

C. ALTERNATIVES

This section is organized as follows: Section C.1 provides an overview of the alternatives screening process; Section C.2 describes the methodology used for alternatives evaluation; Section C.3 presents a summary of the alternatives selected for full environmental impact report (EIR) analysis and those eliminated based on California Environmental Quality Act (CEQA) criteria; Section C.4 describes the alternatives retained for full EIR analysis in Section D; Section C.5 describes the alternatives eliminated from full EIR analysis and the rationale for elimination; and Section C.6 provides a description of the No Project Alternative.

C.1 Alternatives Development and Screening Process

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. In addition to mandating consideration of the No Project Alternative, CEQA Guidelines (Section 15126.6(d); 14 CCR 15000 et seq.) emphasize the selection of a reasonable range of potentially feasible alternatives and adequate assessment of these alternatives to allow for a comparative analysis for consideration by decision makers. CEQA Guidelines state that the discussion of alternatives shall focus on alternatives capable of eliminating or reducing significant adverse environmental effects of a proposed project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly. However, CEQA Guidelines declare that an EIR need not consider an alternative that fails to meet most of the basic project objectives, or whose effects cannot be reasonably ascertained, or whose implementation is remote or speculative.

The South Bay Substation Relocation Project (Proposed Project) is described in detail in Section B of this EIR. Alternatives to the Proposed Project were suggested during the scoping period (July through August 2011) by the general public and federal, state, and local agencies in response to the Notice of Preparation (NOP). Other alternatives were developed by the California Public Utilities Commission (CPUC) or presented by San Diego Gas & Electric (SDG&E) in its Proponent's Environmental Assessment (PEA).

In total, over 22 alternatives were considered in the screening process. Alternatives range from upgrading existing substations to transmission substation location alternatives, to alternative substation technology, as well as non-wire alternatives. "Non-wire alternatives" include methods of meeting project objectives that do not require construction of a new substation (e.g., energy conservation and load management, etc.).

C.2 Alternatives Screening Methodology

Evaluation of alternatives to the Proposed Project was completed using a screening process that consisted of three steps:

- Step 1:** Clarify the description of each alternative to allow comparative evaluation.
- Step 2:** Evaluate each alternative using CEQA criteria (defined below).
- Step 3:** Determine the suitability of each alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it from further consideration. Infeasible alternatives and alternatives that clearly offered no potential for overall environmental advantage were removed from further analysis.

Following this three-step screening process, the advantages and disadvantages of the remaining alternatives were carefully weighed with respect to CEQA's criteria for consideration of alternatives.

CEQA Guidelines (Section 15126.6(a); 14 CCR 15000 et seq.) state that:

An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.

To comply with CEQA's requirements, each alternative suggested or developed for this project has been evaluated in three ways:

- Does the alternative meet most basic project objectives?
- Is the alternative feasible (legal, regulatory, technical)?
- Does the alternative avoid or substantially lessen any significant environmental effects of the Proposed Project (including consideration of whether the alternative itself could create significant environmental effects potentially greater than those of the Proposed Project)?

C.2.1 Consistency with Project Objectives

Section 15126(a) of the CEQA Guidelines (14 CCR 15000 et seq.) requires that project objectives be set forth in an EIR in order to help define alternatives to the Proposed Project that meet most of the basic project objectives. Moreover, a project may not limit the objectives of a project in such a way as to effectively confine the range of feasible alternatives that are available. Having taken into consideration the project objectives set forth by San Diego Gas and Electric (SDG&E) for the South Bay Substation Relocation Project (Section A.2.2 of this EIR), the CPUC has identified the following basic project objectives used to screen alternatives:

- Replace aging and obsolete substation equipment
- Accommodate regional energy needs subsequent to retirement of the South Bay Power Plant (SBPP)
- Provide for future transmission and distribution load growth for the South Bay region.

C.2.2 Feasibility

CEQA Guidelines (Section 15364; 14 CCR 15000 et seq.) define feasibility as:

... capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

In addition, CEQA requires that the lead agency consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and proponent's control over alternative sites in determining the range of alternatives to be evaluated in the EIR (CEQA Guidelines Section 15126.6(f); 14 CCR 15000 et seq.). Feasibility can include:

Legal Feasibility: Does the alternative involve lands that have legal protections that may prohibit or substantially limit the feasibility of permitting a new substation and associated facilities?

Technical Feasibility: Is the alternative feasible from a technological perspective, considering available technology; the construction, operation, and maintenance or spacing requirements of multiple facilities using common rights-of-way (ROWs), and the potential for common mode failure?

For the screening analysis, the legal, technical, and regulatory feasibility of potential alternatives was assessed. The assessment was directed toward reverse reason; that is, a determination was made as to whether there was anything about the alternative that would be infeasible on technical, legal, or regulatory grounds.

The screening analysis did not focus on relative economic factors or costs of the alternatives (as long as they were found to be economically feasible) since CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (CEQA Guidelines Section 15126.6(b); 14 CCR 15000 et seq.). The CPUC's Permit to Construct (PTC) proceedings will separately and specifically consider cost issues.

C.2.3 Potential to Eliminate Significant Environmental Effects

CEQA requires that to be fully considered in an EIR, an alternative must have the potential to “avoid or substantially lessen any of the significant effects of the project” (CEQA Guidelines Section 15126.6(a); 14 CCR 15000 et seq.). If an alternative was identified that clearly does not provide potential overall environmental advantage as compared to the Proposed Project, it was eliminated from further consideration. At the screening stage, it is not possible to evaluate all of the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to general conditions in the subject area.

C.3 Alternatives Considered

The Proposed Project is located in an area that consists of both environmentally sensitive areas and developed land. Given that the area is primarily built out and any undeveloped lands consist of sensitive environmental resources associated with the National Wildlife Refuge, there are limited opportunities for construction of a substation.

To the east of the project site is the City of Chula Vista, which is primarily built out and does not provide opportunities for construction of a new substation without displacing residences or businesses. Undeveloped areas within the City’s jurisdiction primarily consist of transmission corridors associated with SDG&E facilities. To the south of the project site are developed lands and environmentally sensitive lands associated with the National Wildlife Refuge. The area west of the project site consists of open water associated with the San Diego Bay (see Figure C-1). The region north of the project site contains lands that are currently vacant, the SBPP, a marina, industrial uses, and recreational parks. The National Wildlife Refuge is located to the north of the area proposed for redevelopment as part of the CVBMP, which contains environmentally sensitive habitat lands associated with the Sweetwater Marsh Refuge. The alternatives screening study area was limited to the areas as defined above based on the constraints from built-out lands that would require displacement of existing residents and/or businesses and environmentally sensitive lands.

Table C-1 lists the alternatives that were considered in the screening process, including 10 alternative sites as listed below and shown on Figures C-1 through C-12.

Substation Location Alternatives

1. Tank Farm Site (Figure C-3)
2. Existing South Bay Substation Site (Figure C-4)
3. Power Plant Site (Figure C-5)

4. South Bay Boulevard (Figure C-6)
5. Toy Storage Site (Figure C-7)
6. Cima Nevada Site (Figure C-8)
7. Broadway and Palomar Site (Figure C-9)
8. Goodrich South Campus Site (Figure C-10)
9. H Street Yard Site (Figure C-11)
10. Bayside Site (Figure C-12)

Project Design Alternatives

11. Gas Insulated Substation Alternative (Figure C-2a and C-2b)
12. Bay Boulevard Substation at 138/69 kV Alternative
13. Expansion of South Bay Substation by Expanding Substation Boundary and 69 kV capacity
14. Reduced Communications Tower Height Alternative
15. Underground all Transmission Poles and Associated Infrastructure as Proposed
16. Underground all Transmission Poles and Lines along Bay Boulevard and as Proposed

No Build Alternatives

17. Alternative Transmission Upgrades
18. Transmission System Load Management
19. Energy Conservation
20. Energy Conservation Alternative and Transmission Load Management Alternative
21. Transmission System Load Management + Energy Conservation + 138/69 kV

SDG&E Project Alternative

22. Bayfront Enhancement Fund Alternative

C.4 Summary of Screening Results

Table C-1 provides a composite list of the alternatives considered and the results of the screening analysis with respect to the criteria findings for consistency with project objectives, feasibility, and environmental effectiveness. Alternatives carried forward for full EIR analysis are described in the following Section C.5. The alternatives eliminated from further consideration are described in Section C.6.

**Table C-1
Summary of Alternatives Screening Analysis**

Alternative	Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
<i>Alternative Substation Site Locations</i>			
<p>1. Tank Farm Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>
<p>2. Existing South Bay Substation Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated and Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>
<p>3. Power Plant Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>
<p>4. South Bay Boulevard Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Alternative would require expansion of existing site and is considered potentially feasible to construct</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – This alternative would not meet environmental criteria since the alternative does not avoid or minimize significant environmental effects related to land use and population and housing. Alternative would require displacement of residences and commercial uses.</p>
<p>5. Toy Storage Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for most project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Does not meet technical feasibility criteria due to parcel configuration and presence of overhead transmission lines that result in inadequate clearance.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – This alternative would not meet environmental criteria since the alternative does not avoid or minimize significant environmental effects related to land use and population and housing. Alternative would require displacement of residences and commercial uses.</p>

**Table C-1
Summary of Alternatives Screening Analysis**

Alternative	Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
<p>6. Cima Nevada Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated</u> – Alternative would require expansion of site and is considered potentially feasible to construct.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Does not meet environmental criteria, as site is not large enough without the removal of adjacent residences.</p>
<p>7. Broadway and Palomar Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: SDG&E PEA (June 2010)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation</u> – Alternative would require expansion of site and is considered potentially feasible to construct</p> <p><u>Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated Substation</u> – Does not meet environmental criteria as site is not large enough without the removal of existing commercial uses.</p> <p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>
<p>8. Goodrich South Campus Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: CPUC Screening (July 2011)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>
<p>9. H Street Yard Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: CPUC Screening (July 2011)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets the majority of CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>

**Table C-1
Summary of Alternatives Screening Analysis**

Alternative	Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
<p>10. Bayside Site Air Insulated Substation or Gas Insulated Substation configuration</p> <p>Source: CPUC Screening (July 2011)</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets the majority of CEQA screening criteria for project objectives.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets criteria for technical and legal feasibility.</p>	<p><u>Air Insulated Substation and Gas Insulated Substation</u> – Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>
<i>A Project Design Alternatives</i>			
<p>11. Gas-Insulated Substation Technology</p> <p>Source: CPUC Data Request (May 2011)</p>	<p>Meets all project objectives.</p>	<p>Meets criteria for technical and legal feasibility.</p>	<p>Meets environmental criteria. Would reduce impacts to sensitive habitat when compared to the Proposed Project by occupying a smaller footprint.</p>
<p>12. Bay Boulevard Substation at 138/69 kV</p> <p>Source: SDG&E PEA (June 2010)</p>	<p>Does not meet CEQA screening criteria for project objectives. Does not meet project objectives – Accommodate regional energy needs subsequent to retirement of the SBPP, and– provide for future transmission and distribution load growth for the South Bay region. The 230 kV system results in a more robust/reliable system and requires less in the way of system expansion.</p>	<p>Meets criteria for technical and legal feasibility.</p>	<p>Meets environmental criteria.</p>
<p>13. Expansion of South Bay Substation by Expanding Substation Boundary and 69kV Capacity</p> <p>Source: SDG&E PEA (June 2010)</p>	<p>Does not meet CEQA screening criteria for project objectives. Does not meet project objectives – Accommodate regional energy needs subsequent to retirement of the SBPP, and – provide for future transmission and distribution load growth for the South Bay region. The 230 kV system results in a more robust/reliable system and requires less in the way of system expansion.</p>	<p>Meets criteria for technical and legal feasibility.</p>	<p>Meets environmental criteria, although may result in different types of impacts than the Proposed Project.</p>

