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Alamitos Energy Center

(13-AFC-01)

Data Responses, Set 1B

(Responses to Data Requests 45 to 47)

Submitted to

California Energy Commission

Prepared by

AES Southland Development, LLC

With Assistance from

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Section **Page**

Attachments

Introduction

Attached are AES Southland Development, LLC's (AES or the Applicant) responses to the California Energy Commission (CEC) Data Request, Set 1 regarding the Alamitos Energy Center (AEC) (13-AFC-01) Application for Certification (AFC). This submittal includes a response to data requests 45 through 47.

The responses are presented in the same order as the CEC presented them and are keyed to the Data Request numbers.

New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 28 would be numbered Table DR28-1. The first figure used in response to Data Request 28 would be Figure DR28-1, and so on. Figures or tables from the AEC AFC that have been revised have "R1" following the original number, indicating revision 1.

Additional tables, figures, or documents submitted in response to a data request (for example, supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of each discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

Cultural Resources (45–47)

DATA REQUEST

45. Provide the following information regarding the San Gabriel River Channel:

    a. Provide a focused record search to identify any previous significance evaluations or eligibility determinations for the San Gabriel River Channel or its associated segments or features. This should include a focused records search through the South Central Coastal Information Center to determine whether or not other segments of the Channel (e.g., the Channel downstream of Whittier Narrows to the Pacific Ocean) have been recorded and evaluated for historical significance. Records at other agencies should also be searched, including the U.S. Army Corps of Engineers, the Los Angeles County Flood Control District (LACFCD) and other agencies that may have related environmental documents. Incorporate the results of the focused San Gabriel River records search into Section 4.1 of the Cultural Resources Inventory Report. Also incorporate information gathered from the focused record search regarding any prior significance recommendations or eligibility determinations for the San Gabriel River Channel, its segments, and/or features into discussions of the resource.

    b. Provide accurate historical information regarding the San Gabriel River Channel as a historic-period engineered structure and its development with referenced, verifiable construction dates for the associated flood control features and the river's channelization, including Reach 7.

    c. If there is no previous historical significance evaluation or eligibility determination for the San Gabriel River or its associated segments or features identified through the focused record search, provide an evaluation of the San Gabriel River Channel under all four CRHR eligibility criteria. No additional fieldwork is requested for that evaluation; it is anticipated that the historical significance assessment can be adequately performed using readily available literature and online sources regarding the developmental history and importance of the San Gabriel River Channel at the local, state, and national levels.

    d. If the San Gabriel River Channel is found to be eligible for the CRHR, provide a revised assessment of potential impacts to the historical resource that would result from the project and revise Section 5 of the Cultural Resources Inventory Report.

    e. Provide a DPR Primary Record and a Building, Structure, and Object (BSO) Record for the San Gabriel River Channel that details the construction history of the historic engineered structure and incorporates the project description information clarifications requested by the project manager on April 1, 2014 for items 2–6.

Response: The Applicant has prepared a Department of Parks and Recreation (DPR) form 523A for a segment of the San Gabriel River and associated levees (Attachment DR45-1). This form shows that the evaluated segment of the San Gabriel River is eligible for the CRHR, has sufficient integrity, and is recommended as a historical resource for the purposes of CEQA. Further, while the segment may be eligible

and may have sufficient integrity, the AEC project will not result in any significant effects on this segment of the San Gabriel River.

With respect to eligibility, the overall linear resource of the San Gabriel River has not been evaluated for the NRHP or CRHR, but is likely eligible under Criterion A/1 as part of the greater Los Angeles basin flood control system for its association with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. The massive flood control program, which included substantial changes to the San Gabriel River, allowed for modern development in the Los Angeles basin and protected "the momentous growth of population and industry in southern California" (Turhollow, 1975). It allowed for development and growth in the second half of the twentieth century that would otherwise not have been feasible, and prevented the loss of life and property in subsequent flood events, such as the flood of 1969. The evaluated segment of the San Gabriel River would contribute to the potential eligibility of the overall linear resource as part of the greater resource of the Los Angeles basin flood control system. For the purposes of this analysis, the evaluated segment of the river is bounded by the East 7th Street (State Highway 22) crossing to the north, by the Alamitos Generating Station to the west, by the Haynes Generating Station to the east, and by the Westminster Boulevard crossing to the south. It is located south of Coyote Creek and although it serves as part of the watershed system, it retains a soft bottom (LACDPW, 2006).

In terms of integrity, the San Gabriel River has been modified from a natural river to a flood control structure, with flood control and debris basins, dams, channelization, levees, and 10 miles of concrete-lined channel. This segment of the river retains the soft bottom channel, levees, and outfalls much as they were initially constructed in the mid-twentieth century. Although the levees and outfalls have been modified somewhat through ongoing maintenance and upgrades, such as replacing the riprap, the structures retain good integrity.

Finally, there are no significant project effects associated with this segment of the San Gabriel River. The AEC would result in the cessation of use of the outfall gates that expel cooling water into the San Gabriel River. The outfalls will remain intact and will not be removed or altered, but will no longer be used. Therefore, the project will have no effect on the segment of the San Gabriel River.

References

Los Angeles County Department of Public Works (LACDPW). 2006. A Common Thread Rediscovered – San Gabriel River Corridor Master Plan. Prepared and produced by Moore Iacofano Goltsman, Inc. June 2006. http://dpw.lacounty.gov/wmd/watershed/sg/mp/mp.cfm Accessed February 10, 2014.

Turhollow, Anthony F. 1975. A History of The Los Angeles District, U.S. Army Corps Of Engineers 1898–1965. U.S. Army Engineer District, Los Angeles.

