC site. The results of the ambient noise measurements are summarized in Table 4.11-2 of the Draft EIR. The measurement locations are shown on Figure 4.11-1 of the Draft EIR.

Sensitive receptors in the HWC (Mitigated) site Project area are the same as those identified for the previously proposed HWC site in Section 4.11 of the Draft EIR. They consist of multi-family residences approximately 480 feet west of the eastern side of Illinois Street at

2638 3rd Street in between 22nd and 23rd streets and multi-family residences approximately 1,150 feet west at 1423 Indiana Street. No residences have a direct line-of-sight to the Project due to intervening three- and four-story commercial buildings in between the residences and the site. In addition, both residences are within 500 feet of Interstate 280 to the west.

Scheduled construction hours at the San Francisco HWC (Mitigated) Converter Station would be the same as those given for the previously proposed HWC Project site in Section 4.11 of the Draft EIR. The anticipated noise sources would be the same as those outlined in Section 4.11 of the Draft EIR.

Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the previously proposed HWC site in Section 4.11 of the Draft EIR. The closest offsite residential uses to the San Francisco (Mitigated) Converter Station site consist of multi-family residences approximately 480 feet west and 1,150 feet to the west. Average construction sound levels at the closest residences to the San Francisco HWC (Mitigated) Converter Station construction site would be 69 and 62 dBA (A-weighted sound level), respectively, as summarized in Table 3.11-1. Because of the intermittent nature of construction work and he intervening buildings, it is unlikely that noise from construction would be audible at the residences, much less increase the existing noise levels by 5 dBA; therefore, there would be no significant impact. During this time period, construction activity would be required to comply with the City's noise ordinance criteria (80 dBA at 100 feet) and would result in a less-than-significant impact.

3.11.1.1.1 Pile Driving. Calculations were performed to estimate sound levels from pile driving at the receptors. As shown in Table 3.11.1-1, the distance from pile driving activities to the closest receptors is approximately 90 feet greater than the distance for general construction since the HVDC PLUS design includes a 90-foot buffer between Illinois Street and the converter station. Direct line-of-sight sound levels at the residences were calculated to be 84 dBA maximum sound level (L_{max}) (79 dBA equivalent sound level [L_{eq}]) at the residences 570 feet west and 77 dBA L_{max} (72 dBA L_{eq}) at the residences 1,240 feet west. Due to the intervening buildings, received sound levels at the receptors would be substantially less than predicted, although it is likely that noise from the pile driving would still be audible at the receptors. Section 4.11.3.1.1 of the Draft EIR details pile driving restrictions to be followed in San Francisco. Pile driving would be required to comply with these requirements and would result in a less-than-significant impact.

Calculations were performed to estimate vibration from pile driving activities at the closest residences, as detailed in Section 4.11.1.2 of the Draft EIR. Vibration from pile driving was

TABLE 3.11.1-1
CALCULATED SOUND LEVELS FROM THE CONSTRUCTION OF THE SAN FRANCISCO HWC (MITIGATED) CONVERTER STATION UTILIZING HVDC PLUS DESIGN

Converter Station Site	Receptor Description	Distance to Receptors for General Construction (Ft)	Calculated Sound Level for General Construction (dBA)	Distance to Receptors for Pile Driving (Ft)	Calculated Sound Level from Pile Driving (dBA)	
					L_{max}	L_{eq}
San Francisco HWC (Mitigated)	Multi-family residences (2638 3rd Street)	480[1]	69[1]	570[2]	84[2]	79[2]
	Multi-family residences (1423 Indiana Street)	1,150[1]	62[1]	1,240[2]	77[2]	72[2]

[1] Applies to both HWC (Mitigated) sites evaluated in Final EIR and this EIR Addendum.

[2] Applies to HWC (Mitigated) site as evaluated in this EIR Addendum; the comparable numbers presented in the Final EIR are all higher by approximately 1 dBA (i.e., pile driving impacts for HVDC PLUS design are lower in all cases).

assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at the closest residences 570 feet from the pile driving would be 0.007 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less-than-significant impact.

3.11.1.2 Operations-related Impacts

Calculations were performed by Siemens for the HVDC PLUS converter station design (refer to Appendix A of this EIR Addendum) using linear octave band sound power levels as inputs from each noise source. As shown on Figures 2.5-2 and 2.5-3 of this EIR Addendum, the proposed Project design for the San Francisco HWC (Mitigated) Converter Station includes an approximately 15-foot-tall sound wall along the western boundary and a 10-foot-tall sound wall along the southern and northern boundaries. A noise analysis was conducted for the HWC (Mitigated) site, and the results are summarized here and provided in Appendix A of this EIR Addendum.

As summarized in Table 3.3-2, hourly average sound levels from the San Francisco HWC (Mitigated) Converter Station utilizing the HVDC PLUS design and layout would range from 48 dBA L_{eq} on the western property line to 60 dBA L_{eq} at the eastern property line. Because sound levels are below the San Francisco 75 dBA L_{eq} requirement, there would not be a significant impact.

TABLE 3.11.1-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE SAN FRANCISCO HWC (MITIGATED) CONVERTER STATION UTILIZING THE HVDC PLUS DESIGN

Converter Station Site	Receptor Description	Calculated Sound Level (dBA) With Proposed Sound Wall	
San Francisco HWC (Mitigated) Utilizing HVDC PLUS Design	North Property Line	58 L_{eq} (1 hr)	64 L_{dn}
	South Property Line	57 L_{eq} (1 hr)	63 L_{dn}
	East Property Line	60 L_{eq} (1 hr)	66 L_{dn}
	West Property Line	48 L_{eq} (1 hr)	54 L_{dn}

The L_{dn} are used by the State of California to define acceptable land use compatibility with respect to noise. Because of the time-of-day penalties associated with the L_{dn} descriptor, the L_{eq} for a continuously operating sound source during a 24-hour period will be numerically less. Thus, for a noise source operating continuously for periods of 24 hours, the L_{eq} will be 6 dB lower than the L_{dn} value. Thus, the San Francisco noise ordinance requirement of 75 dBA L_{eq} (1 hr) at the property lines would be equivalent to 81 dBA L_{dn}. Comparing the calculated sound levels presented in Table 3.11.1-2 of this EIR Addendum (for HVDC PLUS design) with those presented in Table 4.A.11-2 of the Final EIR indicates that operational noise levels at the property site boundaries would all be substantially less for the HVDC PLUS design/layout.

3.11.1.3 Cumulative Impacts

The proposed San Francisco HWC (Mitigated) Converter Station site is located approximately 90 feet east of Illinois Street between 23rd and 24th streets. As discussed in Section 7.2.3.4 (Central Waterfront Neighborhood Plan [Plan]) of the Draft EIR, the City and County of San Francisco is considering rezoning the location of the overall HWC site to PDR (Production, Distribution, & Repair). In addition, the draft Plan envisions rezoning the west side of Illinois Street to mixed use residential. An assessment of the potential operational noise impacts of the proposed HWC (Mitigated) layout utilizing the HVDC PLUS design/layout, including the approximate 90-foot setback from Illinois Street, with the possible future mixed use residential development across Illinois Street follows. The calculated operational noise level on the west side of Illinois Street (approximately 170 feet west of converter station) is 44 dBA L_{eq} (50 dBA L_{dn}). This noise level is well below the current noise ordinance requirement as well as the currently applicable noise requirements for R1 and R2 residential zoning in San Francisco of 50 dBA from 10:00 p.m. to 7:00 a.m. In summary, no significant possible future cumulative noise impacts would be expected to occur.

3.11.2 Pittsburg Converter Station

3.11.2.1 Introduction

Sections 5.4.11 and 5.5.11 (Noise and Vibration) of the Draft EIR address the environmental setting and environmental impacts of the Pittsburg West Tenth Street Alternative 1 and Alternative 2 converter station sites, respectively. One potentially significant impact was identified in the Draft and Final EIRs relative to noise and vibration at the Alternative 1 site (Impact NOISE-1, Converter Station Operations Sound Levels). With implementation of Mitigation Measure NOISE-1 (Noise Barrier Installation for Converter Station), this impact would be reduced to a less than significant level. In addition, the noise and vibration assessments performed in this EIR Addendum for the HVDC PLUS design/layout at the Alternative 1 converter station site, as modified, indicate that no potentially significant noise or vibration impacts would occur during the construction or operational phases of the Project.