**Table C-1
Summary of Alternatives Screening Analysis**

Alternative	Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
<p>14. Reduced Communications Tower Height Alternative</p> <p>Source: NOP Scoping Period</p>	<p>Meets all project objectives.</p>	<p>The reduced tower height would not be technically feasible since a height of 75 feet is proposed to provide enough height to be above the 55-foot-tall, 230 kV substation structures. A height of 75 feet will allow for a clear path to the existing mountain top to intercept the existing SDG&E backbone network that would not be blocked with near field obstruction and is a reliable link for providing communication services at the substation.</p>	<p>Meets environmental criteria.</p>
<p>15. Underground all Transmission Poles and Associated Infrastructure as proposed</p> <p>Source: NOP Scoping Period</p>	<p>Meets all project objectives.</p>	<p>Meets criteria for technical and legal feasibility.</p>	<p>Does not meet environmental criteria. Alternative would have greater construction-related noise and traffic impacts. Project includes the removal of five lattice steel structures (110 feet), three wood-pole 138 kV tangent-pole structure and one 230 kV transition pole (165 feet). The project includes construction of five new poles (230 kV steel angle tower (110 feet), 138 kV riser (165 feet), and two 69 kV pole risers (85 feet). The analysis conducted as part of the Proposed Project did not identify significant effects of the project due to the Proposed Project's change in the transmission structures that could be avoided or lessened by undergrounding the proposed facilities; therefore, underground has not been carried forward for full consideration in the EIR.</p>

**Table C-1
Summary of Alternatives Screening Analysis**

Alternative	Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
<p>16. Underground all Transmission Poles and Lines along Bay Boulevard and as Proposed</p> <p>Source: NOP Scoping Period</p>	Meets all project objectives.	Meets criteria for technical and legal feasibility.	Does not meet environmental criteria. Alternative would have greater construction-related noise and traffic impacts. Project includes the removal of five lattice steel structures (110 feet), three wood-pole 138 kV tangent-pole structure and one 230 kV transition pole (165 feet). The project includes construction of five new poles (230 kV steel angle tower (110 feet), 138 kV riser (165 feet), and two 69 kV pole risers (85 feet). In addition, the project includes construction of eighteen 69 kV wood poles, removal of twenty-three 69 kV wood poles, and replacement of twenty-two 69 kV wood transmission poles. The analysis conducted as part of the Proposed Project did not identify significant effects of the project due to the Proposed Project's change in the transmission structures that could be avoided or lessened by undergrounding the proposed facilities; therefore, underground has not been carried forward for full consideration in the EIR.
No Build Alternatives			
<p>17. Alternative Transmission Upgrades</p> <p>Source: CPUC Data Request March 2012</p>	Would not solve the criteria violating cited by CAISO and therefore would not meet project objectives criteria	Is potentially feasible to construct	Has potential to avoid environmental impacts of the proposed project
<p>18. Transmission System Load Management</p> <p>Source: NOP Scoping Period</p>	Does not meet project objectives criteria. Would not meet most project objectives including replacing aging and obsolete substation equipment and accommodating San Diego South Bay regional energy needs subsequent to retirement of the SBPP.	Would not meet feasibility criteria since these options are not feasible on a scale that would be suitable to replace the Proposed Project.	Would meet environmental criteria since impacts of the Proposed Project would be avoided, and no new significant environmental impacts would be created.

**Table C-1
Summary of Alternatives Screening Analysis**

Alternative	Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
19. Energy Conservation Source: NOP Scoping Period	Does not meet project objectives criteria. Would not meet most project objectives, including replacing aging and obsolete substation equipment and accommodating San Diego South Bay regional energy needs subsequent to retirement of the SBPP.	Would not meet feasibility criteria since these options are not feasible on a scale that would be suitable to replace the Proposed Project.	Would meet environmental criteria since impacts of the Proposed Project would be avoided, and no new significant environmental impacts would be created.
20. Energy Conservation Alternative and Transmission Load Management Alternative Source: NOP Scoping Period	Does not meet project objectives criteria. Would not meet most project objectives, including replacing aging and obsolete substation equipment and accommodating San Diego South Bay regional energy needs subsequent to retirement of the SBPP	Would not meet feasibility criteria since these options are not feasible on a scale that would be suitable to replace the proposed Project.	Would meet environmental criteria since impacts of the proposed project would be avoided and no new significant impacts created.
21. Transmission System Load Management + Energy Conservation + 138/69 kV substation Source: NOP Scoping Period	Does not meet CEQA screening criteria for project objectives. Does not meet project objectives – Accommodate regional energy needs subsequent to retirement of the SBPP, and– provide for future transmission and distribution load growth for the South Bay region.	Meets criteria for technical, legal, and regulatory feasibility.	Meets environmental criteria.
<i>SDG&E Alternative</i>			
22. Bayfront Enhancement Fund Alternative Source: SDG&E	Meets project objectives.	Due to the undefined nature of this alternative (i.e., proposed enhancement projects have yet to be defined) and that no established funding mechanism for Bayfront enhancement projects currently exists, the regulatory and legal feasibility of this alternative cannot be determined.	While the intent of this alternative is to benefit the San Diego Bayfront while allowing the project to be built as proposed, it cannot be determined at this time whether this alternative meets environmental screening criteria because proposed enhancement projects have environmental effects and benefits that have yet to be determined.

Bold = Alternatives that have been recommended through the alternative screening process for detailed EIR analysis

C.5 Alternatives Evaluated in this EIR

C.5.1 Gas Insulated Substation Technology Alternative

Description: This alternative was presented by SDG&E in response to CPUC's Data Request #5 (May 2010) and is similar to the Proposed Project with the exception that the new substation would be designed to use Gas Insulated Substation technology for the 230/69 kV switchyard (see Figures C-2a and C-2b).

Under this alternative, use of the Gas Insulated Substation technology would result in a smaller development footprint when compared to the Proposed Project due to the reduction in A-frame structures needed for the Air Insulated Substation required under the Proposed Project. With the Gas Insulated Substation Alternative, the Bay Boulevard Substation would occupy approximately 4.4 acres, which is 5.3 acres smaller than the Proposed Project. As shown in Figure C-2a, the new Bay Boulevard Substation built with Gas Insulated Substation technology would be located in the southwest corner of the proposed site, adjacent to the Salt Crystallizer Ponds and a private parking lot; the area north of the proposed Gas Insulated Substation Alternative, and south of the former liquefied natural gas (LNG) site, would not be utilized for proposed facilities as required under the Proposed Project.

The Gas Insulated Substation Technology Alternative would require approximately 6.6 acres of permanent impacts, which includes construction of a water quality basin, substation driveway, and the graded areas surrounding the substation (see Figure C-2a). A single water quality basin would be constructed along the western limits of the Gas Insulated Substation Alternative and would receive runoff from the substation site prior to discharging at the southwest corner. The water quality basin would measure approximately 3 feet deep with a volume of approximately 1.2 acre-feet.

The substation components would be constructed within metal buildings that will utilize gas for insulating the substation components. The gas utilized for insulation of the Gas Insulated Substation components consists of sulfur hexafluoride (SF₆), which is currently utilized by SDG&E in circuit breakers and switching gear. SF₆ is a greenhouse gas (GHG), but is considered nontoxic and inert from a hazardous materials perspective.

The metal buildings constructed for housing the Gas Insulated Substation equipment would consist of two buildings measuring approximately 40 to 50 feet in height. A 10-foot-tall concrete masonry wall as proposed under the Proposed Project would be installed around the perimeter of the substation.

Site development and grading is anticipated to include approximately 70,000 cubic yards (CY) of cut and fill. Cut from the existing surface would be approximately 5,000 CY, and approximately 60,000 CY of import fill material would be required.



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Gas Insulated Substation Technology Alternative
 Permanent Impacts
 Temporary Impacts

0 200 400 Feet

DUDEK

SOURCE: Digital Globe 2008
 SDG&E PEA 2010
 Insignia Environmental 2011

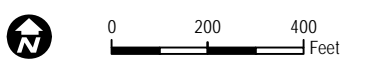
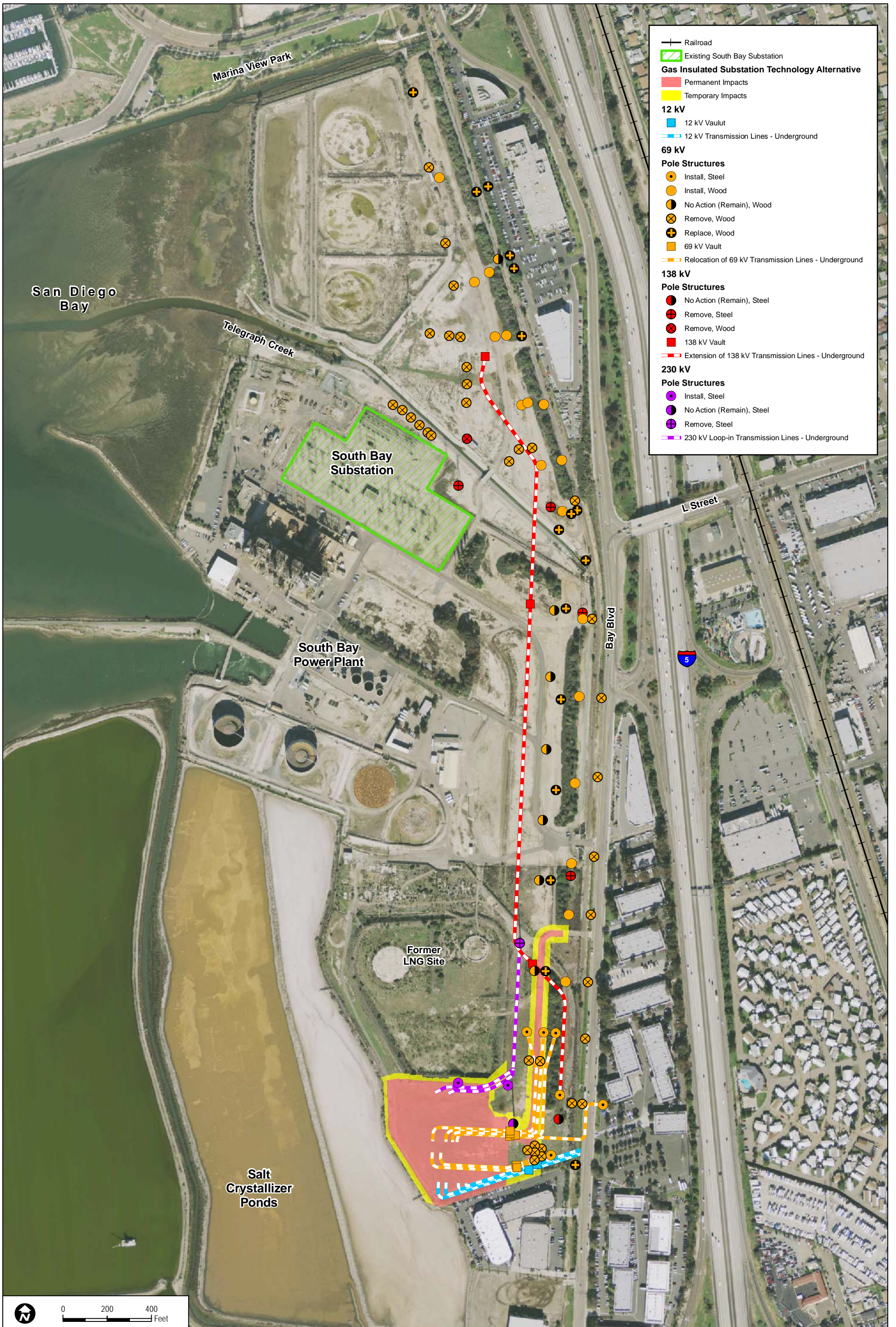
Gas Insulated Substation Technology Alternative - Temporary and Permanent Impacts