BACKGROUND

The Alamitos Generating Station (AGS) includes other built environment features that were not inventoried or included in the CRHR eligibility evaluation of the property as presented in the Cultural Resources Inventory Report and associated DPR records (AES 2014:Appendix 5.3). Those built environment resources noted by staff as missing are two intake channels entering the AGS property on the west side and at least three retention basins located in the eastern portion of the AGS facility. The inclusion of those structures in the inventory, CRHR eligibility evaluation, and assessment of impacts is needed to provide completeness and accuracy of the CEQA record.

In addition, the CRHR evaluation of the AGS under Eligibility Criterion 3 is not provided in the Cultural Resources Inventory Report (Appendix 5.38) or associated DPR forms. A summary significance statement provided on Page 2 of the AGS DPR District Record indicates that the property is not eligible under Criterion 3. However, the evaluation of AGS eligibility provided on Page 5 of the District Record does not

include an evaluation of the property under Eligibility Criterion 3 or justification as to why Page 2 of the DPR indicates AGS is ineligible under Criterion 3.

DATA REQUEST

46. Provide the following information for the AGS:

    a. Provide completed DPR Primary Record forms for each of the retention basins and each intake channel to complete the AGS DPR District Record packet.

    b. Does inclusion of the intake channels and retention basins in the CRHR eligibility evaluation alter the eligibility recommendations provided in the AFC? If so, provide an amended statement of CRHR eligibility for the AGS property. Revise Section D.6 of the AGS DPR District Record to incorporate any changes to the eligibility evaluation.

    c. Provide an eligibility evaluation of the AGS under CRHR Eligibility Criterion 3 and amend section P3a of the Haynes Generating Station DPR Primary Record Continuation Sheet to include that information;

    d. If the AGS is found to be eligible for the CRHR, revise the impacts assessment for the AGS property currently presented in Section 5 of the Cultural Resources Inventory Report and consider these structures in the assessment. Does inclusion of the intake channels and retention basins in the impacts assessment alter the previous study results?

Response: The Applicant has prepared a revised evaluation of the Alamitos Generating Station that includes the intake channels and retention basins (see Attachment DR46-1 for a DPR forms 523A). The Alamitos Generating Station is not a historic resource for the purposes of CEQA.

The generating station is not significant in the context of the history of SCE, the history of steam generation of electricity, or the history of post-World War II steam generation plants, and is therefore not eligible under Criterion 1. Alamitos Generating Station was one of several steam generating plants built by SCE in the mid-twentieth century. It was part of a trend for all electric companies in California to build steam generation plants to keep up with growing demand from new development and higher customer usage. The short time-frame for construction of these plants, and their similar technologies and designs, suggests that they were all being planned and designed at about the same time. These plants and their steam generation technology were the result of the exhaustion of available hydroelectric sites coinciding with a growing need for electricity. Together, the plants impacted the nature of power generation in southern California, overshadowing the importance of any single plant. As of 2008, 21 once-through cooling, steam generation units remained in southern California, including Alamitos Generating Station, all dating from the same general time period, with an average age of 40 years. More than 1,200 steam-generating units use this cooling method in the United States (TetraTech, 2008). Placed in the context of the time and of other power plants, Alamitos Generating Station does not appear to be unique.

The buildings and structures at Alamitos Generating Station do not embody distinctive characteristics of a type, period, region or method of construction. They are not the work or a master and do not have high engineering value (Criterion 3). They are typical components of a mid-century electrical power generating facility, of which there are several similar remaining examples, as noted above. They do not display any architectural style and are unexceptional examples of standard designs.

Alamitos Generating Station is not associated with the life of a historically significant person (Criterion 2), nor is it significant under Criterion 4 as a potential source of data on human history. This property is well-documented through company records and construction documents, and is not a principal source of

important information. The plant has had minor alterations, yet as a whole it retains integrity of location, design, setting, materials, workmanship, feeling, and association.

This property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code. Because the AEC does not meet any of the eligibility criterion, it is not a historical resource for the purposes of CEQA.

References

Tetra Tech, Inc. 2008. California's Coastal Power Plants: Alternative Cooling System Analysis. Prepared for California Ocean Protection Council, Oakland, CA. February 2008.

BACKGROUND

The following five historic-era built environment resources that fall within the Architectural Survey Area were not inventoried or assessed for potential impacts in the Cultural Resources Inventory Report (AES 2013:Appendix 5.3B, Figures 1 and 2).

- Bridge 1563 over North Intake Channel (Caltrans' Bridge 53C0801L and R),
- Bridge 3460 over South Intake Channel (Caltrans' Bridge 53C0802L and R),
- Bridge 2750 over Los Cerritos Channel on Loynes Drive (Caltrans' Bridge 53C0730),
- Studebaker Road, and
- Los Cerritos Channel.

According to Caltrans' (2010) bridge inventory, the two bridges over the intake channels are historic in age (built in 1966) and have been determined ineligible for the NRHP, but have not been evaluated for the CRHR. Likewise, Studebaker Road is more than 45 years of age and was not inventoried or evaluated, and potential impacts to the road that would result from the project were not assessed. Both of the bridges and Studebaker Road fall within the one parcel extent for architectural survey and consideration.