The proposed Project utilizing the HVDC PLUS design/layout at this site now encompasses only the eastern portion of the previously assessed Alternative 1 site plus a small portion (approximately 50 feet southward from the southern boundary of the previous Alternative 1 site) into what was the previous Alternative 2 site as assessed in Section 5.5.11 of the Draft EIR. The approximately 255-foot buffer area between the southern HVDC PLUS converter station layout boundary (modified Alternative 1 site) and the north side of West Tenth Street would potentially be landscaped following construction. To provide operational access to the site, a new access road would be constructed along the western portion of the overall site. This would require the removal of the existing structures (i.e., via demolition) on what was the southern portion of the Pittsburg West Tenth Street Alternative 2 site as evaluated in the Draft EIR (Section 5.5.11). The Alternative 1 and Alternative 2 sites as evaluated in the Draft EIR shared a common eastern boundary which is applicable to the HVDC PLUS layout/site as well. Therefore, the general construction noise assessment (excluding pile driving) presented in Section 5.5.11 of the Draft EIR for the Pittsburg West Tenth Street Alternative 2 site relative to the closest potentially sensitive receptors (i.e., single family residences south of West Tenth Street at 182 Builders Court [150 feet south of southernmost extent of general construction activities] and the single family residences at 900 Beacon Street [600 feet east of eastern converter station/property boundary]) are essentially the same for the HVDC plus design/layout with 255-foot buffer to the south. Examples of short-term, general construction activities that could occur in portions of the buffer area include demolition of existing buildings and construction of the permanent access road along the western border.

Short-term pile driving activities would only occur north of the 255-foot buffer above West Tenth Street and west of the eastern converter station boundary which is essentially the same for HVDC PLUS design/layout and the Pittsburg West Tenth Street Alternative 1 site evaluated in Section 5.4.11 of the Draft EIR. Due to the smaller footprint of the HVDC

PLUS converter station layout and the reduction in the amount of equipment on the site, it is expected that the duration of pile driving activities would be reduced relative to that estimated in the Draft EIR.

For the HVDC PLUS design/layout operational phase noise and vibration impact assessment, the closest sensitive receptors (i.e., aforementioned residences to the south and east) are located approximately 405 feet to the south and 600 feet to the east.

The following sections address construction and operational noise and vibration impacts for the HVDC PLUS design/layout for the Pittsburg West Tenth Street Alternative 1 site, as modified, versus the HVDC conventional design/layout as evaluated in the Draft and Final EIRs.

3.11.2.2 Construction-related Impacts

As discussed in Section 5.4.11 of the Draft EIR, a series of sound level measurements was conducted on September 13 through 14, 2005, to quantify the existing acoustical environment for the Pittsburg West Tenth Street Converter Station site as well as at sensitive receptors near the site. The results of the measurements are summarized in Table 4.11-3, and the measurement locations are shown on Figure 4.11-2 of the Draft EIR.

Sensitive receptors in the vicinity of the Pittsburg Alternative 1 converter station site, as modified, are discussed in Section 3.11.2.1 of this EIR Addendum.

Scheduled construction hours at the Pittsburg West Tenth Street Converter Station site are consistent with those given in Section 4.11 of the Draft EIR (7:00 a.m. to 7:00 p.m.). Criteria are not set forth by the Pittsburg Noise Element or Noise Ordinance related to construction noise levels and times of operations. The anticipated noise sources would be the same as those outlined for the proposed Project site in Section 4.11 of the Draft EIR.

Acoustical calculations were performed to estimate noise from general construction activities at the closest residences with the same methodology as described for the Pittsburg Standard Oil Converter Station site in Section 4.11 of the Draft EIR. The closest offsite residential uses to the proposed West Tenth Street Converter Station Alternative 1 site, as modified to accommodate the HVDC PLUS design/layout, consist of residences approximately 150 feet south and 600 feet to the east. Average general construction sound levels at the closest residences to this alternative site would be 79 dBA 150 feet south and 67 dBA 600 feet east, as summarized in Table 3.11.2-1. Construction of the converter station facility (versus demolition and permanent access road construction in the buffer area to the south) would occur at least 405 feet north of the closest residences.

TABLE 3.11.2-1
CALCULATED SOUND LEVELS FROM CONSTRUCTION OF THE PITTSBURG WEST TENTH STREET ALTERNATIVE 1 CONVERTER STATION SITE (AS MODIFIED) UTILIZING HVDC PLUS DESIGN

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level from General Construction (dBA)	Distance to Receptors for Pile Driving (Ft)	Calculated Sound Level from Pile Driving (dBA)	
					L_{max}	L_{eq}
Pittsburg West Tenth Street Alternative 1, As Modified	Single-family residences (182 Builders Court)	150	79	405	87	82
	Single-family residences (900 Beacon Street)	600	67	600	83	78

Construction noise would be audible at the residential receptors south of West Tenth Street. Once the initial demolition activities were completed in the southern buffer/setback area, general construction noise levels would drop at the receptors south of West Tenth Street. Construction noise would be intermittent and limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday; thus, there would be no significant impact.

3.11.2.2.1 Pile Driving. Calculations were performed to estimate sound levels from pile driving at the receptors. Direct line-of-sight sound levels at the closest residences from the West Tenth Street Converter Station Alternative 1 site, as modified, were calculated to be 87 dBA L_{max} (82 dBA L_{eq}). Pile driving is not subject to sound level restrictions in Pittsburg, but it is limited to the hours of 7:00 a.m. to 10:00 p.m. For this Project, the City of Pittsburg will further limit the permissible hours for pile driving to 7:00 a.m. to 5:00 p.m. This alternative could result in received noise levels as high as 82 dBA (L_{eq}) at the closest receptors. This noise level is less than the 90 dBA L_{eq} threshold of significance (FTA, 1995), and, therefore, would be less than significant.

Calculations were performed to estimate vibrations from pile driving activities at the closest residences. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 405 feet from the pile driving under Alternative 1, as modified, would be less than 0.04 in/sec, which is well below the FTA threshold, resulting in a less than significant impact.

3.11.2.3 Operations-related Impacts

Calculations were performed using linear octave band sound power levels as inputs from each noise source. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix A of this EIR Addendum. As summarized in Table 3.11.2-2, sound levels at the Pittsburg West Tenth Street Converter Station Alternative 1 site, as modified, utilizing the HVDC PLUS design/layout would not exceed the City of Pittsburg 75 L_{dn} requirement, and impacts would be less than significant. Therefore, Impact NOISE-1 (Converter Station Operations Sound Levels) and corresponding Mitigation Measure NOISE-1 (Noise Barrier Installation for Alternative Converter Station) as identified in the Draft and Final EIRs are no longer applicable and/or required. However, the Applicant has committed to implement Mitigation Measure NOISE-1 at this site by constructing a 10-foot-tall sound wall around the southern, western, and eastern site boundaries.

TABLE 3.11.2-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE PITTSBURG WEST TENTH STREET ALTERNATIVE 1 CONVERTER STATION SITE (AS MODIFIED) UTILIZING HVDC PLUS DESIGN

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)[1]
Pittsburg West Tenth Street Alternative 1, As Modified, Using HVDC PLUS Design	North Property Line	70 L_{dn}
	South Property Line	56 L_{dn}
	East Property Line	70 L_{dn}
	West Property Line	74 L_{dn}
	Closest Receptors	55 L_{dn}

[1] These calculated sound levels are all below the calculated sound levels at the closest receptors identified in the Draft EIR for both the Pittsburg West Tenth Street Alternative 1 and Alternative 2 sites.

In summary, implementation of the HVDC PLUS design converter station at the Pittsburg West Tenth Street Alternative 1 site, as modified, would not result in any potentially significant noise or vibration impacts.

3.12 PUBLIC SERVICES AND UTILITIES

The potentially significant public services and utilities related impacts of the proposed San Francisco HWC (Mitigated) and Pittsburg West Tenth Street Converter Station sites are the same as presented in Sections 5.2.12 and 5.4.12 of the Draft EIR, respectively with implementation of Mitigation Measures PS-1 (Construction Fire Prevention), PS-2 (Utility Survey), and PS-3 (Operations Fire Prevention), Impacts PS-1 (Construction Fire Hazard), PS-2 (Existing Onshore Underground Utilities), and PS-3 (Operations Fire Hazards) would all be reduced to less than significant levels.