FIGURE C-2a

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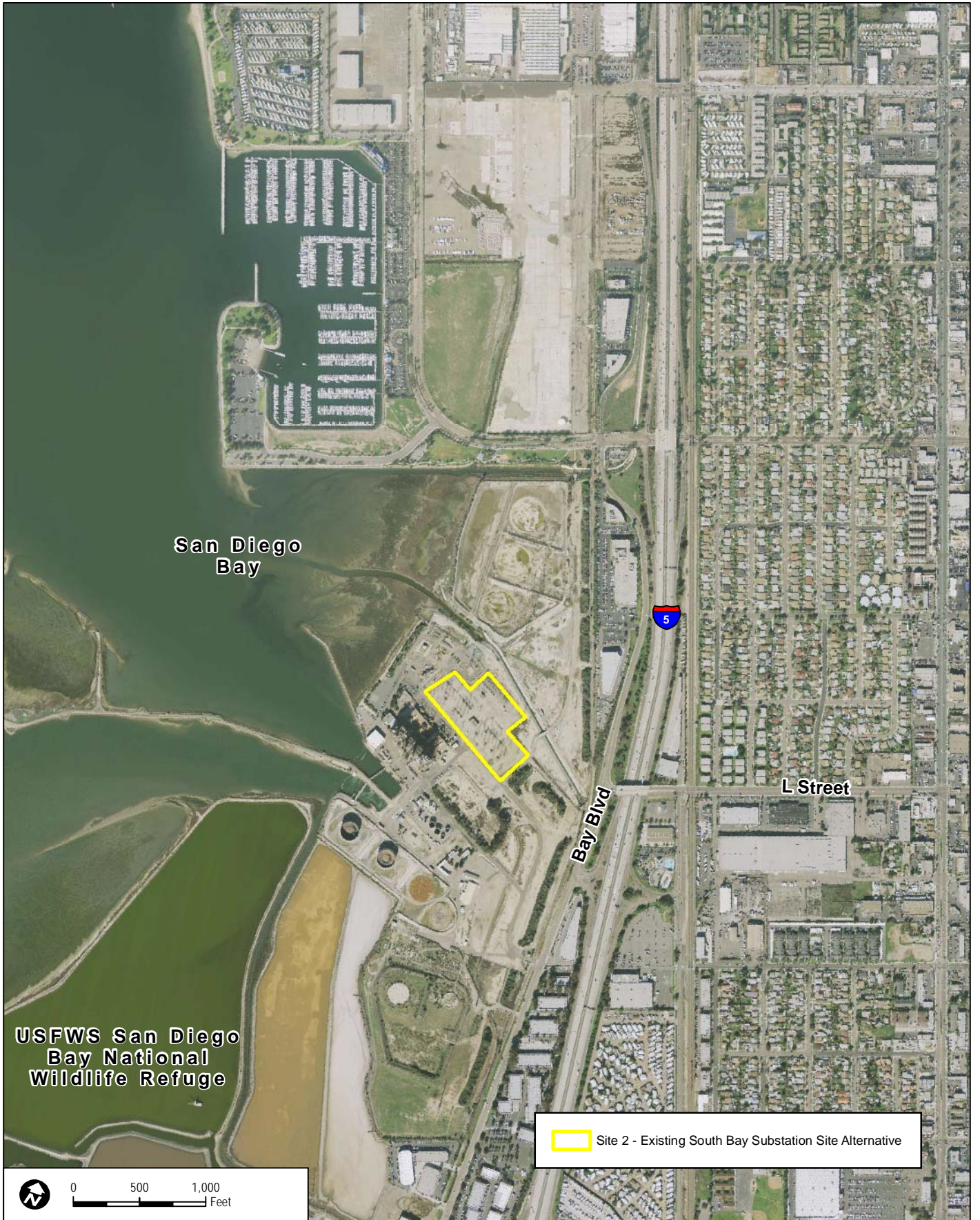
SOURCE: Digital Globe 2008

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FIGURE C-3
Site 1 - Tank Farm Site Alternative

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SOURCE: Digital Globe 2008

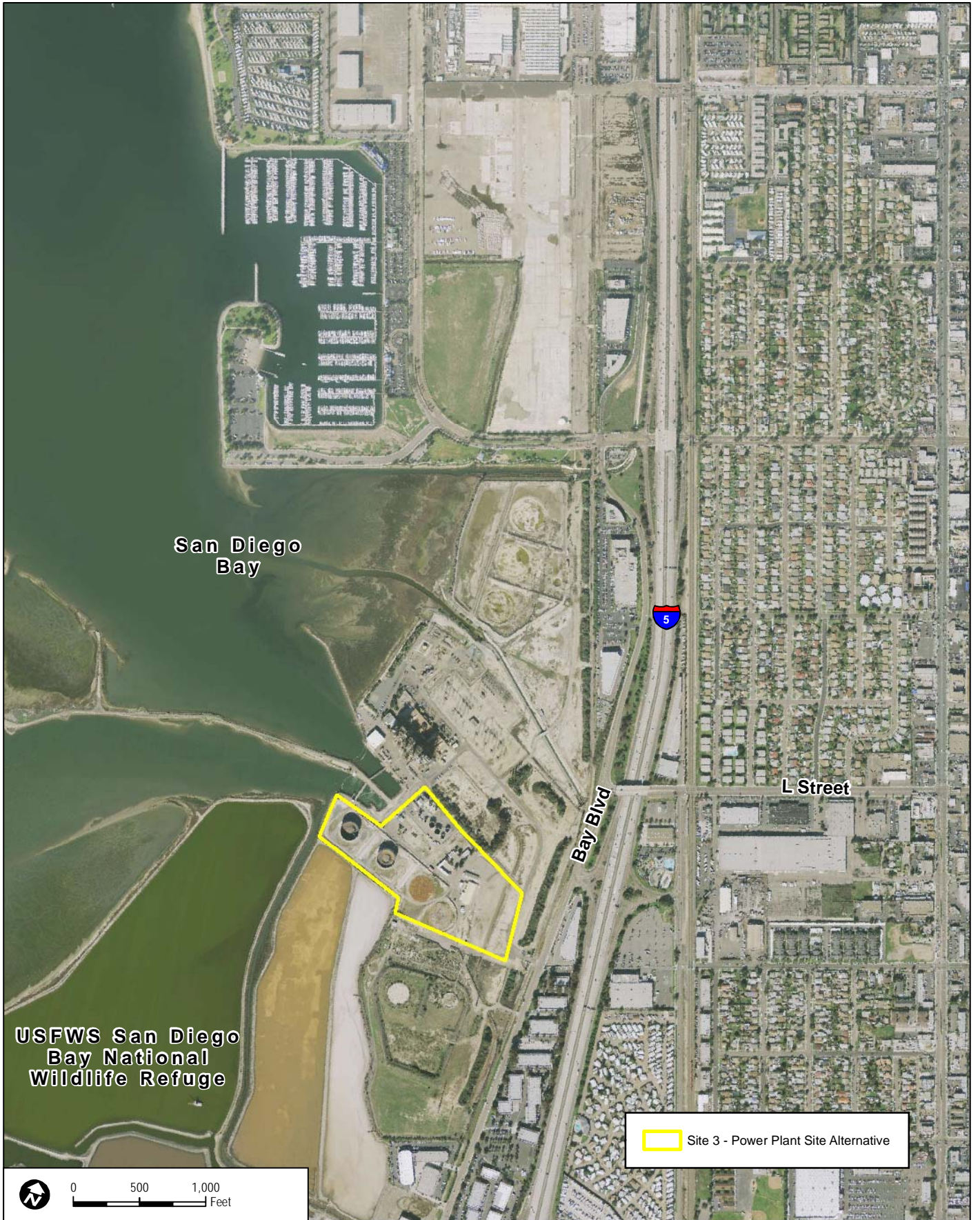
FIGURE C-4

Site 2 - Existing South Bay Substation Site Alternative

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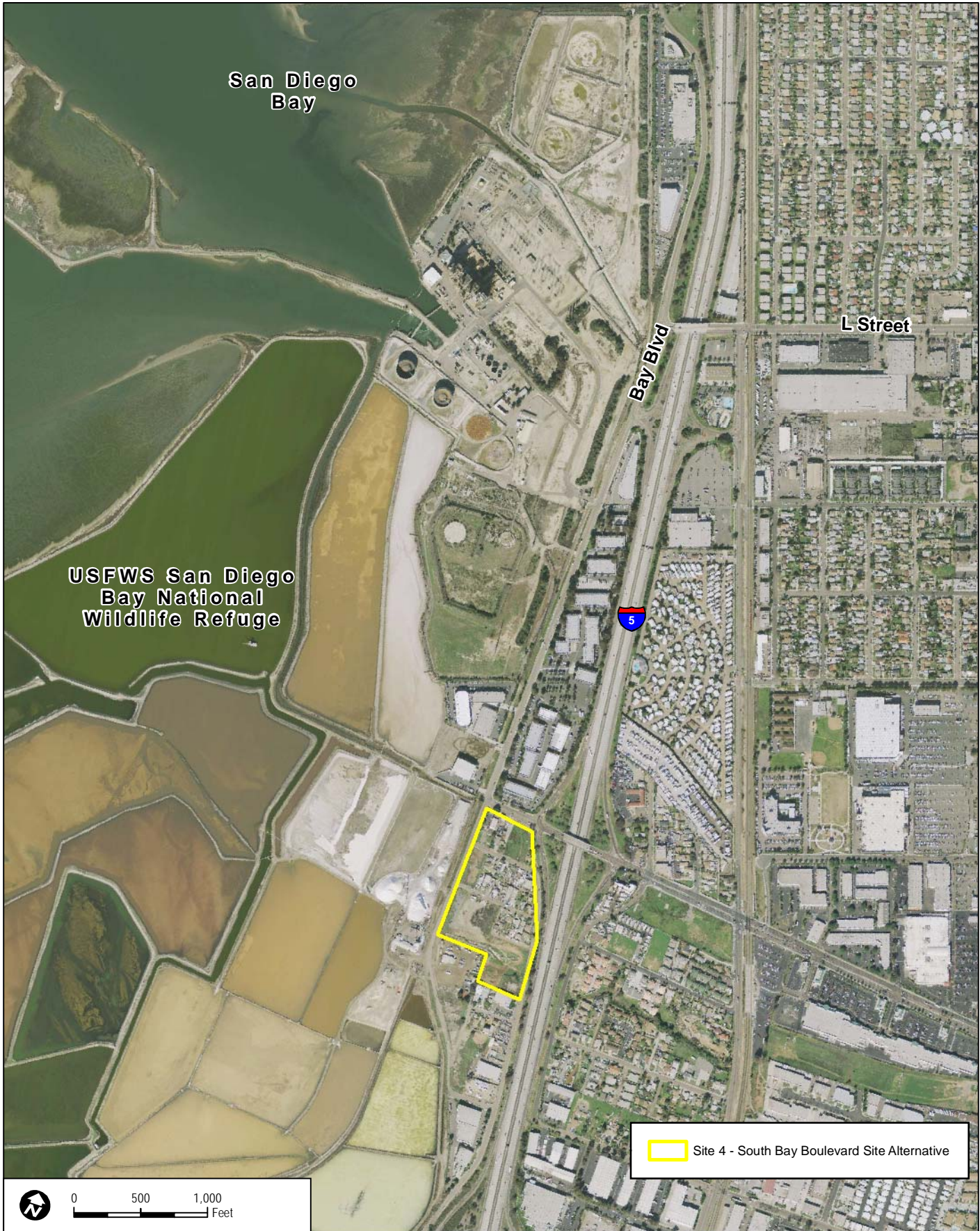
SOURCE: Digital Globe 2008