The AFC indicates that 1,000 feet of new sewer line will be installed and a portion attached to Bridge 2750 over Los Cerritos Channel on Loynes Drive (Caltrans' Bridge 53C0730). The Cultural Resource Report does not include an inventory or evaluation of the bridge or an assessment of impacts to the bridge that would result from the project. The bridge is more than 45 years in age (built in 1966). As with the two bridges discussed above, the Caltrans' (2010) bridge inventory indicates that Bridge 2750 (Caltrans' Bridge 53C0730) has been determined ineligible for the NRHP, but has not been evaluated for the CRHR

Los Cerritos Channel is a built feature that pre-dates construction of the Alamitos Plant in 1955. Historic maps and aerial photographs contained in the AFC indicate that the Los Cerritos Channel was constructed by 1947 (EMS 2013: Appendix F and G). Both it and the San Gabriel River Channel are working parts of the Alamitos Power Plant's historic-era cooling water system. There is no inventory or evaluation of this historic-era engineered structure or assessment of project impacts to the channel in the Cultural Resources Inventory Report (AFC Appendix 5.3B). Los Cerritos Channel falls within the one parcel extent for architectural survey and consideration.

DATA REQUEST

Staff requires the information requested below to assess potential impacts to cultural resources that would result from the proposed project. The requested information below should be incorporated into either a stand-alone addendum report with the other requested cultural resource information detailed above or as revisions to the Cultural Resources Inventory

Report and associated DPR records. Please note that the report and DPR records do not need to be submitted under confidential cover with the archaeological responses

47. Information detailed below is requested for the following resources:

    a. Perform an architectural survey of the following resources:

        - Bridge 1563 over North Intake Channel (Caltrans' Bridge 53C0801L and R),
        - Bridge 3460 over South Intake Channel (Caltrans' Bridge 53C0802L and R),
        - Bridge 2750 over Los Cerritos Channel on Loynes Drive (Caltrans' Bridge 53C0730),
        - Studebaker Road, and
        - Los Cerritos Channel

        The resources are to be recorded following the *California Office of Historic Preservation's (OHP) Instructions for Recording Historical Resources* (1995), including completion of a DPR Primary and BSO record for each resource. The architectural survey is to be performed by a cultural resource professional who meets the Secretary of the Interior's Professional Qualification Standards for Architectural Historian;

    b. Evaluate CRHR eligibility (under all four eligibility criteria) of each of the resources indicated above; and

    c. For each resource listed above that is found to be eligible for the CRHR, provide a revised project impacts assessment to include an analysis of potential impacts to each of the five indicated structures that would result from the project.

Response:

Caltrans Bridges and Studebaker Road

There are three bridges in the project area, all built in 1966: Bridge 1563 over the North Intake Channel (Caltrans' Bridge 53C0801 L and R), Bridge 3460 over the South Intake Channel (Caltrans' Bridge 53C0802 L and R), and Bridge 2750 over Los Cerritos Channel on Loynes Drive (Caltrans' Bridge 53C0730). The California Department of Transportation (Caltrans) bridge inventory classifies these three bridges as "Category 5. Bridge not eligible for NRHP." Caltrans policy is that an evaluation of NRHP criteria is equal to an evaluation of CRHR criteria because the two criteria are the same [PRC 5024.1(c)]. The CRHR criteria have been modified for state use in order to include a range of historical resources which better reflect the history of California (CCR 4852) and thus allow for more types of resources to be listed, such as cemeteries. Furthermore, the Caltrans policy states "The California Register regulations do address integrity. But, they do not state that the California Register is more inclusive or has a lower threshold of significance than the National Register." Therefore, as Caltrans has already determined that the three bridges are not eligible for the NRHP because they do not meet the NRHP criteria, then they also do not meet the CRHR criteria.

The Applicant verified Caltrans policy with Caltrans staff (Gloria Scott, Built Environment Preservation Services Branch Chief, Cultural Studies Office, Caltrans Division of Environmental Analysis, telephone: 916-653-1029 email: gloria.scott@dot.ca.gov). On June 16, 2014, CH2MHILL confirmed with Caltrans cultural resources staff that all three of these bridges have been reviewed for eligibility as part of a revised bridge inventory report (due to be completed by end of the 2014–early 2015) and they remain not eligible (Janice Catlin Calpo, Principal Architectural Historian, Cultural Studies Office, Division of Environmental Analysis,

Caltrans HQ, telephone: 916-653-0802, email: Janice.calpo@dot.ca.gov). According to Caltrans, “We are actually working on the next bridge update now, which will add 1965–1974 bridges, so I looked and can tell you also that none of these has been flagged for potential eligibility, so it is anticipated they will continue to be Category 5 after being considered pragmatically among the others.” Based on this information and a visual survey of the bridges, there is no reason to believe that the bridges require further evaluation in excess of what Caltrans has already done, and that the previous determination of “not eligible” remains accurate for the three bridges.

For Studebaker Road, no DPR form was prepared. Rather than an adjacent parcel, this is merely a public roadway that abuts the site. As a standard public roadway, it is not considered an adjacent parcel by the city/county and does not possess a parcel ID. This is also true in standard professional practice for architectural history—for instance, when a survey is done for a historic district, no survey forms are prepared nor evaluations done for each street in the neighborhood. However, to satisfy the request, the Applicant did conduct preliminary research. The Applicant contacted Los Angeles County to collect available information on Studebaker Road. The county said it was within the city limits and they did not have any information on it. The Applicant then contacted the City of Long Beach Public Works Department for information on the history or origins and maintenance history of Studebaker Road. Diana Garafano in Public Works said they did not have any information, but referred the Applicant to City Planning and the local library. City Planning (Lynette Ferency) responded that they have no information on Studebaker Road but did provide links to planning documents and historic planning maps. The research librarian at Long Beach Library (Lauren Nguyen) searched their files and records and responded that they did not have any information on Studebaker Road, inclusive of dates of construction, origin of name, or any history. The Applicant reviewed a 1936 Long Beach planning map that showed Studebaker Road. On the 1936 map, the road terminates on the north side of Spring Street and then picks up again heading south from 7th Street, passing the current project area, and ending at the intersection with Hathaway Avenue. The road is currently classified as a minor avenue north of Spring Street and a major avenue south of Spring Street (moves traffic within the city as opposed to through-traffic and typically has 4 or more lanes—designed to move large volumes of traffic); it does not meet any of the generally-accepted historic road criteria—it is not an aesthetic or cultural route, and as an engineered route, it is a basic city roadway that does not possess any outstanding engineering or safety improvements (technology, materials, design, etc.). No documented purpose for the road was discovered, but it appears to have simply been a connector route that was gradually extended as needed, in non-continuous segments, to support expansion of development and increased traffic. This preliminary research supports the premise that Studebaker Road is a standard public roadway with none of the attributes of a historic road. No further analysis is necessary.