3.13 VISUAL RESOURCES/AESTHETICS

3.13.1 Introduction

This section addresses the potential visual resource impacts of the converter stations in San Francisco and Pittsburg considering utilization of the HVDC PLUS design and layout instead of the HVDC conventional design evaluated in the Draft and Final EIRs. Key differences in the HVDC PLUS design addressed in this EIR Addendum relative to the HVDC conventional design evaluated in the Draft and Final EIRs from a visual perspective include:

- Smaller footprint required (i.e., approximately 3 to 4 acres needed for the converter station facilities versus the 5 to 6 acres needed for the conventional design evaluated in the Draft and Final EIRs).
- The converter building is only 35 feet tall versus the 64-foot tall structures associated with the conventional design.
- The HVDC PLUS design involves lightning arrestor poles that are 65 feet tall versus the 80-foot tall poles associated with the HVDC conventional design, and they would be fewer in number.
- The HVDC PLUS design avoids the need for outdoor filters and switch gear associated with the HVDC conventional design.
- The smaller footprint requirements provide the opportunity to establish greater setbacks/visual buffers on the given sites and thereby provide space for landscaping to provide visual screening and/or buffering for the San Francisco and Pittsburg converter station sites.

The visual analysis presented in this EIR Addendum addresses the San Francisco HWC (Mitigated) Converter Station site (subset of San Francisco HWC Mitigated site as evaluated in Section 4.A.13 of the Final EIR) and the Pittsburg West Tenth Street Alternative 1 site, as modified.

The concepts, terminology, and impact assessment methodology as well as the locations and descriptions of the key observation points (KOPs) used in the visual analysis are as described in Sections 4.13 (Draft EIR)/4.A.13 (Final EIR) for the San Francisco Converter Station site and Sections 5.4.13/5.5.13 for the Pittsburg West Tenth Street Converter Station site.

Site specific visual resource impact assessments follow for the San Francisco and Pittsburg converter stations utilizing the HVDC PLUS design/layouts and sites.

3.13.2 San Francisco Converter Station

The San Francisco HWC (Mitigated) Converter Station site is visible from Illinois Street and when viewing down both 23rd and 24th streets. All views are within the context of the existing Mirant Power Plant, the adjacent PG&E substation, or the Sheedy construction site. This is an existing industrial area both in terms of the visual context and the type of traffic traversing the area. The converter station site is also visible from the Potrero housing projects approximately 0.5 mile to the west. While the facility would be visible from a more birds-eye view, again it would be seen in the context of the larger industrial activity of the area, and the primary focus of any viewer would be toward San Francisco Bay in the background. The third viewing area is from Warm Water Cove Park which is located more than 200 feet east of the San Francisco HWC (Mitigated) Converter Station site. Existing views from this area are toward the Bay to the east and the existing industrial structures to the north, west, and south. In this context, the existing buildings to the west would be demolished and replaced by the proposed San Francisco HWC (Mitigated) Converter Station utilizing the smaller HVDC PLUS layout. The HVDC PLUS layout would be set back from Illinois Street by approximately 90 feet and would include a landscaped buffer area.

Operations-related impacts are defined as those impacts that would be visible while the converter station is in operation and visible over the lifetime of the structure. The potential for impacts is discussed on a key observation point (KOP)-by-KOP basis. Refer to Map 4.13-1 in the Draft EIR for KOP locations.

The proposed San Francisco HWC (Mitigated) Converter Station HVDC PLUS site is located on an approximately 3- to 4-acre site on the east of Illinois Street between 23rd and 24th streets. Use of this site as proposed would require removal of the existing Airgas/DHL warehouse and office structures. The most visible component would be the converter building structure, which has a ridgeline of approximately 35 feet in height. The electric switchyard includes a series of metal poles approximately 65 feet in height, which would be most visible from Illinois Street. An articulated 12- to 14-foot high screening wall with vines (similar to those utilized by the California Department of Transportation [Caltrans] in the San Francisco Bay area) is included as visual screening along the fence line. In addition, the 90-foot wide setback area between the converter station fence line and Illinois Street would be landscaped to provide screening and a visual buffer.

KOP SF-1: 23rd Street at Illinois Street. From this location (see Photo A, Figure 3.13.2-1), the visual changes include the replacement of the large white masonry warehouse (Airgas/DHL) by the HVDC PLUS converter station (see Photo B, Figure 3.13.2-1). The 65-foot high metal poles and portions of the control building are visible above the screening wall (Photo B, Figure 3.13.2-1). From this KOP, while the visual character is more cluttered than the existing condition, the Project structures would be neither out of scale with the

adjacent buildings nor would they unfavorably contrast with surrounding context; no scenic vista would be obscured. The landscape buffer area along Illinois Street is considered an improvement to the existing condition as well as an improvement to the HVDC conventional design evaluated in the Final EIR. The Impact Severity is classified as Low.

Since the Impact Susceptibility for the area is also Low, the resulting impact per the guidance provided in Table 4.13-2 of the Draft EIR would be less-than-significant for this KOP.

KOP SF-2: Potrero Hill. There are glimpsed views of the Project site for residents of the housing projects on Potrero Hill (see Photo A, Figure 3.13.2-2). However, as can be seen (Photo B, Figure 3.13.2-2), the view is relatively distant, and the converter station would replace structures of a similar size and character. The new structures would not project to a height that would significantly obscure views of San Francisco Bay. They are neither out of scale nor unfavorably contrasting. The Impact Severity is classified as Low. Since the Impact Susceptibility for the area is Low to Moderate, the resulting impact would be less than significant.

KOP SF-3: Warm Water Cove Park. The replacement of the existing warehouse structures (see Photo A, Figure 3.13.2-3) by the Project structures, generally of the same scale, would result in less visual clutter (Photo B, Figure 3.13.2-3). While a small portion of the view west towards Potrero Hill would be blocked, this is not considered a significant scenic vista. The increased visual impact of the building mass is considered somewhat offset by the reduced clutter and removal of the existing structures and related storage yards. The Impact Severity is considered Moderate. The Impact Susceptibility for the area is also Moderate given that the views from Warm Water Cove, a public place. The resulting impact would be considered adverse but less than significant.

KOP SF-5: 24th Street at Illinois Street. From this location, the visual change would be the replacement of the large white Airgas/DHL warehouse office structure (see Photo A, Figure 3.13.2-4) with the converter building structure (Photo B, Figure 3.13.2-4). The 65-foot high metal poles are also visible above the screen wall (Photo B, Figure 3.13.2-4). The existing PG&E Potrero Substation is visible north of 23rd Street on the left portion of the photo. From this KOP, the Project structure would be neither out of scale with the adjacent buildings nor would it unfavorably contrast with the existing surrounding context; no scenic vista would be obscured. The Impact Severity is classified as Low. The landscaped frontage along Illinois Street and along 24th Street to Warm Water Cove Park is classified as an improvement on the existing condition, as well as an improvement to the HVDC conventional design evaluated in Section 4.A.13 of the Final EIR for the HWC (Mitigated) site. Since the Impact Susceptibility for the area is also Low, the resulting impact per Table 4.13-2 of the Draft EIR would be less than significant for this KOP. For comparison purposes, the photosimulation of

the HWC (Mitigated) site utilizing the HVDC conventional design (Figure 4.A.13-4 of the Final EIR) is also presented herein.

Impact VIS-1A: HWC (Mitigated) Converter Station Domination of View. Since the architectural design character of the building and the general character of proposed landscaping have not been identified in detail, there is the possibility of generating potentially significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from Warm Water Cove Park. This condition may also be true of the landscape screening wall proposed along Illinois, 23rd, and 24th streets.

While this impact has been classified as less than significant without design controls, it may still be adverse. This adversity can be lessened through the application of Mitigation Measures VIS-1a and VIS-1b. These measures are the same as those specified in the Final EIR, as certified.

Impact VIS-2: Converter Station Will Create Substantial Light and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by either residents of Potrero Hill or visitors to Warm Water Cove Park, which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare. While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2. This mitigation measure is the same as that specified in the Final EIR, as certified.

With implementation of the following mitigation measures, potential visual impacts associated with the HVDC PLUS converter stations at this site would be reduced further:

- Mitigation measures VIS-1a (Plan Submittal Requirements for Building Materials and Colors) and VIS-1b (Plan submittal Requirements for Landscaping) for Impact VIS-1 (Converter Station Domination of View)
- Mitigation Measure VIS-2 (Plan Submittal Requirements for Lighting) for Impact VIS-2 (Converter Station will Create Substantial Light and Glare)

In conclusion, adoption of the HVDC PLUS design/layout, including the landscaped buffer along Illinois Street, versus the HVDC conventional design evaluated in the Draft and Final EIRs, would not result in any new potentially significant visual impacts and would actually reduce visual impacts compared to the previously proposed HVDC conventional design. This conclusion also applies to the possible mixed used residential development that may occur in the future on the west side of Illinois Street.