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FIGURE C-5
Site 3 - Power Plant Site Alternative

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SOURCE: Digital Globe 2008

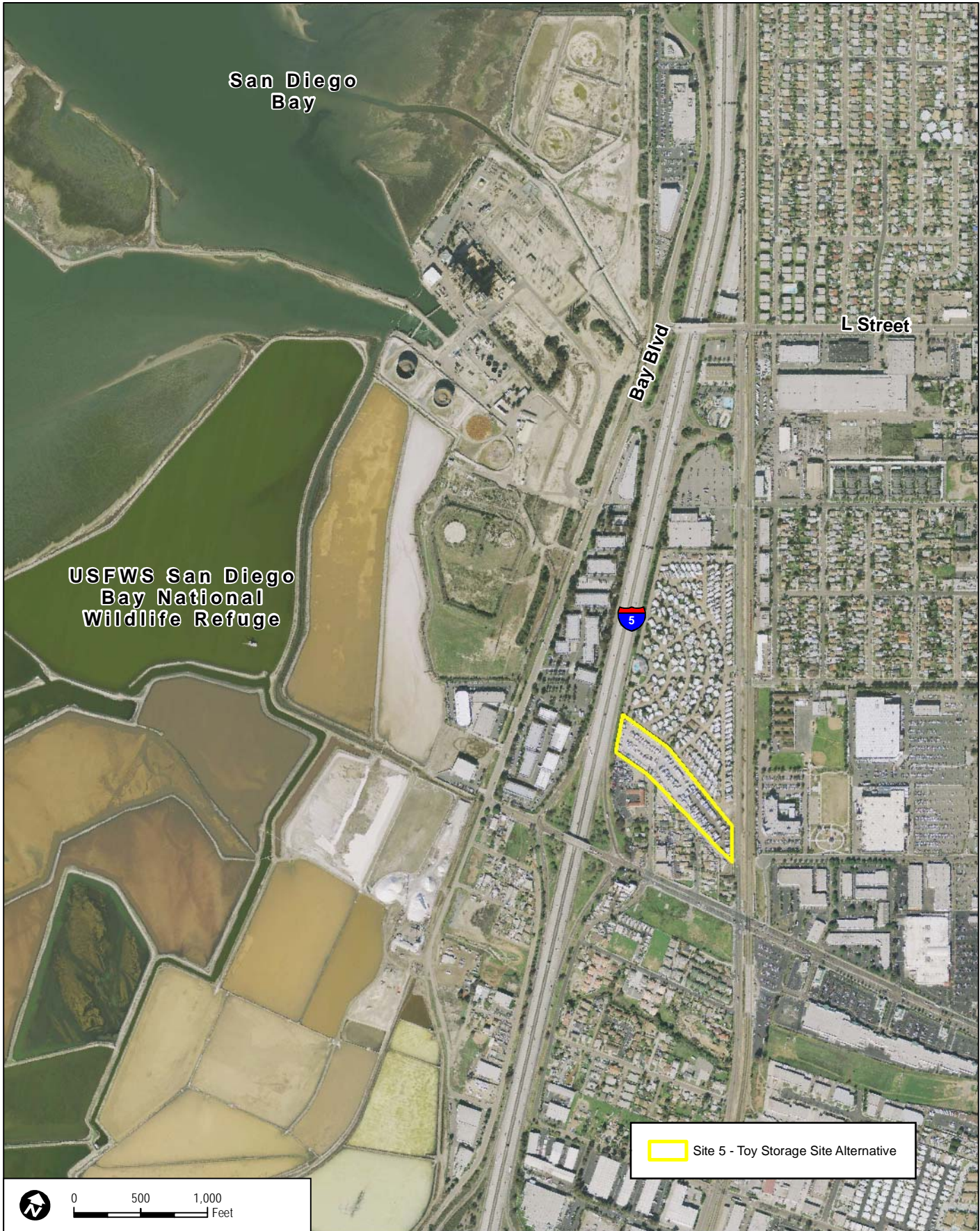
FIGURE C-6

Site 4 - South Bay Boulevard Site Alternative

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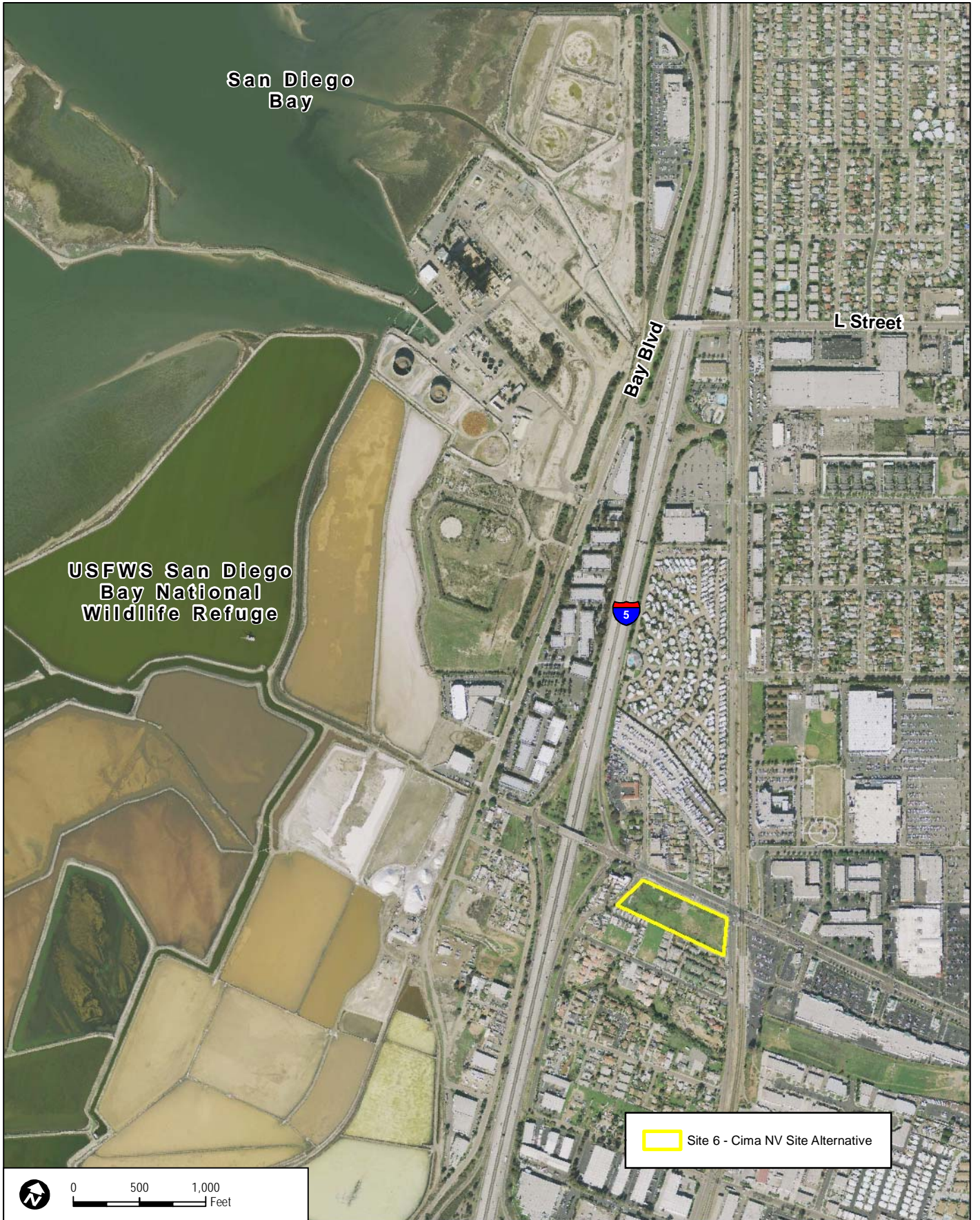
SOURCE: Digital Globe 2008

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FIGURE C-7
Site 5 - Toy Storage Site Alternative

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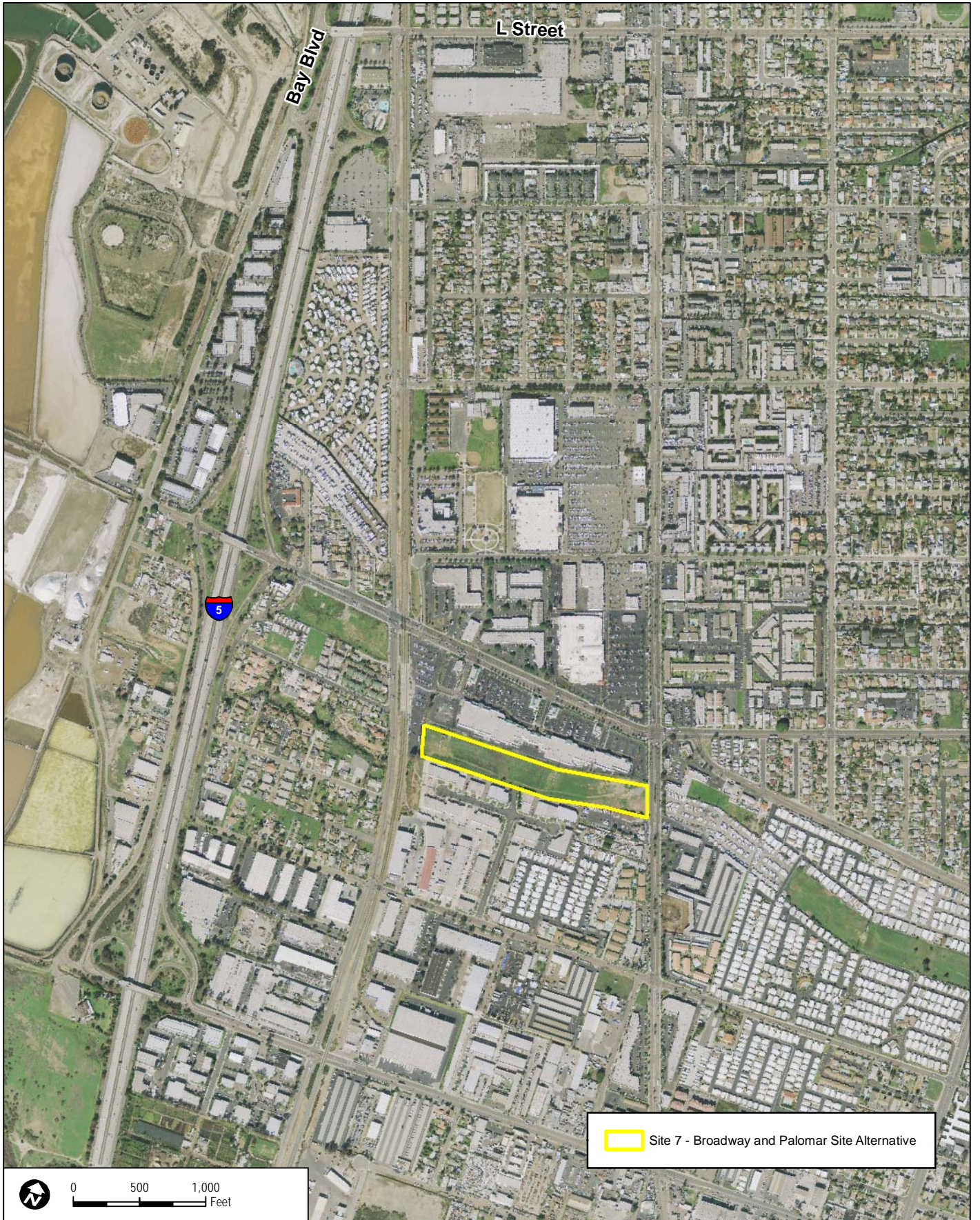
SOURCE: Digital Globe 2008