Los Cerritos Channel

The Applicant has prepared an evaluation of the segment of the Los Cerritos Channel (Attachment DR47-1) in the project area. (see Attachment DR47-1 for a DPR form 523A). The segment of the Los Cerritos Channel evaluated is recommended as a historical resource for the purposes of CEQA. The overall linear resource of the Los Cerritos Channel has not been evaluated for the NRHP or CRHR, but is likely eligible under Criterion A/1 as part of the Los Angeles basin flood control system for its association with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage. The massive flood control program, which included substantial changes to the San Gabriel and Los Angeles rivers and instigated the design and construction of the Los Cerritos Channel, allowed for modern development in the Los Angeles basin and protected “the momentous growth of population and industry in southern California” (Turhollow, 1975). It allowed for development and growth in the second half of the twentieth century that would otherwise not have been feasible, and prevented the loss of life and property in subsequent flood events, such as the flood of 1969. This segment would contribute to the potential eligibility of the Los Cerritos Channel as a contributing element to the greater resource of the Los Angeles basin flood control system. Although much of the setting of the channel has been altered by intensive

modern development, this segment of the channel appears to have had few physical changes and retains good integrity.

The AEC would result in the cessation of use of the intake channels that draw cooling water from the Los Cerritos Channel for use in the power plant. The intake channels will remain intact and will not be removed, but will no longer be used as a source of cooling water. Therefore, the project will have no significant environmental effects on the segment of the Los Cerritos Channel.

References

Turhollow, Anthony F. 1975. A History of the Los Angeles District, U.S. Army Corps Of Engineers 1898 -1965. U.S. Army Engineer District, Los Angeles.

Attachment DR45-1
Department of Parks and Recreation Form 523A for the San Gabriel River within the AEC Project Area

State of California ¾ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z

Other Listings
Review Code Reviewer Date

*Resource Name or #: San Gabriel River segment and levees

P1. Other Identifier:

*P2. Location: o Not for Publication x Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Los Alamitos Date: 1981 T 5S ; R 12W ; ¼ of ¼ of Sec 2, 3 and 11; M.D. B.M.

c. Address: N/A City: Long Beach Zip:

d. UTM: Zone: 11; North end at center of river 398356.377125; 398356.377125. South end at center of river 398298.293319; 398298.293319

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Parcel number 7237-019-270

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The San Gabriel River drains the San Gabriel River Watershed, which is located in eastern Los Angeles County. The watershed is roughly bound by the San Gabriel Mountains to the north, most of San Bernardino/Orange County to the east, the area where the San Gabriel River separates from the Los Angeles River to the west, and the Pacific Ocean to the south. "The watershed drains into the San Gabriel River from the San Gabriel Mountains flowing 58 miles south until its confluence with the Pacific Ocean. …Channel flows pass through different sections in the San Gabriel river, diverting from the riverbed into four different spreading grounds, held behind several rubber dams for controlled flow and ground water recharge, and controlled through 10 miles of concrete channel bottom from below Whittier Narrows Dam to past Coyote Creek" (LACDPW 2014a). This segment of the river is bounded by the East 7th Street (State Highway 22) crossing to the north, by the Alamitos Generating Station to the west, by the Haynes Generating Station to the east, and by the Westminster Boulevard crossing to the south. It is located south of Coyote Creek and although it serves as part of the watershed system, it retains a soft bottom (LACDPW 2006). Historic maps and historic aerial photographs appear to show some channelization of this river segment, but no documentary evidence was located to confirm this or provide dates that the channelization occurred. The banks of the river in this segment are protected by earthen levees armored with riprap, and they contain concrete outfalls to serve the two generating stations. The river is spanned by a suspended pipe structure at approximately the midpoint of this segment. (see continuation sheet.)

*P3b. Resource Attributes: HP22 – river

*P4. Resources Present: ¨ Building x Structure o Object o Site ¨ District o Element of District o Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo: View looking northwest at AES Alamitos from San Gabriel River bike path, February 3, 2014

*P6. Date Constructed/Age and Sources: x Historic
o Prehistoric o Both
c. 1957 to 1960
Source: L.A. County Dept of Public Works

*P7. Owner and Address:
AES Alamitos, LLC
690 N. Studebaker Road, Long Beach, CA 90803

*P8. Recorded by:
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707

*P9. Date Recorded: February 10, 2014

*P10. Survey Type: Intensive

*P11. Report Citation: Cardenas et al. 2013. *Cultural Resources Inventory Report for the Alamitos Energy Project – Los Angeles County, California*

*Attachments: o NONE x Location Map o Sketch Map x Continuation Sheet ¨ Building, Structure, and Object Record o Archaeological Record ¨ District Record x Linear Feature Record o Milling Station Record o Rock Art Record o Artifact Record o Photograph Record o Other (List):

***P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)**

The San Gabriel River channel from the Whittier Narrows Dam to the Pacific Ocean, which includes this segment of the river and its levees, was altered as part of the "general comprehensive plan for flood control and other purposes in the basins of the Los Angeles and San Gabriel rivers and Ballona Creek (as set forth in House Document 838, 76th Congress, third session). The comprehensive plan was approved on August 18, 1941 by act of Congress, Public Law 228, 77th Congress, first session" (USACE 2012). The USACE Los Angeles District and the Los Angeles County Flood Control District (LACFCD) entered into a Project Cooperation Agreement on August 7, 1995, as required by Public Law 99-622. The Los Angeles County Department of Public Works (LACDPW) is responsible for operating and maintaining most of the San Gabriel River Levee System (USACE 2012).