3.13.3 Pittsburg Converter Station

The Pittsburg West Tenth Street Alternative 1 Converter Station site, as modified, is located in a service-commercial area of Pittsburg, south of the existing Mirant Pittsburg Power Plant property and the existing PG&E Pittsburg substation. The site is located in the north-central portion of the overall West Tenth Street property. The Pittsburg West Tenth Street Alternative 1 site as modified to accommodate the HVDC PLUS design also includes a 255-foot buffer on the south to West Tenth Street. This area was previously part of the West Tenth Street Alternative 2 site. The existing buildings in this area would be removed. Once construction was completed, the area would potentially be landscaped to provide a visual buffer. The proposed converter station site is set north of the existing commercial frontage along West Tenth Street. It is located approximately 400 feet north of a residential community that was recently developed. The existing character in the area is one of wholesale and service commercial business of a relatively modest scale. To the north are a series of larger scale fuel tanks and the Mirant Pittsburg Power Plant with its substantial stack. There is relatively low-density commercial clutter on the north frontage of West Tenth Street with a backdrop of heavy industrial as indicated by the tanks and stacks. There are no scenic vistas or natural features. The visual quality is lacking in harmony and coherence. Visual quality is classified as Low. Traffic on West Tenth Street used to be predominantly commercial, but, recently, with the development of new housing tracts to the west of Pittsburg, there is an increasing amount of residential traffic as well.

Operations related impacts are assessed as follows by key observation point (KOP) (refer to Map 5.4-1 in the Draft EIR for locations).

KOP P-3 (West Tenth Street). Visual impacts of constructing the Project at this location (see Photo A, Figure 3.13.3-1) would be relatively minimal with consideration of utilization of the HVDC PLUS design/layout on the modified site with a 255-foot landscaped buffer area to the south (see Photo B, Figure 3.13.3-1). Photo B on Figure 3.13.3-2 provides a simulation of what the facility would look like if the 255-foot buffer was not landscaped. No scenic vistas would be blocked and the project character, seen in the context of the background fuel tanks and Mirant Pittsburg Power Plant would be in character. The 35-foot high control building would be co-dominant with other major features in this scene but would not be a prominent feature along West Tenth Street. The Impact Severity is classified Low. For comparison purposes, the photosimulation of the West Tenth Street Alternative 1 site utilizing the HVDC conventional design (Figure 5.4-2 of the Draft EIR) is also presented herein.

Light and glare would be a concern with the recent residential development south of West Tenth Street. However, given the distance from the converter station and the intervening

screening by adjacent structures this would not be a significant issue if lighting design were controlled.

The Impact Susceptibility for the area is classified as Moderate, and the resulting impact would be less than significant. With implementation of the following mitigation measures, potential visual impacts associated with the HVDC PLUS converter stations at this site would be reduced further:

- Mitigation Measures VIS-1a (Plan Submittal Requirements for Building Materials and Colors) and VIS-1b (Plan Submittal Requirements for Landscaping) for Impact VIS-1 (Converter Station Domination of View)

- Mitigation Measure VIS-2 (Plan Submittal Requirements for Lighting) for Impact VIS-2 (Converter Station will Create Substantial Light and Glare)

These impacts and mitigation measures are the same as those presented in the Draft and Final EIRs for the Pittsburg West Tenth Street Alternative 1 site. No new potentially significant visual impacts have been identified for the HVDC PLUS design at the West Tenth Street Alternative 1 site, as modified, and the identified impacts are less than significant with implementation of the specified mitigation measures.

3.14 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

3.14.1 San Francisco Converter Station

The hazardous material and waste management assessment for the San Francisco HWC (Mitigated) Converter Station site is as presented in Section 4.A.14 of the Final EIR. Soil and groundwater contamination are known to occur at the site, and the existing structures are known to have asbestos-containing materials and lead-based paint. The proposed HVDC PLUS converter station design/layout at the HWC (Mitigated) site would require less area and less earthwork/excavation than was previously associated with the HVDC conventional design evaluated in the Draft and Final EIRs. With implementation of Mitigation Measures HAZ-1 through HAZ-12, Impacts HAZ-1 through HAZ-12 would all be reduced to less than significant levels.

3.14.2 Pittsburg Converter Station Site

The hazardous material and waste management assessment for the proposed Pittsburg West Tenth Street site utilizing HVDC PLUS design/layout is as presented in Sections 5.4.14 (Alternative 1) and 5.5.14 (Alternative 2) of the Draft EIR. Since the HVDC PLUS layout is located on the eastern portion of the previously assessed Alternative 1 site (Draft and Final EIRs) and this area generally coincides with the northern portion of the previously assessed

Alternative 2 site, the assessment presented in Section 5.5.14 of the Draft EIR is most applicable herein.

The proposed Pittsburg West Tenth Street Alternative 1 site, as modified, is known to have contaminated soil, asbestos containing building materials, and lead-based paint. With implementation of Mitigation Measures HAZ-1 through HAZ-12, potentially significant impacts HAZ-1 through HAZ-12 would all be reduced to less than significant levels.

3.15 PALEONTOLOGICAL RESOURCES

No fossil localities have been identified at the San Francisco HWC (Mitigated) (see Draft EIR Section 4.A.15) or Pittsburg West Tenth Street (see Draft EIR Section 5.4.15) converter station sites. However, construction excavations have the potential to penetrate into undisturbed Qal sediments which could contain significant fossil resources and thereby result in potentially significant impacts (Impact PALEO-1). With implementation of Mitigation Measure PALEO-1 (Potential Fossil Resources Protection), Impact PALEO-1 (Disturbance of Fossil Resources) would be reduced to a less than significant level.

3.16 SUMMARY AND CONCLUSION

While many impacts associated with implementation of the proposed Project are considered to be potentially significant, with implementation of the proposed mitigation measures no impacts would remain significant. The refinements and improvements that have been made to the proposed Project (i.e., utilization of the HVDC PLUS design) reduce the impacts of the Project as presented in the Final EIR and present no new potentially significant impacts.

3.16.1 Unavoidable Adverse Significant Impacts

This section of the EIR Addendum discusses unavoidable significant adverse impacts that would be expected to occur if the proposed Project as now proposed with the HVDC PLUS technology/design at the San Francisco HWC (Mitigated) and Pittsburg West Tenth Street converter station sites (as modified) was implemented. Unavoidable significant adverse impacts are those which cannot be reduced to a less-than-significant level. Approval and implementation of a project that involves unmitigable significant impacts typically requires a Statement of Overriding Considerations by the Lead Agency for CEQA compliance (i.e., City of Pittsburg for this Project) and/or other regulatory agencies with discretionary approvals (e.g., City and County of San Francisco).

No unavoidable adverse significant impacts have been identified for the refined proposed Project utilizing HVDC PLUS technology/design, including the San Francisco HWC (Mitigated) site, the modified Pittsburg West Tenth Street Alternative 1 (E/W) site, and the submarine cable.

A Baseline view as seen from KOP SF-1 toward HWC (Mitigated) HVDC PLUS converter station site

B Simulation of proposed Project (HWC Mitigated); HVDC PLUS as seen from KOP SF-1 (23rd and Illinois Streets)

TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 3.13.2-1. KOP SF-1 PHOTOS A/B	2006

A Baseline view from KOP SF-2 toward HWC (Mitigated) HVDC PLUS converter station site

B Simulation of the proposed Project (HWC Mitigated); HVDC PLUS as seen from KOP SF-2 (Potrero Hill)

TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 3.13.2-2. KOP SF-2 PHOTOS A/B	2006

A Baseline view as seen from KOP SF-3 toward HWC (Mitigated) HVDC PLUS converter station site

B Simulation of proposed Project (HWC Mitigated); HVDC PLUS as seen from KOP SF-3 (Warm Water Cove Park/Bay)