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FIGURE C-8
Site 6 - Cima NV Site Alternative

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SOURCE: Digital Globe 2008

FIGURE C-9
Site 7 - Broadway and Palomar Site Alternative

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SOURCE: Digital Globe 2008

FIGURE C-10

Site 8 - Goodrich South Campus Site Alternative

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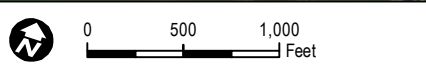


USFWS National
Wildlife Refuge
Sweetwater Marsh

San Diego
Bay

Bay Blvd

Site 9 - H Street Yard Site Alternative



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SOURCE: Digital Globe 2008

FIGURE C-11

Site 9 - H Street Yard Site Alternative

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SOURCE: Digital Globe 2008

FIGURE C-12

Site 10 - Bayside Site Alternative

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As under the Proposed Project, the existing driveway located to the north of the Gas Insulated Substation Alternative would provide access from Bay Boulevard. An approximately 1,250-foot-long by 32-foot-wide, asphalt-paved access road would be constructed from the end of the existing driveway to the two substation gates, and would be located east of the site within the existing transmission ROW. In addition, two 30-foot-wide sliding gates would be installed in the perimeter wall to permit ingress and egress to the site by SDG&E personnel. No access will be provided to the south just as under the Proposed Project.

As under the Proposed Project, the Gas Insulated Substation Alternative includes two potential arrangements: the initial and ultimate arrangement. The initial arrangement does not include 12 kV distribution equipment and would be used to provide 69 kV transmission to the South Bay region. As part of the ultimate arrangement, distribution equipment would be included at the proposed substation as local distribution loads develop in the South Bay region.

The initial arrangement would consist of the following primary components:

- Two metal buildings measuring approximately 40 to 50 feet in height with a footprint of 80 by 250 feet. The buildings will be utilized to house the 230 and 69 kV Gas Insulated Substation equipment and will be painted a beige color or treated with similar non-reflective neutral colors.
- Up to seven 69 kV and 230 kV dead-end structures, including six for the transmission banks and one for the 230 kV getaways.
- A communications tower as proposed under the Proposed Project, which consists of a 75-foot-tall lattice steel tower to support an 8-foot-diameter microwave telecommunications disk.
- 69 kV Lines – Six 69 kV lines would be constructed underground within a duct bank within the project limits to terminate at the 69 kV transmission lines with the associated circuit breakers, disconnects, and controls located at the 69 kV yard.
- 230 kV Lines – Two 230 kV lines from the OMPL alignment located east of the proposed substation will be terminated with the associated circuit breakers, disconnects, and controls using overhead connections.
- 230/69 kV Transformers – Two 230/69 kV transformers and associated circuit breakers, disconnects, and controls will be installed for grounding purposes.
- 69 kV Ground Transformers – Two 69 kV ground transformers and associated circuit breakers, disconnects, and controls will be installed for grounding purposes.
- 69 kV Capacitors – Two 69 kV capacitor positions would be constructed to feed the two 69 kV capacitors and associated circuit breakers, disconnects, and controls.

- Two 69 kV Station Light and Power (SL&P) transformers.
- Control House – Two control houses measuring approximately 30 feet wide by 60 feet long by 20 feet high, constructed of masonry block, will be utilized to house substation controls and protection.
- Telecommunications Building – A telecommunication building measuring approximately 12 feet wide by 20 feet long by 10 to 12 feet high will be constructed to monitor the substation operations remotely.

The ultimate arrangement would consist of all the components constructed as part of the initial arrangement with the addition of the following components:

- Up to twenty-nine 69 kV and 230 kV dead-end structures, including thirteen for the transmission banks, eight for the distribution banks, two for the 230 kV getaways, and six for the capacitors.
- 69 kV Lines – The ultimate arrangement would include the addition of two to six 69 kV lines that would be constructed underground within a duct bank within the project limits to terminate at the 69 kV transmission lines with the associated circuit breakers, disconnects, and controls located at the 69 kV yard.
- 230 KV Lines – The ultimate arrangement would include the addition of up to three lines from the OMPL alignment located east of the proposed substation that will be terminated with the associated circuit breakers, disconnects, and controls using overhead connections.
- 230/69 kV Transformer – The ultimate arrangement would include the addition of one 230/69 kV, 224-megavolt ampere (MVA) transformer and associated circuit breakers, disconnects, and controls will be installed for grounding purposes.
- 230 kV Capacitor Bank – Two 230 kV capacitor would be constructed along with associated circuit breakers, disconnects, and controls will be installed for grounding purposes.
- 69/12 kV Transformers – The ultimate arrangement would include the addition of four 69/12 kV, 28 MVA transformers and associated switchgear, capacitor banks, and controls. An oil containment basin would be constructed around the perimeter of each transformer with a capacity that is 10% greater than the oil capacity of the transformer to ensure at least 6 inches of freeboard is maintained.
- 12 kV Capacitors – Four 12 kV capacitors would be constructed along with associated circuit breakers, disconnects, and controls.
- 12 kV Lines – Sixteen 12 kV distribution lines would be installed using an underground duct bank beneath the southern access road to the Bay Boulevard site.

A new distribution control house, in addition to the one that will be constructed under the initial arrangement, measuring approximately 20 feet wide by 40 feet long and 12 feet tall, would be constructed to the south between the 69 kV bays and 12 kV distribution equipment. The structure is required to house substation controls and protection and is typically constructed of masonry blocks.

230 kV Loop-In

The 230 kV loop-in would include components as defined under the Proposed Project. However, under the Gas Insulated Substation Alternative, two steel poles would be installed (the Proposed Project would install a single steel cable pole riser) west of Bay Boulevard and east of the proposed Bay Boulevard Substation wall. Under this configuration, the overhead component of the 230 kV component would enter the substation from the north at a single point location (i.e., the proposed steel pole to be located north of the substation wall (see Figure C-2b) where it would then split and interconnect with the substation at two separate locations. Due to the arrangement of the Gas Insulated Substation Alternative, the underground component of 230 kV transmission line would follow a slightly different alignment and would enter the substation at different location as compared to the Proposed Project (see Figure C-2b).

138 kV Extension

The 138 kV extension would include components as defined under the Proposed Project. No duct-banks or vertical components other than those identified under the Proposed Project would be required.

69 kV Relocation

The 69 kV relocation would include components as defined under the Proposed Project. Under the Gas Insulated Substation Alternative, TL 644 would be relocated from the Bay Boulevard ROW (south of Telegraph Creek) to the ROW vacated by TL 13823 and 13824, which would be installed underground. In addition to a cable pole riser to be installed east of the bermed area and west of Bay Boulevard (the underground alignment for TL 644 into the Bay Boulevard substation would initiate from this point), five wood poles would be installed and two existing 138 kV steel lattice towers would be removed (the lattice towers would also be removed under the Proposed Project). TL 644 would then travel in a northerly direction and would return to its existing alignment north of Telegraph Creek. Because a segment of TL 644 along Bay Boulevard would be relocated, a 69 kV steel cable pole riser associated with the Proposed Project would not be installed, and similarly, eight wood poles associated with the abandoned section of TL 644 would be removed from the Bay Boulevard ROW (under the Proposed Project, TL 644 would not be relocated and poles within the Bay Boulevard ROW would be replaced).

In addition, under the Gas Insulated Substation Alternative, a new steel pole associated with TL 645 would be installed along the alignment, generally east of Bay Boulevard within the parking lot of a small-scale, commercial warehouse development. Also, due to the configuration of the Gas Insulated Substation Alternative, the underground component of TL 645 would differ slightly from that of the Proposed Project (undergrounding would begin in the parking lot of the commercial warehouse development located east of Bay Boulevard, proceed under Bay Boulevard, and then enter the substation from the north (see Figure C-2b)).

Lastly, trenching associated with the underground components of TL 646 and TL 647 would differ from that of the Proposed Project. Under the Gas Insulated Substation Alternative, these lines would be installed underground in two separate trenches (under the Proposed Project a common trench would be shared for a portion of the alignment).

Components associated with the 12 kV distribution line adjacent to Bay Boulevard would differ slightly under the Gas Insulated Substation Alternative. For example, due to the configuration of the Gas Insulated Substation Alternative, the underground alignment of the 12 kV distribution line be different (the alignment would travel in a southwesterly direction from Bay Boulevard and would then enter the substation from the south) from that of the Proposed Project, which would travel in a westerly direction from Bay Boulevard and enter the substation from the west).

Rationale for Full Analysis: The Gas Insulated Substation Alternative meets the CEQA criteria for project objectives, feasibility, and environmental effectiveness by avoiding legal and regulatory feasibility issues associated with acquiring private property, and it would minimize impacts to wetlands on site. This alternative would not result in potentially more overall environmental impacts than the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.2 Tank Farm Site Alternative

Description: This site alternative consists of a 19-acre parcel, located approximately 250 feet north of the existing South Bay Substation site and approximately 50 feet south of Marina View Park. The western limits of the site are located immediately adjacent to the San Diego Bay National Wildlife Refuge, and the northern project limits are located adjacent to a vegetated drainage along the southern limits of J Street (see Figure C-3).

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: Portions of the Tank Farm site were previously developed as the North Tank Farm for the South Bay Power Plant. The site is currently unoccupied and is covered with tan and brown grasses and low-lying shrubs. Earthen berms associated with previous industrial

uses (berms and low-lying areas served as spill containment basins for power plant tanks) are located in the central and eastern portions of the site. The western portion of the site is located adjacent to the J Street Marsh and has direct access to San Diego Bay. The site provides opportunities for ponding on site and supports sensitive habitat due to the ponding that has historically occurred on site.

Rationale for Full Analysis: The Tank Farm Site Alternative meets CEQA criteria for project objectives and feasibility, and it meets environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.3 Existing South Bay Substation Site Alternative

Description: This alternative includes dismantling the existing 7-acre South Bay Substation and construction of a new substation at the same location. The Existing South Bay Substation Site Alternative is located adjacent to the north side of the existing SBPP (see Figure C-4).