This segment, which is just below the confluence with Coyote Creek and the concrete channel part of the river, is part of Reach 7 known as the "zone of tidal influence" (LACDPW 2006). Reach 7 is the final stretch of river, approximately 3.5 miles, from below Coyote Creek to the Pacific Ocean. The total length of the river is approximately 73 miles (LACDPW 2006). The San Gabriel River changed its course due to flood events several times in the 1800s and finally settled into essentially its present course after 1912, when early levees and other flood control measures combined with increased ground water extraction to help stabilize it (Stein et al 2007).

Historically, the San Gabriel River would flood and overflow its banks during heavy rains. Records indicate that there were 17 floods between 1815 and 1938 (Salazar 2013). With the rapid increase in population in the twentieth century, controlling the river and addressing the recurrent flooding became a concern. The 1914 flood caused $10 million in damages and in response, the LACFCD was formed in 1915. Taxpayers approved bond issues in 1917 and 1924 to build dams, but there were not enough funds for the necessary infrastructure downstream of the dams (LACDPW 2014b). Severe floods happened again in 1934 and 1938. In the 1938 flood, "115 people lost their lives, thousands more were evacuated, over 6000 homes were damaged or destroyed, and 108,000 acres - one third of Los Angeles - was flooded" (Cram 2012). The disaster prompted a request for federal assistance. The LACFCD requested funding from the Works Progress Administration to channelize the Los Angeles and San Gabriel rivers. They also received funding through the federal Flood Control Act. The Flood Control Act of 1936 redefined the role of the U.S. Army Corps of Engineers (USACE), allowing them to oversee permanent future flood control plans for the Los Angeles, Rio Hondo, and San Gabriel rivers. The Act also authorized $70 million in federal dollars for flood control (LACDPW 1996). Under authorization of the Flood Control Act of 1936, USACE submitted a general plan for the Rio Hondo and the San Gabriel Rivers in February 1938, which became part of the Los Angeles County Drainage Area Plan. One of the three parts of the plan was to "Rectify and stabilize the natural channels throughout the entire coastal plain for rapid drainage" (Turhollow 1975). This plan was approved by Congress in 1941 with an authorization of $230 million for construction of a comprehensive flood control system (LACDPW 1996).The flood control plan had three major components: (1) channelize, straighten, and deepen the rivers; (2) install debris basins in foothills to protect against debris flows during storm events; and (3) construct dams in the mountains to impound storm runoff and permit controlled release of those waters (State of California Resources Agency 2001). The USACE took the lead implementing the massive project. It is likely that this segment of the San Gabriel River was straightened to its current footprint as a result of this plan; however, an exact date for this work has not been discovered. A probable time period is between 1941 (when the plan was approved and funded) and 1947, when the channel appears to be in its current footprint (USGS quadrangle Downey 1947). The 1950 topographic map clearly shows the channelization and also the existence of levees along the San Gabriel (USGS quadrangle Los Alamitos 1950). A map showing work completed on the project by June 1956 shows this segment of the San Gabriel as "work completed by local interests" (Turhollow 1975), which appears to indicate that the channelization of this segment was complete by that date. The work by USACE on the San Gabriel River began in earnest in 1957 (Turhollow 1975).

By the time the project was completed in 1960, most of the Los Angeles River was encased in concrete, and the San Gabriel River was partially paved and surrounded by levees. Definitive documentation was not found for the completion date of the levees in this segment of the river, but it appears that Reach 7 was the last section completed. The Whittier Narrows Dam, north of this segment, was completed in 1957, so it is likely that the levees here were constructed after that, in the late 1950s (LADWP 1996). A photo of AES Alamitos from 1958 shows what appears to be a natural bank covered in vegetation, without a high levee or riprap. The outfalls were likely constructed at the same time as the power generation plants that they serve - 1956 -69 for AES Alamitos and 1962-67 for Haynes Generating Station (AES 2010, LADWP 2010).

The overall resource of the Los Angeles basin flood control system and the linear resource of the San Gabriel River have not been evaluated for the NRHP or CRHR, but are likely eligible under Criterion A/1 for their association with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. The massive flood control program which included substantial changes to the San Gabriel River allowed for modern development in the Los Angeles basin and protected "the momentous growth of population and industry in southern California" (Turhollow 1975)**.** It allowed for development and growth in the second half of the 20th century that would otherwise not have been feasible, and prevented the loss of life and property in subsequent flood events, such as the flood of 1969. This segment of the San Gabriel River would contribute to the potential eligibility of the greater San Gabriel River resource as part of the larger flood control project. Although it remains a natural, soft-bottomed channel and was not subject to the more severe flood control modifications that other parts of the river

were, it does appear to have been realigned to straighten out some natural curves and it does have earthen levees along its banks. The river and its levees retain good integrity.

***D7. References**:

AES. 2010. Alamitos Generating Station Tour Information. On file at Alamitos Generating Station.

Cram, Justin. 2012. KCET website. "Los Angeles Flood of 1938: Cementing the River's Future." February 28, 2012. http://www.kcet.org/socal/departures/columns/la-river/los-angeles-flood-of-1938-channelization.html Accessed February 10, 2014.