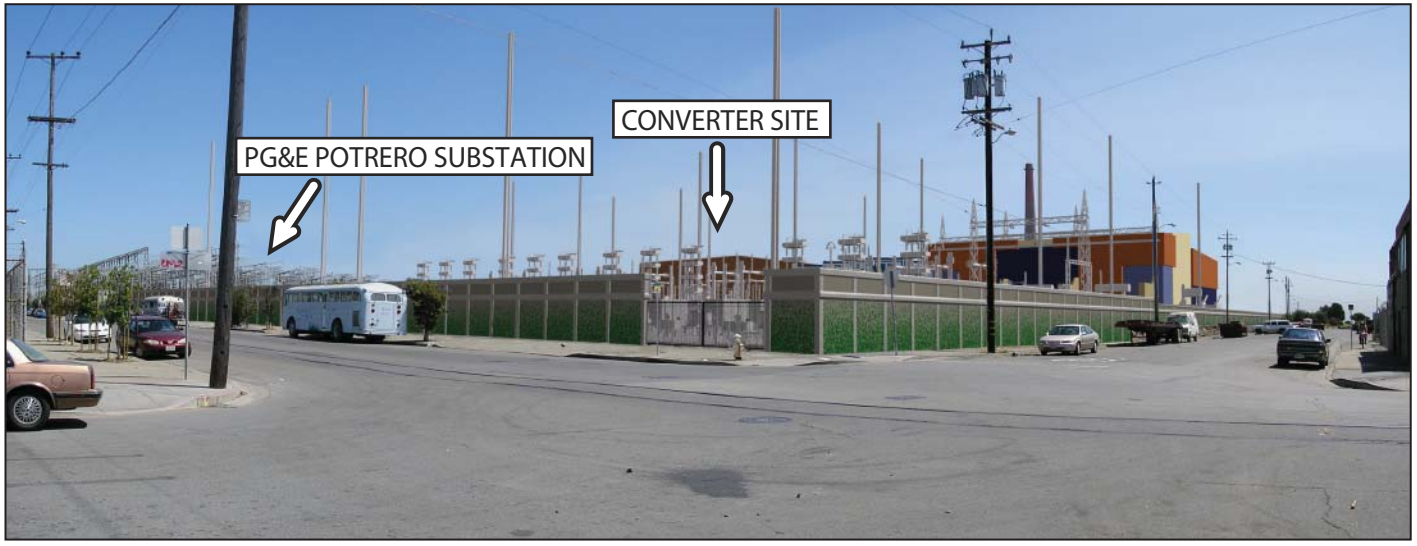
TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 3.13.2-3. KOP SF-3 PHOTOS A/B	2006

A Baseline view as seen from KOP SF-5 toward HWC (Mitigated) HVDC PLUS converter station site

B Simulation of proposed Project (HWC Mitigated); HVDC PLUS as seen from KOP SF-5 (24th and Illinois)

TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 3.13.2-4. KOP SF-5 PHOTOS A/B	2006

A Baseline view as seen from KOP SF-5 toward HWC (Mitigated) converter station site



B Simulation of proposed Project (HWC Mitigated) as seen from KOP SF-5 (24th and Illinois Streets)

Note: This is an excerpt from the Final EIR for the HVDC conventional converter station design which is no longer proposed.

TRANS BAY CABLE PROJECT EIR	Figure 4.A.13-4. KOP SF-5 PHOTOS A/B	2006

A Baseline view as seen from KOP P-3 (West Tenth Street HVDC PLUS).

B Simulation of the project as seen from KOP P-3 (West Tenth Street HVDC PLUS).

TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 3.13.3-1. KOP P-3 PHOTOS A/B WEST TENTH STREET HVDC PLUS WITH LANDSCAPED BUFFER	2006

A Baseline view as seen from KOP P-3 (West Tenth Street HVDC PLUS).

B Simulation of the project as seen from KOP P-3 (West Tenth Street HVDC PLUS).

TRANS BAY CABLE PROJECT EIR ADDENDUM	Figure 3.13.3-2. KOP P-3 PHOTOS A/B WEST TENTH STREET HVDC PLUS WITHOUT LANDSCAPED BUFFER	2006

A Baseline view as seen from KOP P-3 (West Tenth Street Alternative 1).

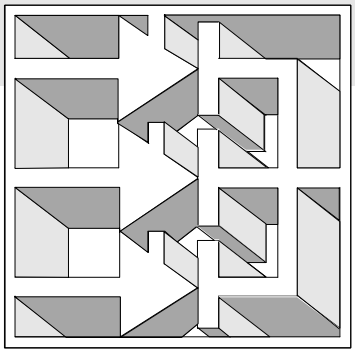
B Simulation of the project as seen from KOP P-3 (West Tenth Street Alternative 1).

Note: This is an excerpt from the Draft EIR for the HVDC conventional converter station design which is no longer proposed.

TRANS BAY CABLE PROJECT EIR	Figure 5.4-2. KOP P-3 PHOTOS A/B WEST TENTH STREET ALTERNATIVE 1	2006

This appendix of the EIR Addendum for the Trans Bay Cable Project presents the audible noise studies prepared by Siemens for the proposed HVDC converter station site layouts in San Francisco (HWC Mitigated), which is identified as the "Potrero Westerly HWC Site" in the Siemens study, and the Pittsburg West Tenth Street Alternative 1 (as modified), which is identified as the "Pittsburg 10th Street, N-S Orientation" in the Siemens study.

Trans Bay Cable Project (400 MW)



Preliminary Audible Noise Study

Potrero Westerly HWC Site

Rev.	Date	Section	Page	Remarks	Signature
0	17.11.06	all	all	first issue	
1	13.12.06	1.1.1, 1.4.1, Fig. 1.1, Fig. 1.2, Fig. 1.3	2, 3, 4, 5	mirrored layout, protection walls	

1 Audible Noise Study

1.1 Basis

The following report outlines the basis of the audible noise study and how the preliminary audible noise levels at the Potrero Westerly Converter Station have been calculated for the HVDC PLUS technology.

1.1.1 Basis of Acoustical Sound Prediction Calculation

The simplified basic formula of acoustical calculation is:

$$L_{AT}(LT) = L_{WA} + D_c - A_{div} - A_{atm} - A_{gr} - A_{bar} - A_{misc} - C_{met}$$

The symbols mean (according to DIN EN ISO 9613-2):

$L_{AT}(LT)$: long-term average A-weighted sound pressure level
L_{WA} : A-weighted sound power level of the sound source
D_c : correction for directivity of the source
A_{div} : attenuation due to the geometrical divergence
A_{atm} : attenuation due to air absorption
A_{gr} : attenuation due to ground effects
A_{bar} : the attenuation due to screening (including buildings, land contours, barriers, noise screens, retaining walls and cuttings)
A_{misc} : the attenuation due to other miscellaneous effects (e.g. dense foliage, industrial sites)
C_{met}: meteorological correction

The sound propagation has been calculated with the computer program “Cadna A”, using the international regulation for noise prediction calculation “ISO 9613-2”. The model describes the sound pressure level at a certain distance from the sound source.
The buildings, fire protection walls and the boundary wall of the station are digitized for the calculation. The building models in the station area are observed as reflectors.
The calculation of the sound power level of the facades of the buildings is in line with VDI 2571.
The sound propagation was determined in octave bands with nominal midband frequencies from 31,5 Hz to 4.000 Hz.
Sound power levels in octave bandwidth levels, distance, heights of imission points and sound sources, walls and reflectors, air absorption, attenuation and reflection caused by walls have been entered into the calculations.
Vegetation has an attenuation effect on sound propagation. However, in this study it was not included because it is assumed that no vegetation is existing at the converter station.
A flat landscape was assumed in the calculation area of the HVDC Station. The neighboring HMR building has been considered as reflector. Other surrounding buildings and structures have not been regarded in the calculation.

1.2 Analysis Methodology

All calculations performed in the program are based on standard noise propagation equations. The program calculates the sound pressure level impact from each source for specified points of receivers. These sound levels are combined to obtain the overall substation sound pressure levels and the overall (A-weighted) sound pressure level for each critical imission. The sound level calculation at each individual location also accounts for the height of the receiver and noise blockage due to any interceding barriers, such as terrain or walls.
The location of the sound sources corresponds to the arrangement of the equipment according to the preliminary station layout of the converter station.

1.3 Audible Noise Level Limits

The allowable audible noise levels are according table 1:

		Potrero
Measuring unit		dB(A), L_{eq} (1 hour)
Limit at property line	dB(A)	75
Receivers at site	dB(A)	n.a.
Ambient noise		not to be considered for limit
Height of measuring / calculation	m	1,5

Tab. 1: Audible noise limits

1.4 Analysis Results

Based on the preliminary layout and preliminary audible noise levels for the respective components the analysis was done for the Westerly HWC converter station site/alternative.

1.4.1 Layout and Analysis Results

The layout and location of sound sources is shown in Fig. 1.1 and Fig. 1.2. The calculated sound pressure at the property lines is indicated in Fig. 1.3. The maximum sound pressure values are calculated as:

	Max. calculated audible noise level [dB(A), L_{eq} (1 hour)]
north property line	58
east property line	60
west property line	48
south property line	57

which is within the limits specified for the property lines and the receivers.