Configuration: Both an Air Insulated Substation and a Gas Insulated Substation configuration were considered for this alternative site. Construction of the Air Insulated Substation would require an additional 3 acres assumed, for purposes of the analysis conducted in this EIR, to be located on disturbed vacant lands adjacent to the site.

Existing Conditions: The on-site conditions consist of a highly disturbed site that includes substation facilities associated with the South Bay Substation (138/69 kV substation). The substation was originally constructed to support the SBPP located to the south.

Rationale for Full Analysis: The Existing South Bay Substation Site Alternative – meets CEQA criteria for project objectives, is potentially feasible to construct, and meets environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.4 Power Plant Site Alternative

Description: This alternative consists of a 22-acre site located on the SBPP property, which is located immediately adjacent to and south of the existing South Bay Substation (see Figure C-5). San Diego Bay and the National Wildlife Refuge are located to the west of the site, and salt crystallizer ponds and the former LNG site are located to the south.

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The site is highly disturbed and includes facilities associated with the SBPP operations. Irregular clumps of ornamental plantings are located around existing buildings to provide visual relief from surrounding land uses. Disturbed habitat occurs along the easternmost edge of the site and is isolated from the remainder of the site by access roads to the north, west, and south, and railroad tracks to the east.

Rationale for Full Analysis: The Power Plant Site Alternative meets CEQA criteria for project objectives, feasibility, and environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.5 Broadway and Palomar Site Alternative (Gas Insulated Substation)

Description: This alternative consists of a 9-acre site that is located approximately 1.2 miles southeast of the existing South Bay Substation. The site is located between Industrial Boulevard and Broadway, south of Palomar Street (see Figure C-9).

The alternative would require construction of approximately 2.9 miles of transmission corridors to provide connections to the SDG&E grid, which includes construction of 69 kV lines that would need to cross I-5 via horizontal directional drilling. Establishment of additional corridors would entail the installation of new overhead transmission structures.

Configuration: Both an Air Insulated Substation and a Gas Insulated Substation configuration were considered for this alternative site. See Section C.6.4 for a discussion of the Broadway and Palomar Site – Air Insulated Substation Alternative that was eliminated from full analysis in the EIR.

Existing Conditions: The 9-acre Broadway and Palomar site is between Industrial Boulevard and Broadway, and south of Palomar Street. The site features gently rolling topography from east to west, sparse and irregular low-growing vegetation across the site, and graded access roads and pads for existing transmission structures (the site is a transmission corridor owned by SDG&E). With the exception of transmission structures, the site is undeveloped. Commercial uses are located to the north, and commercial and light industrial uses are located to the south. The Metropolitan Transit System (MTS) Palomar Street Trolley Station and parking lot are located adjacent to the western portion of the site. Residential land uses are located farther east of the site (east of Broadway) and farther west of the site (west of Industrial Boulevard).

Rationale for Full Analysis: The Broadway and Palomar Site – Gas Insulated Substation Alternative meets CEQA criteria for project objectives and feasibility, and it avoids regulatory feasibility issues associated with acquiring private property since the site is currently owned by SDG&E. The Broadway and Palomar Site – Gas Insulated Substation Alternative meets

environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.6 Goodrich South Campus Site Alternative

Description: This alternative consists of a 31-acre site that is located approximately 0.8 mile north of the existing South Bay Substation. The site is located to the northwest of the J Street/Bay Boulevard intersection (see Figure C-10). The site consists of a linear configuration that is west of an SDG&E ROW within an area previously used by Goodrich.

This alternate site would require construction of approximately 0.6 mile of transmission corridors to provide connections to the SDG&E grid, which includes construction of 69 kV lines that terminate at the existing South Bay Substation and that would need to be extended to the north to the Goodrich South Campus Site.

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The 31-acre Goodrich South Campus site is located west of I-5 and east of the Chula Vista Marina, approximately 0.35 mile north of the existing South Bay Substation. The site is located northwest of the J Street/Bay Boulevard intersection and was previously used by Goodrich for industrial operations and associated parking needs. The easternmost portion of the site (adjacent to the SDG&E transmission corridor) is flat, paved with concrete, and contains evidence (an aboveground storage tank in the southeastern corner of the site) of past industrial operations. Past uses and structures have marked the area as evidenced by staining and/or discoloration of the covering concrete. Also relatively flat, the western portion of the site is disturbed and consists of exposed tan soils, tan and brown grasses, and irregular patches of low-growing brown shrubs. A narrow drainage bisects the site. Industrial uses are located to the north, commercial and recreational uses (the Chula Vista Marina) are located to the west across Marina Parkway, the SDG&E transmission corridor is located to the east (commercial uses are located beyond the transmission corridor), and Marina Parkway and Marina View Park are located to the south.

Rationale for Full Analysis: The Goodrich South Campus Site Alternative meets CEQA criteria for project objectives, feasibility, and environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.7 H Street Yard Site Alternative

Description: This alternative consists of a 47-acre site that is located approximately 0.8 mile north of the existing South Bay Substation. The site is located southwest of the H Street/Bay Boulevard intersection (see Figure C-11). The site consists of a linear configuration that is east of an SDG&E ROW within an area previously used as a parking lot for Goodrich employees.

This alternate site would require construction of approximately 0.8 mile of transmission corridors to provide connections to the SDG&E grid, which includes construction of 69 kV lines that terminate at the existing South Bay Substation and that would need to be extended to the north to the H Street Yard Alternative Site.

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The 47-acre H Street Yard site is located west of I-5 and east of the Chula Vista Marina, approximately 0.6 mile north of the existing South Bay Substation. The site is north, adjacent to the Goodrich South Campus site alternative discussed in Section D.10.4.6, and is located southwest of the H Street/Bay Boulevard intersection. The industrial site is entirely paved with concrete and contains evidence of past industrial uses. Portions of the site appear to be currently used for temporary storage. Industrial uses are located to the north and south, and I-5 is located to the east. A previously developed industrial lot is located to the northwest, and commercial and recreation uses are located to the west, across Marina Parkway.

Rationale for Full Analysis: The H Street Yard Site Alternative meets CEQA criteria for project objectives, feasibility, and environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.5.8 Bayside Site Alternative

Description: This alternative consists of a 38-acre site that is located approximately 0.9 mile north of the existing South Bay Substation. The site is located southeast of the Quay Way/G Street intersection (see Figure C-12).

This alternate site would require construction of approximately 1.5 miles of transmission corridors to provide connections to the SDG&E grid, which includes construction of 69 kV lines that terminate at the existing South Bay Substation and that would need to be extended to the north to the Bayside site. In addition, approximately 0.3 mile of 230 kV conductor will need to be constructed from the existing 230 kV corridor located to the east of the Bayside Site Alternative.

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The 38-acre Bayside site is located west of I-5, east of Bayside Park, and approximately 0.8 mile north of the existing South Bay Substation. Sandpiper Way traverses the site and separates the previously developed eastern portion of the site from the disturbed yet undeveloped western portion of the site adjacent to Bayside Park. The easternmost portion of the site is entirely paved and includes several concrete pads that supported previous on-site industrial uses. The area west of Sandpiper Way consists of two disturbed yet undeveloped lots (the lots are separated by Quay Way). Industrial land uses are located to the north; however, open space is also located to the north and adjacent to Marina Parkway. Industrial uses are also located to the east, across Marina Parkway, and commercial and recreational uses (Bayside Park and the Chula Vista Marina) are located to the south. The northern portion of Bayside Park is also located to the northwestern-most portions of the site, and the Chula Vista RV Resort is located adjacent to the western boundary of the site.

Rationale for Full Analysis: The Bayside Site Alternative meets CEQA criteria for project objectives, feasibility, and environmental effectiveness criteria because the alternative would potentially lessen environmental impacts identified under the Proposed Project. Consequently, this alternative was recommended to be carried forward to full EIR analysis.

C.6 Alternatives Eliminated from Full EIR Evaluation

C.6.1 South Bay Boulevard Site Alternative

Description: This alternative consists of a 15-acre site that is located approximately 0.8 mile south of the existing South Bay Substation, southeast of the Palomar Road/Bay Boulevard intersection (see Figure C-6). I-5 is located along the eastern limits of the site.

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The site contains residential, commercial, and industrial uses.

Rationale for Elimination: The South Bay Boulevard Site Alternative meets CEQA criteria for project objectives and is potentially feasible to construct. This alternative would not meet environmental criteria because the alternative does not avoid or minimize significant environmental effects related to population and housing and land use. This alternative would require the displacement of approximately 20 residences (single-family and mobile homes) and 5 industrial and commercial uses/businesses along Palomar Street, West Frontage Road, and Ada Street. The substantial land use and population and housing impacts resulting from this

alternative would represent new environmental impacts beyond those identified under the Proposed Project.

While this alternative would meet the CEQA criteria for most project objectives and is both legally and technically feasible, the alternative would not avoid or substantially reduce the significant environmental effects of the Proposed Project. For these reasons, this alternative was not recommended to be carried forward for full EIR analysis.

C.6.2 Toy Storage Site Alternative

Description: This alternative site location consists of a 6-acre site located approximately 0.6 mile southeast of the existing South Bay Substation. The site is located approximately 0.1 mile north of the Palomar Street/Industrial Boulevard intersection (see Figure C-7). Single-family residences are located immediately adjacent to the south, and a mobile home park is located along the northern limits of the site.

Configuration: Both an Air Insulated Substation as proposed and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The site consists of a linear configuration that is currently owned by SDG&E and is used as a transmission corridor for both 138 kV and 230 kV utilities. The site consists of a paved lot that is used as a storage yard for boats, RVs, and so forth.

Rationale for Elimination: This alternative meets the CEQA screening criteria for project objectives, including replacement of aging and obsolete substation equipment, accommodating regional energy needs subsequent to retirement of the SBPP, and providing for future transmission and distribution load growth for the South Bay region.

This alternative would not be technically feasible for construction of an Air Insulated Substation. A Gas Insulated Substation configuration on the site would also not be technically feasible due to parcel configuration and the presence of transmission lines overhead, which does not result in adequate vertical clearance.

The Toy Storage Site Alternative would not meet environmental effectiveness criteria because the 6-acre Toy Storage site is not physically large enough to accommodate the Air Insulated Substation or Gas Insulated Substation Alternative without removing adjacent residences. As such, the Air Insulated Substation and Gas Insulated Substation Alternatives are not technically feasible at this site. Therefore, this alternative was not recommended to be carried forward for full EIR analysis.

C.6.3 Cima Nevada Site Alternative

Description: This alternative consists of a 4-acre site that is located approximately 0.9 mile southeast of the existing South Bay Substation. The site is located between Industrial Boulevard and East Frontage Road, south of Palomar Street (see Figure C-8).

Configuration: Both an Air Insulated Substation, as proposed, and a Gas Insulated Substation configuration were considered for this alternative site.

Existing Conditions: The site is currently vacant and located adjacent to Palomar Street (six-lane roadway), and the San Diego Trolley is located to the south. Single-family residences are located along the southern limits of the site.

Rationale for Elimination: The Cima Nevada Site Alternative meets CEQA criteria for project objectives and is potentially feasible to construct.

The Cima Nevada Site Alternative site would not meet environmental effectiveness criteria because the 4-acre Cima Nevada Site Alternative is not physically large enough to accommodate the Air Insulated Substation or Gas Insulated Substation Alternative and cannot be expanded without the removal of adjacent residences. As such, the Air Insulated Substation and Gas Insulated Substation Alternatives were not recommended to be carried forward for full EIR analysis.