Los Angeles County Department of Public Works (LACDPW), et al. 1996. Los Angeles River Master Plan. June 1996. http://ladpw.org/wmd/watershed/LA/LARMP/ Accessed February 10, 2014.

Los Angeles County Department of Public Works (LACDPW). 2006. *A Common Thread Rediscovered – San Gabriel River Corridor Master Plan*. Prepared and produced by Moore Iacofano Goltsman, Inc. June 2006. http://dpw.lacounty.gov/wmd/watershed/sg/mp/mp.cfm Accessed February 10, 2014.

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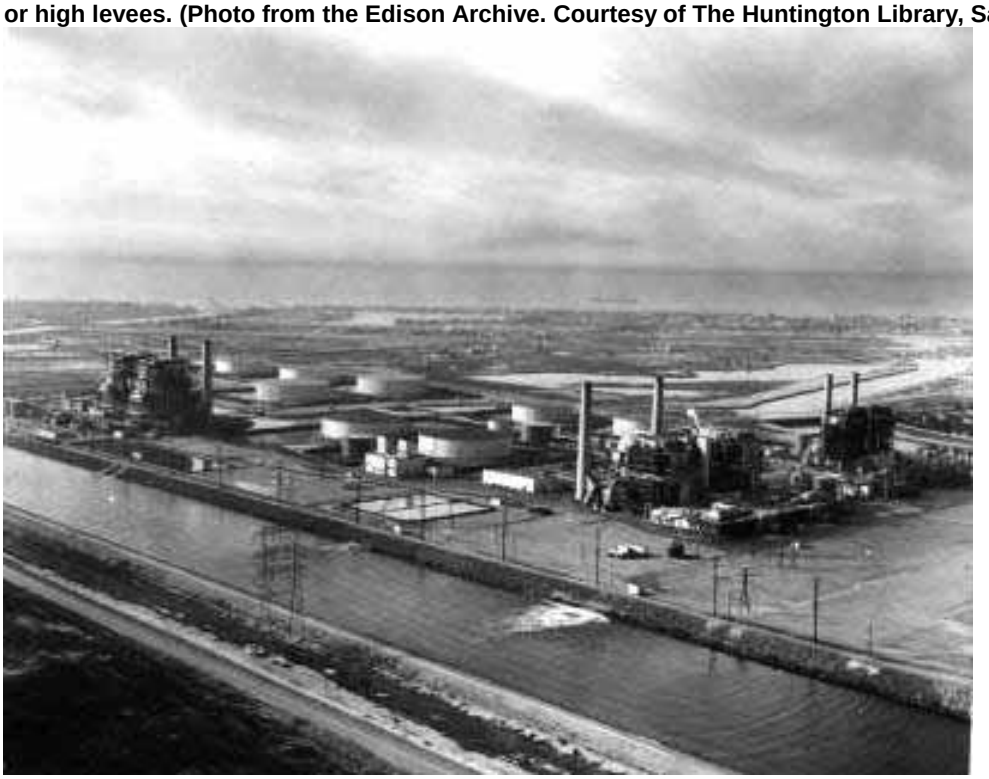
USGS quadrangle Downey, CA. 15 minute series. 1947.

USGS quadrangle Los Alamitos, CA. 1947. 7.5 minute series. 1950.

Alamitos Generating Station, view looking northwest, September 1958. Note vegetated banks of river and lack of riprap or high levees. (Photo from the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)



Aerial view of Alamitos Generating Station, view looking southwest, taken August 26, 1972. Armored levees and outfalls are in place. (Photo by Joseph Fadler, from the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

View looking northeast from AES Alamitos. West bank levee is in middle of photo with San Gabriel River to the right. September 2011.

View looking east from AES Alamitos. West bank levee is near bottom of photo with San Gabriel River in center of photo. Haynes Generating Station outfalls are visible in east bank levee. September 2011.

View looking southeast from AES Alamitos at outfall for units 5 & 6 and west side of west bank levee. September 2011.

View looking southwest at AES Alamitos outfall for units 1 & 2 and east side of west bank levee. February 2014.

View looking northwest with outfall for Haynes Generating Station and east bank levee in foreground. February 2014.

View looking northwest at pipeline suspended across San Gabriel River. February 2014.