1.4.2 Noise Reduction Measures

Since the calculated sound pressure at the property line is within the limits no noise reduction measures are proposed.

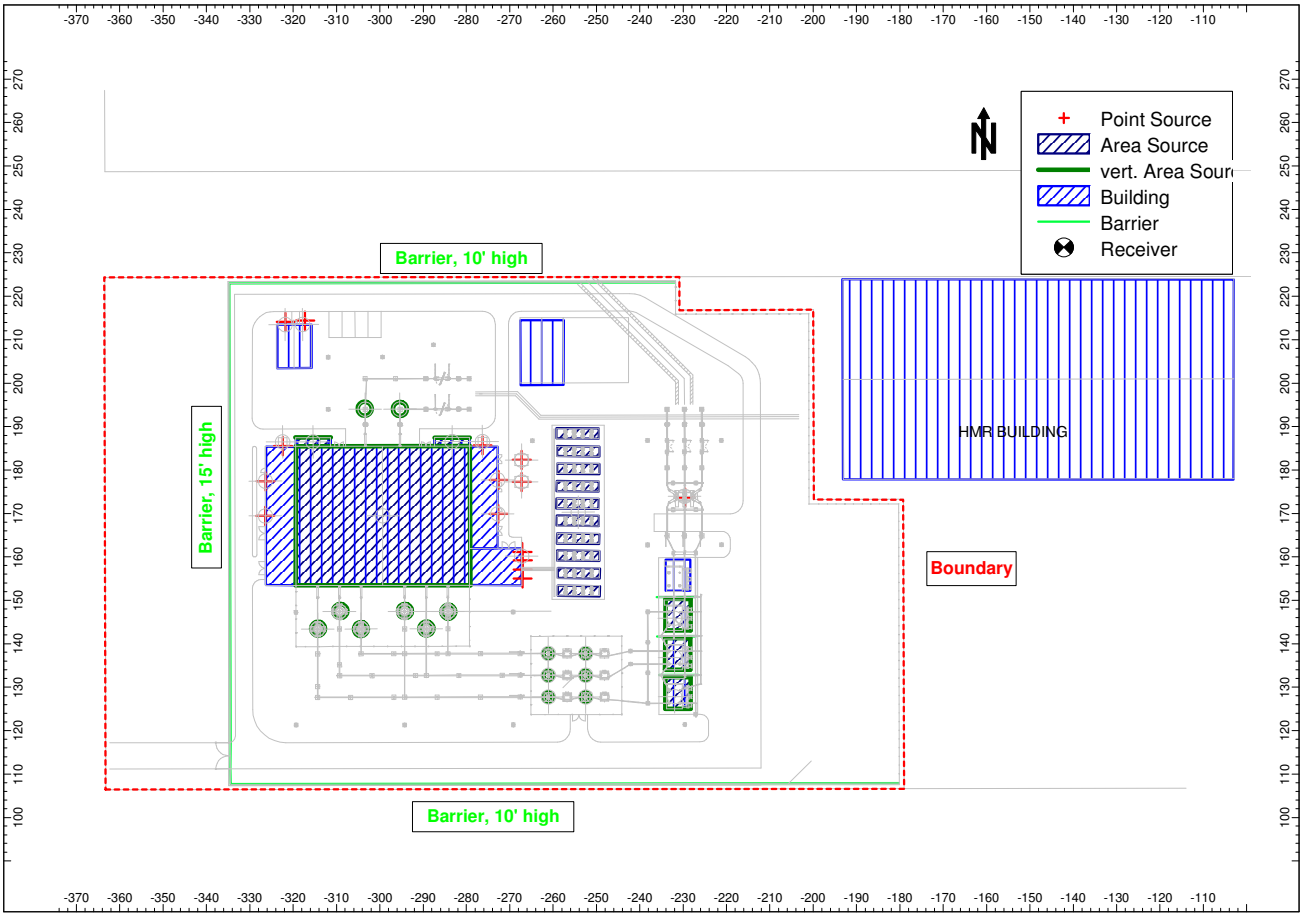


Fig. 1.1: Potrero, HWC Westerly, layout with sound sources

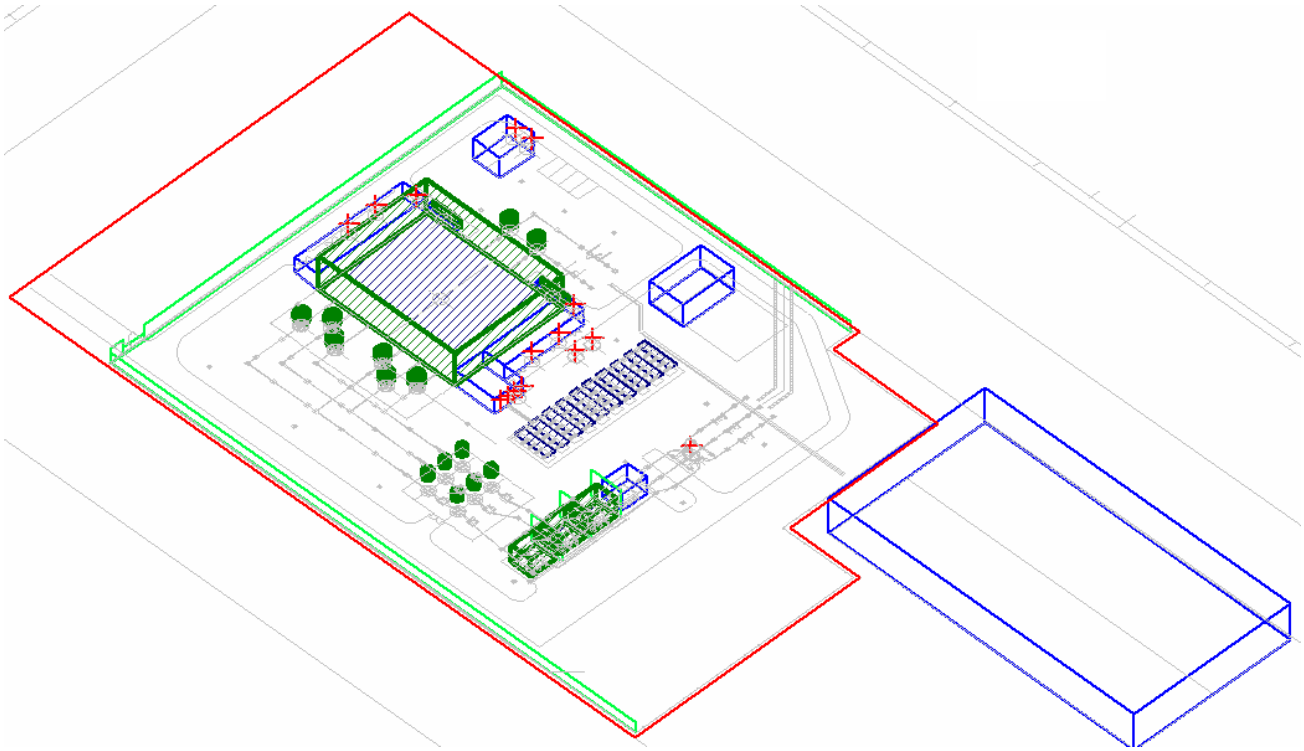


Fig. 1.2: Potrero, HWC Westerly, 3D view

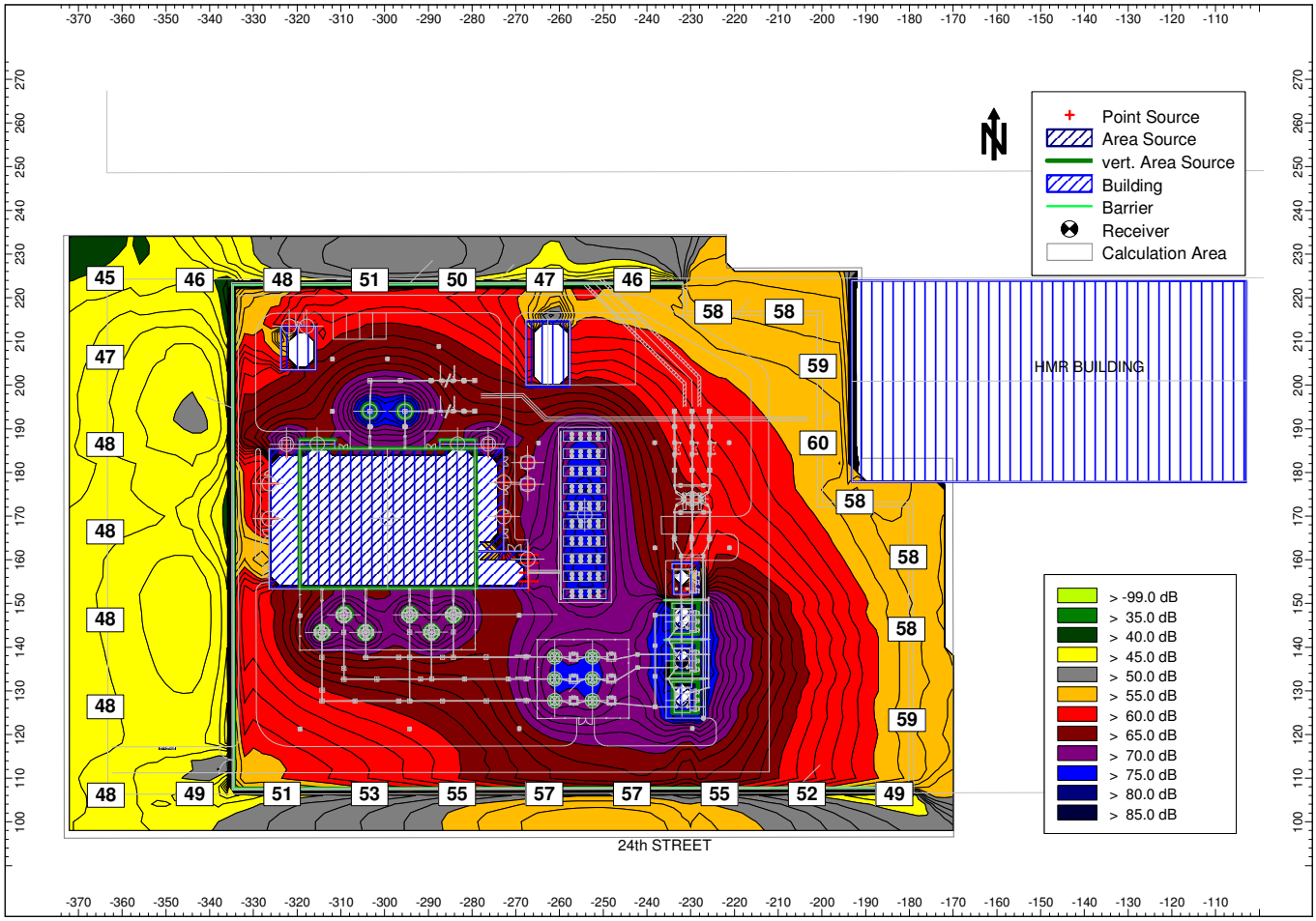
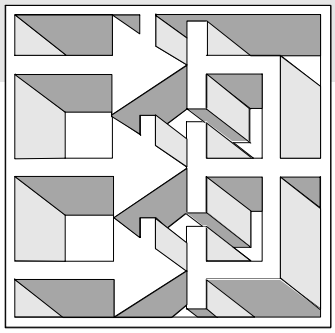


Fig. 1.3: Potrero, HWC Westerly, noise contour map at height of 1,5 m (L_{eq} (1 hour))

Trans Bay Cable Project (400 MW)



Preliminary Audible Noise Study

Pittsburg 10th Street, N-S Orientation

Rev.	Date	Section	Page	Remarks	Signature
0	17.11.06	all	all	first issue	

1 Audible Noise Study

1.1 Basis

The following report outlines the basis of the audible noise study and how the preliminary audible noise levels at the Pittsburg 10th Street N-S Orientation Converter Station have been calculated for the HVDC PLUS technology.

1.1.1 Basis of Acoustical Sound Prediction Calculation

The simplified basic formula of acoustical calculation is:

$$L_{AT}(LT) = L_{WA} + D_c - A_{div} - A_{atm} - A_{gr} - A_{bar} - A_{misc} - C_{met}$$

The symbols mean (according to DIN EN ISO 9613-2):

$L_{AT}(LT)$: long-term average A-weighted sound pressure level
L_{WA} : A-weighted sound power level of the sound source
D_c : correction for directivity of the source
A_{div} : attenuation due to the geometrical divergence
A_{atm} : attenuation due to air absorption
A_{gr} : attenuation due to ground effects
A_{bar} : the attenuation due to screening (including buildings, land contours, barriers, noise screens, retaining walls and cuttings)
A_{misc} : the attenuation due to other miscellaneous effects (e.g. dense foliage, industrial sites)
C_{met}: meteorological correction

The sound propagation has been calculated with the computer program “Cadna A”, using the international regulation for noise prediction calculation “ISO 9613-2”. The model describes the sound pressure level at a certain distance from the sound source.
The buildings and the fire protection walls of the stations are digitized for the calculation. The building models in the station area are observed as reflectors.
The calculation of the sound power level of the facades of the buildings is in line with VDI 2571.
The sound propagation was determined in octave bands with nominal midband frequencies from 31,5 Hz to 4.000 Hz.
Sound power levels in octave bandwidth levels, distance, heights of imission points and sound sources, walls and reflectors, air absorption, attenuation and reflection caused by walls have been entered into the calculations.