C.6.4 Broadway and Palomar Site Alternative (Air Insulated Substation)

Description: This alternative consists of a 9-acre site that is located approximately 1.2 miles southeast of the existing South Bay Substation. The site is located between Industrial Boulevard and Broadway, south of Palomar Street (see Figure C-9).

Configuration: Both an Air Insulated Substation and a Gas Insulated Substation configuration were considered for this alternative site. Section C.5.5 includes a discussion of the Broadway and Palomar Site – Gas Insulated Substation Alternative that was carried forward for a full analysis in the EIR. This section includes a discussion of the Broadway and Palomar Site – Air Insulated Substation Alternative that was eliminated from full analysis in the EIR.

Existing Conditions: The 9-acre Broadway and Palomar site is between Industrial Boulevard and Broadway, and south of Palomar Street. The site features gently rolling topography from east to west, sparse and irregular low-growing vegetation across the site, and graded access roads and pads for existing transmission structures (the site is a transmission corridor owned by SDG&E). With the exception of transmission structures, the site is undeveloped. Commercial uses are located to the north and commercial and light industrial uses are located to the south. The MTS

Palomar Street Trolley Station and parking lot are located adjacent to the western portion of the site. Residential land uses are located farther east of the site (east of Broadway) and farther west of the site (west of Industrial Boulevard).

Rationale for Elimination: This alternative meets criteria for project objectives and is potentially feasible to construct. The Broadway and Palomar site is not physically large enough to accommodate the 10-acre Air Insulated Substation Alternative without the removal of existing commercial uses. As such, the Air Insulated Substation Alternative is not technically feasible at this site. Therefore, this alternative was not recommended to be carried forward for full EIR analysis.

C.6.5 Bay Boulevard at 138/69 kV Alternative

Description: This alternative includes construction of a 138/69 kV substation at the proposed Bay Boulevard site location with the same voltage as the existing South Bay Substation.

Rationale for Elimination: This alternative does not meet the CEQA screening criteria for project objectives. With the planned removal of the existing SBPP and without construction of a new substation that can accommodate a 230 kV system, service reliability to the area now served by the South Bay Substation would be materially reduced, possibly requiring involuntary shedding of load in the South Bay region.

CAISO has approved the need for the Bay Boulevard Substation at the proposed 230/69 kV configuration. A substation with a 138/69 kV configuration would not meet regional energy demands subsequent to retirement of the SBPP. The 138/69 kV configuration would result in a heavily loaded transmission system, which would reduce the flexibility of the system to adapt to peak energy demands or future load growth planned in the region. In addition, SDG&E is required to meet performance criteria in accordance with the North American Electrical Reliability Corporation, Western Electricity Coordinating Council, and CAISO. The criteria established includes the ability for the transmission system to be able to withstand the loss of any one system element (i.e., transmission line, transformer, and/or generator) during peak demand without violating system operating ratings. The current 138/69 kV configuration does not meet these criteria. Thermal violations are also present within the current 138/69 kV configuration (and may be expected to be present under a 138/69kV configuration at the Bay Boulevard site) on both the Old Town 230/69 kV transformer banks, the Miguel 230/69 kV bank 61, transmission lines TL604 (Kettner–Old Town), and TL609 (Kettner–Station B). To correct these thermal violations, additional transmission upgrades are required beyond a new 138/69 kV configuration at the Bay Boulevard site.

Therefore, this alternative would not meet the project objectives of replacing aging and obsolete substation equipment, accommodating regional energy needs subsequent to retirement of the South Bay Power Plant and providing for future transmission and distribution load growth for the South Bay region. The tie-in to the 230 kV system, which is located immediately adjacent to the proposed Bay Boulevard Substation, results in a more robust/reliable system and requires less in the way of system expansion.

While this alternative could potentially reduce the required footprint and associated environmental impacts and it meets legal, technical, and regulatory requirements for timeliness, this alternative was not recommended to be carried forward for full EIR analysis because it would not meet CEQA screening criteria for project objectives.

C.6.6 Expansion of South Bay Substation by Expanding Substation Boundary/69 kV Capacity Alternative

Description: This alternative includes expansion of the existing South Bay Substation at the same voltage level that is currently in service (138/69 kV). The existing South Bay Substation would be expanded outside of the existing substation fence, adjacent to the existing 69 kV structures to provide additional 69 kV capacity.

Rationale for Elimination: This alternative does not meet the CEQA screening criteria for project objectives. In absence of constructing a new substation that can accommodate a 230 kV system, service reliability to the South Bay and surrounding area would be materially reduced, possibly requiring involuntary shedding of load in the South Bay region (see Section C.6.5).

Therefore, this alternative would not meet the project objectives of replacing aging and obsolete substation equipment, accommodating regional energy subsequent to retirement of the SBPP, and providing for future transmission and distribution load growth for the South Bay region. The tie-in to the 230 kV system, which is located immediately adjacent to the proposed Bay Boulevard Substation, results in a more robust/reliable system and requires less in the way of system expansion.

While this alternative could potentially reduce the required footprint and associated environmental impacts and it meets legal and technical requirements, this alternative was not recommended to be carried forward for full EIR analysis because it would not meet CEQA screening criteria for project objectives.

C.6.7 Reduced Communications Tower Height Alternative

Description: This alternative would reduce the height of the communications tower, which is proposed by SDG&E to be 75 feet tall. The Reduced Communications Tower Height Alternative

would include a communication tower with a height of approximately 44 feet, which is the permitted height of structures within the industrial district where the Proposed Project site is located.

Rationale for Elimination: The reduced tower height would not be technically feasible because a height of 75 feet is proposed to provide adequate vertical clearance for uninterrupted communications. The communications tower needs to be approximately 75 feet tall to provide communication clearance above the 55-foot-tall A-frame structures. A height of 75 feet will ensure a clear line of sight for communication signals with the existing SDG&E backbone network. A reduced tower height would not be technically feasible because it would result in obstruction for the near-field communication. The telecommunications component is essential to the project reliability because it ensures a reliable transmission system. While this alternative would reduce potential environmental impacts of the Proposed Project, this alternative was not recommended to be carried forward for full EIR analysis because it does not meet feasibility criteria.

C.6.8 Underground All Transmission Poles and Associated Infrastructure Alternative

Description: This alternative would include undergrounding new transmission poles as proposed under the Proposed Project. The alternative would eliminate the need for five 69 kV steel cable pole risers (85 feet), one 138 kV steel cable pole riser (165 feet), and one 230 kV steel cable pole riser (110 feet).

Rationale for Elimination: The proposed undergrounding of the 69 kV transmission line does not meet environmental criteria. This alternative would have greater construction-related noise and traffic impacts. The Proposed Project includes the removal of five lattice steel structures (110 feet), three wood-pole 138 kV tangent structure (100 feet) and one 230 kV transition pole (165 feet). The project also includes construction of five new poles (230 kV steel angle tower (110 feet), 138 kV riser (165 feet), and five 69 kV pole risers (85 feet). In addition, the project includes construction of eighteen 69 kV wood poles, removal of twenty-three 69 kV wood poles, and replacement of twenty-two 69 kV wood transmission poles. As seen in Section D of the EIR, the Proposed Project would not result in any significant effects due to the change in the transmission structures that could be avoided or lessened by undergrounding the proposed facilities; therefore, this underground alternative has not been carried forward for full consideration in the Draft EIR.

C.6.9 Underground All Transmission Poles and Lines Along Bay Boulevard Alternative

Description: This alternative would include undergrounding all transmission poles proposed under the Proposed Project and transmission infrastructure located along Bay Boulevard. The

alternative would include the undergrounding of two 69 kV steel cable pole risers (85 feet in height) and eleven 69 kV wood poles that are proposed to be replaced along Bay Boulevard.

Rationale for Elimination: The proposed undergrounding of the 69 kV transmission line does not meet environmental criteria. This alternative would have greater construction-related noise and traffic impacts. The Proposed Project includes the removal of five lattice steel structures (110 feet), three wood-pole 138 kV tangent structure (100 feet) and one 230 kV transition pole (165 feet). The project also includes construction of five new poles (230 kV steel angle tower (110 feet), 138 kV riser (165 feet), and five 69 kV pole risers (85 feet)). In addition, the project includes construction of eighteen 69 kV wood poles, removal of twenty-three 69 kV wood poles, and replacement of twenty-two 69 kV wood transmission poles. As seen in Section D of the EIR, the Proposed Project would not result in any significant effects due to the change in the transmission structures that could be avoided or lessened by undergrounding the proposed facilities; therefore, this underground alternative has not been carried forward for full consideration in the Draft EIR.

C.6.10 Transmission System Load Management Alternative

Description: This alternative includes load management programs to reduce peak electric demand or have the primary effect of shifting electric demand from peak to non-peak periods. Regulatory requirements dictate that supply-side and demand-side resource options should be considered on an equal basis in a utility's plan to acquire lowest-cost resources. These programs are designed to either reduce the overall use of energy or shift the consumption of energy to off-peak times. Under this alternative, the need for a new substation would be met through increased load management activities similar to those noted above.

Rationale for Elimination: As separate and stand-alone programs, these alternatives do not provide either the expansion capabilities or reliability needs of SDG&E, as stated in the project objectives. For these reasons, this alternative has been eliminated from further consideration.

C.6.11 Energy Conservation Alternative

Description: This alternative would include energy conservation programs offered by SDG&E to customers, such as financial incentives for installing specific energy-efficient appliances or taking other measures to conserve energy.

Under the direction of CPUC, SDG&E offers a number of energy conservation programs for customers, including financial incentives for installing specific energy-efficiency appliances or taking other measures to conserve energy. SDG&E also provides programs such as in-line energy profiling and in-home energy audits to make customers more aware of their energy usage and of ways to conserve, as well as a variety of free brochures about improving energy efficiency.

Impacts associated with these programs are routinely factored into the peak and energy forecasts prepared by SDG&E, including the forecasts for the area to be served by the proposed Bay Boulevard Substation. Thus, the need for the project has been considered relative to the benefits associated with conservation and demand-side management.

Rationale for Elimination: As a separate and stand-alone program, this alternative does not meet CEQA screening criteria for project objectives. With the planned removal of the existing SBPP and without construction of a new substation that can accommodate a 230 kV system, service reliability to the area now served by the South Bay Substation would be materially reduced, possibly requiring involuntary shedding of load in the South Bay region. Therefore, this alternative would not meet the project objectives of replacing aging and obsolete substation equipment, accommodating regional energy subsequent to retirement of the SBPP, facilitating the City's Bayfront redevelopment goals by relocating the South Bay Substation and providing for future transmission and distribution load growth for the South Bay region.

This alternative would also not meet the feasibility criteria. Reductions in energy usage provided by energy conservation would not occur at a scale that would eliminate the need for the energy delivered by the Bay Boulevard Substation for the South Bay region, and these reductions are already calculated into the transmission forecasting. While this alternative would avoid environmental impacts of the Proposed Project, this alternative was not recommended to be carried forward for full EIR analysis because it would not meet project objectives and feasibility criteria.

C.6.12 Energy Conservation Alternative and Transmission Load Management Alternative

Description: This alternative would include a combination of the energy conservation programs offered by SDG&E to customers such as financial incentives and a transmission system load management program to reduce peak electric demand.