Legend

Property Boundary

Township 5S, Range 12W, Sections 2,3,11
Quad Name: Los Alamitos

0 1,000 2,000
Feet

San Gabriel River Segment
Alamitos Energy Center
Long Beach, California

CH2MHILL

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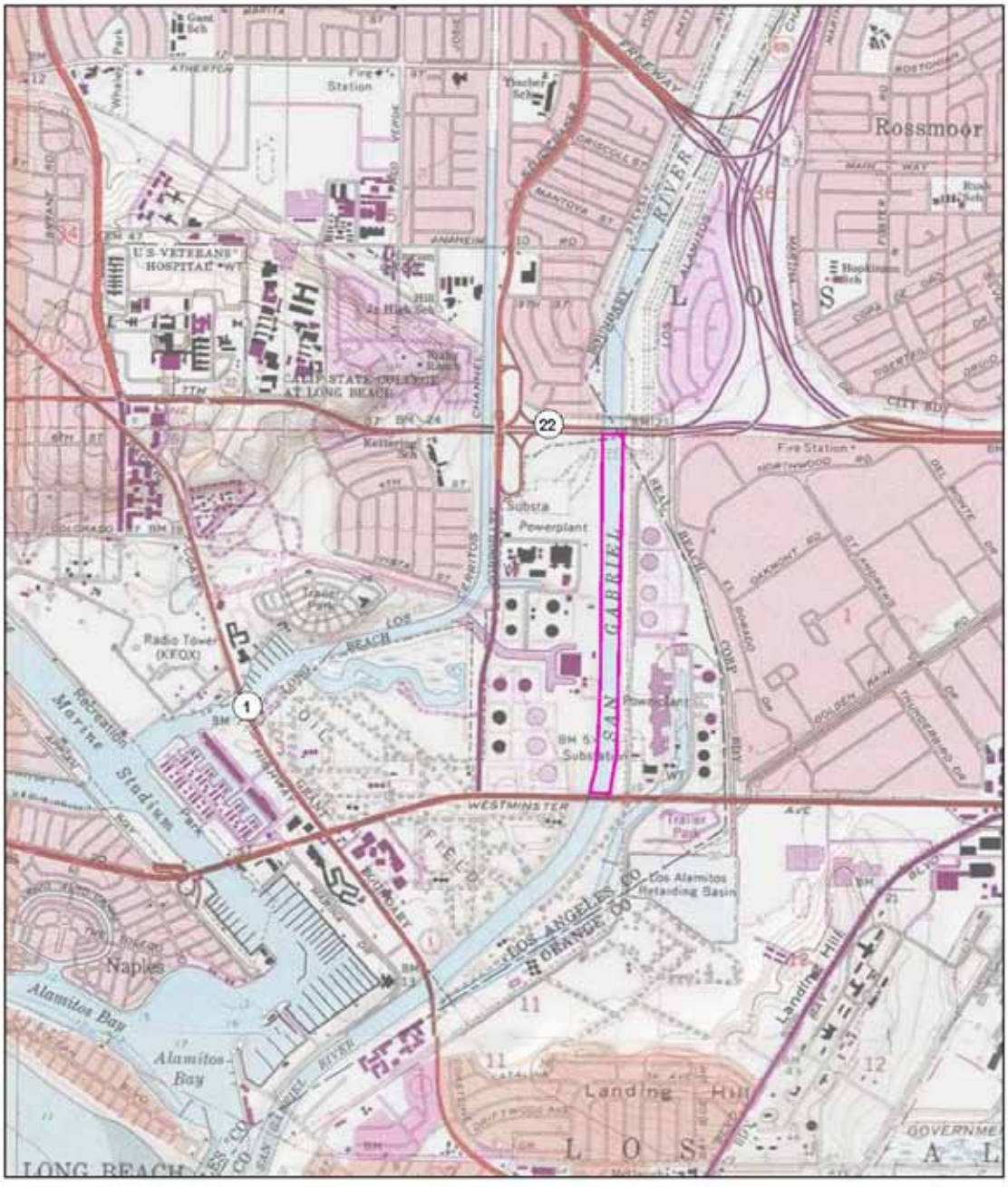

Legend

Property Boundary

Township 5S, Range 12W, Sections 2,3,11
Quad Name: Los Alamitos

0 1,000 2,000 Feet

San Gabriel River Segment
Alamitos Energy Center
Long Beach, California

CH2MHILL

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State of California — The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI #
LINEAR FEATURE RECORD
Trinomial

 Resource Name or #: San Gabriel River segment and levees

L1. Historic and/or Common Name: Same

L2a. Portion Described: o Entire Resource x Segment o Point Observation **Designation:** portion of Reach 7 of San Gabriel River

b. Location of point or segment: Segment of the San Gabriel River between the East 7th Street (State Highway 22) crossing to the north, the Alamitos Generating Station to the west, the Haynes Generating Station to the east, and the Westminster Boulevard crossing to the south.
UTMs: North end at center of river 398356.377125; 398356.377125. South end at center of river 398298.293319; 398298.293319.

L3. Description: This segment of the river remains a natural, soft bottom channel, although its alignment has been straightened for flood control. It has earthen levees along both banks that are armored with riprap, and concrete outfalls have been built through the levees on both banks to accommodate the power plants on either side. It is spanned by concrete bridges that carry State Hwy 22 and Westminster Blvd at each end of the segment. There is also a metal pipe suspended on a cable system across the river at approximately the midpoint of this segment.

L4. Dimensions: (In feet for historic features and meters for prehistoric features) Measurements extrapolated from map
a. Top Width: unknown
b. Bottom Width: 301.588
c. Height or Depth: unknown
d. Length of Segment: 5,207.888

L4e. Sketch of Cross-Section (include scale) **Facing:**

L5. Associated Resources: N/A

L6. Setting: This segment of the river has large industrial facilities (power generation plants) on each bank. The east bank has a paved bike path (the San Gabriel River Bike Trail) on top of the levee. The land on both banks is flat. The Los Cerritos Channel is located to the west, on the west side of the AES Alamitos Generating Station.

L7. Integrity Considerations: The San Gabriel River has been modified from a natural river to a flood control structure, with flood control and debris basins, dams, channelization, levees, and 10 miles of concrete lined channel. This segment of the river retains the channel, levees, and outfalls much as they were initially constructed in the mid-twentieth century. Although the levees and outfalls have been modified somewhat through ongoing maintenance and upgrades, such as replacing the riprap, the structures retain good integrity.

L8b. Description of Photo, Map, or Drawing View northeast from AES Alamitos showing river and levees, September 2011.

L9. Remarks: The overall linear resource of the San Gabriel River has not been evaluated for the NRHP or CRHR, but is likely eligible under Criterion A/1 as part of the greater Los Angeles basin flood control system for its association with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. The massive flood control program which included substantial changes to the San Gabriel River allowed for modern development in the Los Angeles basin and protected "the momentous growth of population and industry in southern California" (Turhollow 1975). It allowed for development and growth in the second half of the 20th century that would otherwise not have been feasible, and prevented the loss of life and property in subsequent flood events, such as the flood of 1969. This segment of the San Gabriel River would contribute to the potential eligibility of the greater resource as part of the flood control project.