Vegetation has an attenuation effect on sound propagation. However, in this study it was not included because it is assumed that no vegetation is existing at the converter station.
A flat landscape was assumed in the calculation area of the HVDC Station and the dwellings nearby. The surrounding buildings at 10th Street have been regarded in the calculation.

1.2 Analysis Methodology

All calculations performed in the program are based on standard noise propagation equations. The program calculates the sound pressure level impact from each source for specified points of receivers. These sound levels are combined to obtain the overall substation sound pressure levels and the overall (A-weighted) sound pressure level for each critical imission. The sound level calculation at each individual location also accounts for the height of the receiver and noise blockage due to any interceding barriers, such as terrain or walls.
The location of the sound sources corresponds to the arrangement of the equipment according to the preliminary station layout of the converter station.

1.3 Audible Noise Level Limits

The allowable audible noise levels are according table 1:

		Pittsburg 10th Street
Measuring unit		dB(A), L_{dn} 24h average, 10 dB penalty between 22:00h - 07:00h
Limit at property line	dB(A)	• north 75 • east, 75 • west 75 • south, n.a.
Receivers at site	dB(A)	• south 60, residences, IO1, IO2, IO3 • east 60, residences, IO4, IO5, IO6
Ambient noise		not to be considered for limit
Height of measuring / calculation	m	1,5

Tab. 1: Audible noise limits

1.4 Analysis Results

Based on the preliminary layout and preliminary audible noise levels for the respective components the analysis was done for the Pittsburg 10th Street N-S Orientation converter station site/alternative.

1.4.1 Layout and Analysis Results

The layout and location of sound sources and receivers is shown in Fig. 1.1 and 1.2. The calculated sound pressure at the property lines and the receivers is indicated in Fig. 1.3. The maximum sound pressure values are calculated as:

	Max. calculated audible noise level [dB(A), L_{dn}]
north property line	70
east property line	70
west property line	74
south property line	n.a.
Receivers	55 (R1)

which is within the limits specified for the property lines and the receivers.

1.4.2 Noise Reduction Measures

Since the calculated sound pressure at the property line and at the receivers is within the limits no noise reduction measures are proposed.