Rationale for Elimination: As discussed in Sections C.6.10 and C.6.11, transmission load management programs and energy conservation programs do not provide either the expansion capabilities or reliability needs of SDG&E, as stated in the project objectives. This alternative would not meet the feasibility criteria. Reductions in energy usage and transmission load management programs would not occur at a scale that would eliminate the need for the energy delivered by the Bay Boulevard Substation for the South Bay region.

In addition, this alternative would not meet the project objectives of replacing aging and obsolete substation equipment, accommodating regional energy subsequent to retirement of the SBPP, and providing for future transmission and distribution load growth for the South Bay region.

While this alternative would avoid the environmental impacts of the Proposed Project, this alternative was not recommended to be carried forward for full EIR analysis because it would not meet project objectives and feasibility criteria.

C.6.13 Transmission System Load Management + Energy Conservation + 138/69 kV Alternative

Description: This alternative consists of a combination of transmission load management, energy conservation, and construction of the Bay Boulevard Substation at 138/69 kV configuration. See the discussion in Sections C.6.10 and C.6.11 regarding the Transmission Load Management Alternative and Energy Conservation Alternative.

Rationale for Elimination: This alternative does not meet the CEQA screening criteria for project objectives. With the planned removal of the existing SBPP and without construction of a new substation that can accommodate a 230 kV system, service reliability to the area now served by the South Bay Substation would be materially reduced, possibly requiring involuntary shedding of load in the South Bay region. Therefore, this alternative would not meet the project objectives of replacing aging and obsolete substation equipment, accommodating regional energy subsequent to retirement of the SBPP, and providing for future transmission and distribution load growth for the South Bay region.

In addition, this alternative would not meet the feasibility criteria. Reductions in energy usage provided by energy conservation and transmission system load management would not occur at a scale that would eliminate the need for the energy delivered by the Bay Boulevard Substation at a 138/69 kV configuration for the South Bay region. Energy conservation goals are already factored into the long-term transmission planning requirements.

While this alternative would avoid environmental impacts of the Proposed Project, this alternative was not recommended to be carried forward for full EIR analysis because it would not meet project objectives and feasibility criteria.

C.6.14 Bayfront Enhancement Fund Alternative

Description: The Bayfront Enhancement Fund Alternative consists of constructing the Proposed Project and the establishment of a funding program to be used for San Diego Bayfront enhancement. Under this alternative, SDG&E would contribute \$5 million to fund Bayfront enhancement projects, such as (1) creation, restoration, and/or enhancement of wetlands; (2) coastal resources, including coastal access enhancements, such as walkway, path, park, overlook, and traffic improvements, as well as educational signage and events; (3) biological resources, such as habitat management and protection efforts, including predator management, vegetation management, and security signage; water quality improvements; and aesthetics enhancements,

such as landscaping and lighting improvements. SDG&E has indicated that specific projects would be identified by a group of agency and community stakeholders and could be coordinated with ongoing efforts to finalize the Chula Vista Bayfront Master Plan.

Rationale for Elimination: This alternative meets the CEQA screening criteria for project objectives, including replacement of aging and obsolete substation equipment, accommodating regional energy needs subsequent to retirement of the SBPP, and providing for future transmission and distribution load growth for the South Bay region.

Due to the undefined nature of this alternative (i.e., proposed enhancement projects have yet to be defined) and that no established funding mechanism for Bayfront enhancement projects currently exists, the regulatory and legal feasibility of this alternative cannot be determined.

Additionally, while the intent of this alternative is to benefit the San Diego Bayfront while allowing the project to be built as proposed, it cannot be determined at this time whether this alternative meets environmental screening criteria because proposed enhancement projects have environmental effects and benefits that have yet to be determined.

While this alternative would meet the CEQA criteria for project objectives, due to the undefined nature of this alternative, it cannot be determined whether it can meet both feasibility and environmental criteria; therefore, it was not recommended to be carried forward for full EIR analysis.

C.6.15 Alternative Transmission Upgrades

Description: This alternative consists of not developing the proposed Bay Boulevard Substation and associated transmission upgrades and instead developing the following transmission upgrades with or without the removal of the existing South Bay Substation:

- Adding a third 230/69-kV transformer at Miguel
- Converting the Montgomery substation from a 69-kV feed substation to a 138-kV substation by looping the adjacent South Bay – Sweetwater 138-kV circuit into it
- Constructing a new 69-kV line from Miguel to the Sunnyside tap and rearranging the lines so that a Miguel – Sunnyside line and a Miguel – Sweetwater line are created
- Providing additional support to the South Bay area (should such support be required) by one or both of the following actions:
 - Operation of the existing Peaker units in the vicinity of the Border substation during times of peak loads as necessary to maintain reliable service
 - Placing series capacitors in the Miguel – Border 69-kV line to allow for the injection of additional power into the South Bay region.

Rationale for Elimination: While this alternative has the potential to avoid environmental impacts of the Proposed Project and is potentially feasible to construct, it was not recommended to be carried forward for full EIR analysis because it would not meet project objectives criteria.

As discussed in Section A2, the Proposed Project is needed to address future load growth and transmission overloads that would occur as a result of the SBPP retirement as well as eliminate criteria violations identified by the CAISO and SDG&E consisting of overloading transformers and transmission lines at the following locations : Miguel 230/138 kV transformer banks, Kettner-Station 69 kV transmission, Old-Town–Kettner 69 kV transmission, and Old Town 230/69 kV transformer banks (SDG&E 2011i).

The estimated duration and magnitude of the overloads indicate that with reasonable load-growth expectations the contingency loadings on the Old Town and Miguel transformers could exceed reliability criteria by 2015 or shortly thereafter. While the transmission upgrades under this alternative could bolster the existing 69kV system in response to the loss of the 69kV supply at South Bay as well as relieve the system thru the transfer of some distribution load to a 138 kV source, it would not solve the criteria violations cited by SDG&E and CAISO as noted above and therefore not carried forward for full EIR analysis.

C.7 No Project Alternative

CEQA requires an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the project with the impacts of not approving the project. According to CEQA Guidelines (Section 15126.6[e]; 14 CCR 15000 et seq.), the No Project Alternative must include (a) the assumption that conditions at the time of the NOP (i.e., baseline environmental conditions) would not be changed since the Proposed Project would not be installed and (b) the events or actions that would be reasonably expected to occur in the foreseeable future if the project were not approved. The first condition is described in the EIR for each environmental discipline as the “environmental baseline,” since no impacts of the Proposed Project would be created. This section defines the second condition of reasonably foreseeable actions or events. The impacts of these actions are evaluated in each issue area’s analysis in Section D.

Under the No Project Alternative, the Bay Boulevard Substation would not be built, and the existing South Bay Substation would remain in operation.

As discussed in Section A2 of this EIR, the Applicant states that the Proposed Project is needed to address transmission overloads that would occur as a result of SBPP retirement and for servicing future load growth. The Applicant states that the Proposed Project will also eliminate NERC and WECC criteria violations that result from retirement of the SBPP. Based on correspondence between the CAISO and SDG&E, criteria violations consisting of overloading transformers and transmission lines at the following locations would result without the Proposed Project; Miguel

230/138 kV transformer banks, Kettner-Station B 69 kV transmission, Old-Town-Kettner 69 kV transmission, and Old Town 230/69 kV transformer banks (SDG&E 2011i).

Under the current condition, contingency loadings on the transformers at Old Town and Miguel would experience above normal ratings. *Based on recent analysis conducted by SDG&E, the Miguel transformer can be expected to exceed its normal rating (under N-1 conditions) whenever the SDG&E system load is above 4,926 MW and the Old Town units can expect to reach their normal rating (under N-1-1 conditions) when the system load is above 4,799 MW.* The current CEC Adopted Forecast (12/2009) for the SDG&E's 2012 and 2013 summer peak load is 5,124 and 5,212 MW respectively. In a draft CEC report dated 12/10, the short term forecast for 2011 and 2012 were revised downward with the 2012 forecast being decreased to 4,882 MW. The CEC report did not consider changes beyond prepared by CEC staff 2012.

There is concern with the application of the transformer emergency ratings in the case where the overload is the result of the loss of the adjacent transformer. It can take up to two weeks to relocate and install a transformer whereas the transformer emergency rating is designed for use under shorter term conditions. The Applicant has stated that the transformer emergency ratings are not intended to be applies for periods more than 24 hours for five days (occurrences) in a year. Further the CAISO has stated that long-term emergency ratings, if available, will be used in all emergency conditions as long as "system readjustment" is provided in the amount of time given (specific to each element) to reduce the flow to within the normal ratings.

Based on this information the loss of one Miguel transformer or Old Town transformer can result in overloading the remaining transformer as early as the summer of 2012 in the case of Old Town and 2013 in the case of Miguel. The Applicant claims the emergency ratings to be valid only for short term use and not applicable for the durations one could expect to replace a failed transformer. With time, the magnitude and duration of the overloads will increase and thus potential transformer damage in the form of decreased expected transformer life will occur. *For example, SDG&E studies indicate that under 2014 peak load conditions one could expect the duration of the overload (loading exceeding normal rating) to range from 10 to 72 hours per year for the Old Town transformers and from 9 to 32 hours per year for the Miguel transformer.*

Applicant states that with the planned removal of the existing SBPP and without construction of a new substation that can accommodate a 230 kV system, service reliability to the area now served by the South Bay Substation would also be materially reduced, possibly requiring involuntary shedding of load in the South Bay region, possibly as early as the summer of 2012.

To avoid these consequences, SDG&E would be required to implement additional transmission upgrades. For purposes of the analysis conducted in this EIR, the following actions can be reasonably expected to occur if the proposed project were not approved and are assumed to be a

part of the No Project Alternative (SDG&E 2012). It should be noted that the “Mitigation of overloads” essentially requires the installation of devices capable of opening preselected circuitry to disconnect load from the system. The frequency and magnitude of load interruption can be expected to increase with time.

- As-Needed in-kind replacement of the existing 138/69 kV South Bay substation
- Mitigate overloads on the Old Town 230/69 kV transformers #1 or #2. Mitigation measures may include one or more of the following actions: Changing Old Town transformer tap from 67kV to 70.35kV, running Border Area peakers and dropping load.
- Mitigate the overloads on the Old Town-Kettner 69 kV line by dropping load as needed (the overload should not occur until 2019 assuming load forecasts remain as robust as SDG&E projects)
- Mitigate the overloads on the Kettner-B St. 69 kV line by dropping load as needed (the overload should not occur until 2019 assuming load forecasts remain as robust as SDG&E projects)
- Installation of the Miguel 230/138 kV transformer #2, which is a separate project already scheduled to be in service the summer of 2012 and assumed to be in service for purposes of measuring the above overloads.

C.8 References

14 CCR 15000–15387 and Appendix A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

CAISO (California Independent System Operator). 2010. Memorandum, Decision on the Bayfront Substation Transmission Project, December 2010.

SDG&E (San Diego Gas & Electric). 2010a. Proponent’s Environmental Assessment (PEA) for the South Bay Substation Relocation Project. Prepared by Insignia Environmental. June 2010.

SDG&E. 2010b. Application of San Diego Gas & Electric Company (U 902 E) for a Permit to Construct the South Bay Substation Relocation Project, filed June 16, 2010.

SDG&E 2011. SDG&E Response to Data Request #12 (dated November 16, 2011). Submitted to CPUC December 2, 2011.

SDG&E 2012. Response to Data Request #13.

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