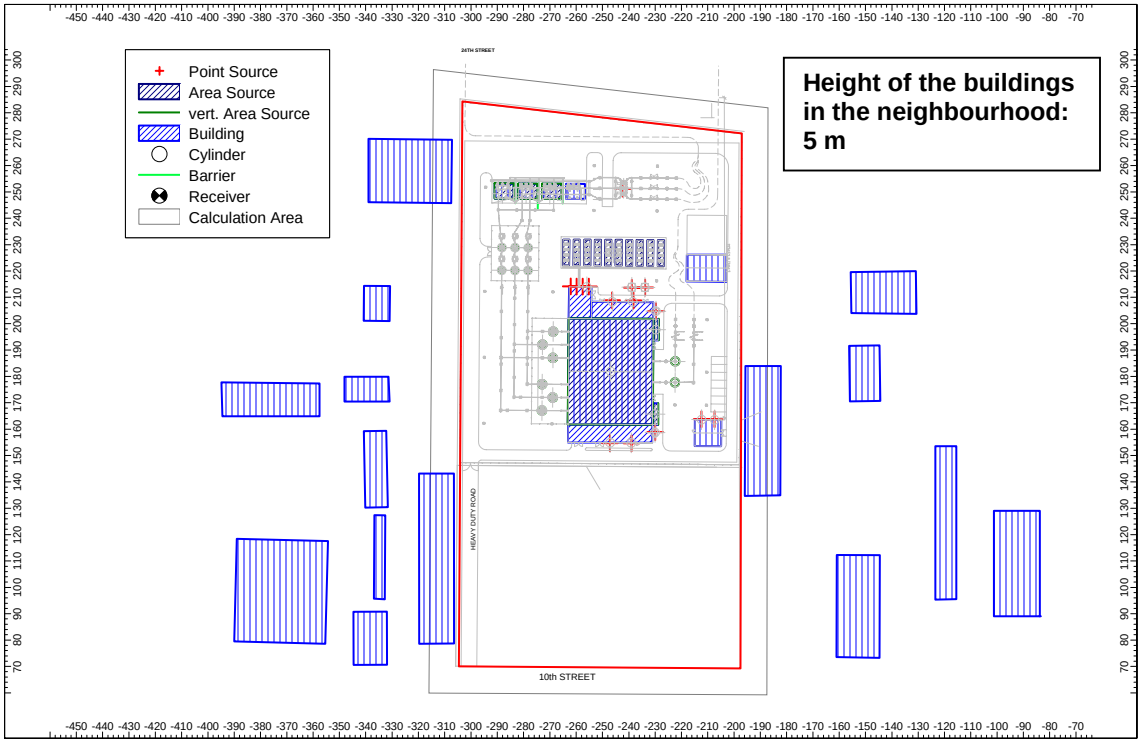


Fig. 1.1: Pittsburg, 10th Street N – S orientation, layout with sound sources

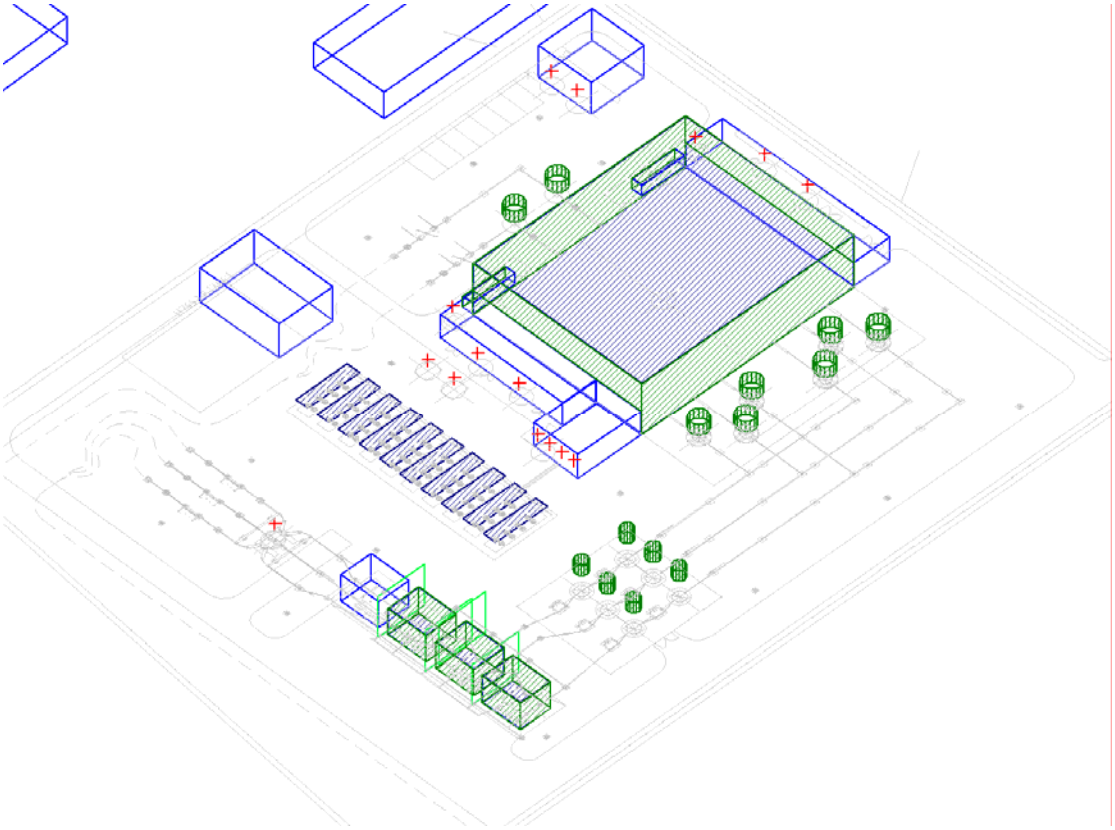


Fig. 1.2: Pittsburg, 10th Street N – S orientation, 3D view

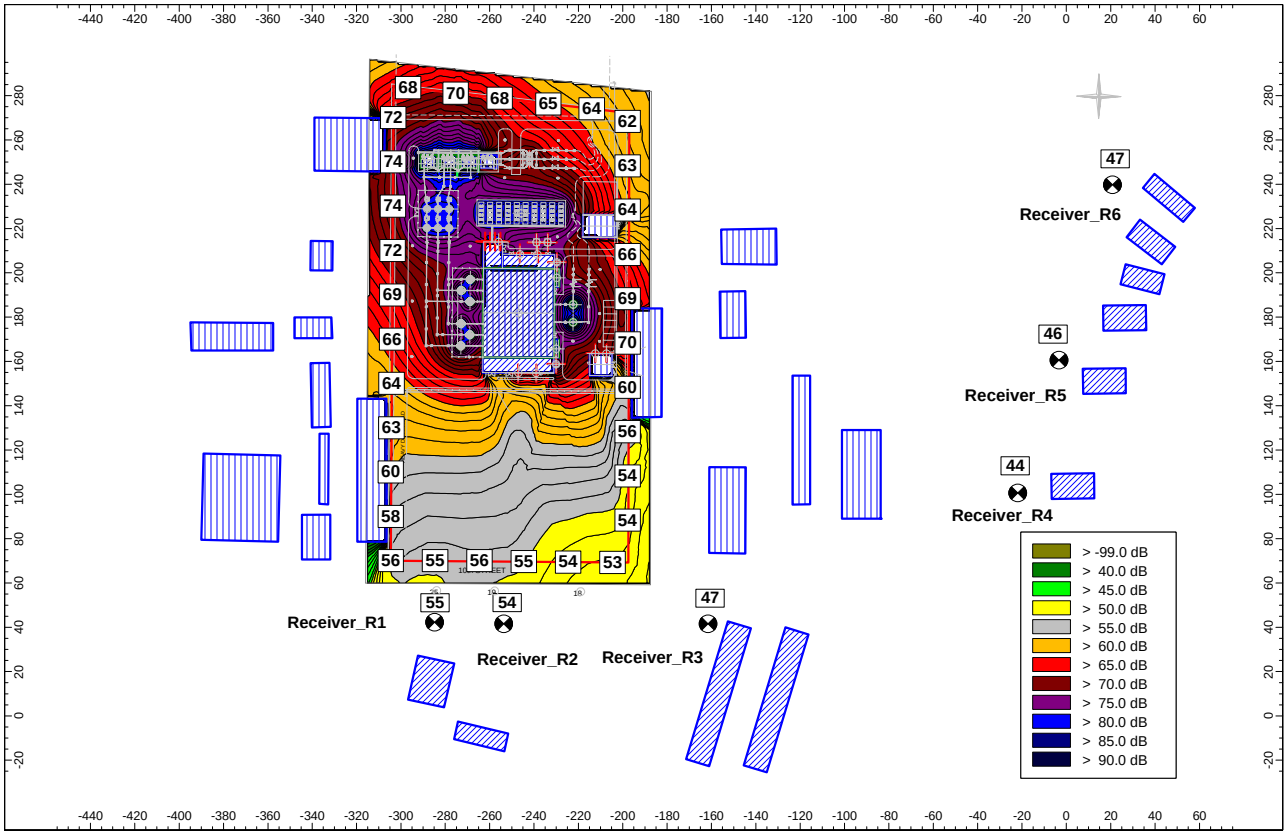


Fig. 1.3: Pittsburg, 10th Street N – S orientation, noise contour map and receivers at height of 1,5 m (L_{Adn}, 24 h average, 10 dB penalty between 22.00 h and 07.00 h)