L8a. Photograph, Map or Drawing

L10. Form Prepared by:
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707

L11. Date: February 10, 2014

Attachment DR46-1
Revised Department of Parks and Recreation Form 523A for the Alamitos Generating Station

State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **HRI #**

PRIMARY RECORD

Trinomial
NRHP Status Code 6Z

Other Listings
Review Code **Reviewer** **Date**

Page 1 **of** 12 *__Resource Name or #: Alamitos Generating Station__

P1. Other Identifier:

***P2. Location:** o **Not for Publication** x **Unrestricted** ***a. County:** Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Los Alamitos **Date:** 1981 **T 5S** ; **R 12W** ; **¼ of ¼ of Sec 2 and 11;** M.D. **B.M.**

c. Address: 690 N. Studebaker Road City: Long Beach Zip: 90803

d. UTM: Zone: 11 ; 398034.911174/ 3737077.341691 (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Parcel numbers 7237018808 and 7237019808

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Alamitos Generating Station is located in Long Beach, California, between the Los Cerritos Channel and the San Gabriel River. The plant was constructed by Southern California Edison Company and began operation in 1956, with the final unit brought online in 1969. Alamitos Generating Station is composed of three pairs of power generating units, one decommissioned peaker unit, administration buildings, warehouses, and various support facilities. The district is roughly U-shaped and encompasses the Alamitos Generating Station property, which is two parcels for a total of approximately 120 acres. It is roughly bounded by on the west by the Los Cerritos Channel and North Studebaker Avenue, on the north by State Highway 22, on the east by the San Gabriel River, and on the south by Westminster Avenue/East 2nd Street. This large and complex industrial site is being recorded as a district.

***P3b. Resource Attributes:** HP9 – public utility

***P4. Resources Present:** ¨ Building ¨ Structure o Object o Site ý District o Element of District o Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo: View looking southwest at Units 1 through 4, September 29, 2011

***P6. Date Constructed/Age and Sources:** x Historic
o Prehistoric o Both
1955 to 1990
Source: AES Alamitos, LLC (property owner)

***P7. Owner and Address:**
AES Alamitos, LLC
690 N. Studebaker Road, Long Beach, CA 90803

***P8. Recorded by:**
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707

***P9. Date Recorded:** July 22, 2013

***P10. Survey Type:** Intensive

***P11. Report Citation:** Cardenas et al. 2013. *Cultural Resources Inventory Report for the Alamitos Energy Project – Los Angeles County, California*

***Attachments:** o NONE x Location Map o Sketch Map ¨ Continuation Sheet ¨ Building, Structure, and Object Record o Archaeological Record ý District Record o Linear Feature Record o Milling Station Record o Rock Art Record o Artifact Record o Photograph Record o Other (List):

D1. Historic Name: Alamitos Generating Station D2. Common Name: same

***D3. Detailed Description**: The district is composed of the features of the Alamitos Generating Station, a natural gas-fired steam electric generating facility located between the San Gabriel River and Los Cerritos Channel in Long Beach, California. The station was designed with three pairs of generating units, for a total of six. A peaker unit, Unit 7, was added later but was decommissioned and retired in 2004. Units 1–6 have a current capacity of 2,004 MW. The facility operates on the once-through cooling process using water from Los Cerritos Channel.

The plant was constructed by Southern California Edison Company beginning in 1955. Unit 1 began commercial operation in September 1956 and Unit 2 joined it in February 1957; Unit 3 went online in December 1961, followed by Unit 4 in June 1962; Unit 5 began operation in March 1966, with Unit 6 in September 1966. Unit 7 dates from July 1969 but no longer functions – it was retired in January 2004 (AES 2010). Alamitos Generating Station is roughly a U-shaped facility, with Units 1-4 grouped together on one side of the "U," and Units 5 and 6 on the other side (see Plant Layout map). Units 1-4 are located in a row along the north edge of the property, near the plant entrance, along with two integrated smokestacks each. South of Units 1 and 2 is the north intake channel that serves units 1-4, which branches off to the east from Los Cerritos Channel. The intake structure for Units 1 and 2 is also located here. Between the unit pairs is a compressor house. South of the compressor house is the oily waste transfer area and a warehouse. South of Units 3 and 4 is a warehouse, maintenance shop, and locker room building, and west of that is the intake structure for Units 3 and 4 at the east end of the north intake channel. Directly south of the warehouse/ maintenance/locker room building is Unit 7, located at the bottom of the "U," with the Units 1-4 section to the north and the Units 5-6 section to the south. The original administration building is at the entrance on N. Studebaker Road, just north of the entry drive, northwest of Unit 1 – it is now leased for use as a charter school. The current administrative area is located in the northeast corner of the property and contains multiple buildings that hold offices, warehouse and shop space, and training space. East of the administration buildings is the outfall structure for Units 3 and 4, on the banks of the San Gabriel River. South of the administration buildings are two retention basins, a sewage treatment plant, and a gas metering unit. The outfall structure for Units 1 and 2 is immediately east of the retention basins. South of the retention basins is a hazardous waste and oil storage area, and two acid basins (both out of service). Continuing south is the electric shop and another retention basin. Further south is the area that serves Units 5 and 6, in the southeast corner of the facility. There is an administration building for Units 5 and 6, with the outfall structure for Units 5 and 6 located to its southeast. Units 5 and 6 are located west and southwest of the administration building, each with a smokestack on the west side. West of the units is the south intake channel, with intake structures to the north and south of the units. The south intake channel serves Units 5 and 6, and is an L-shaped channel of Los Cerritos Channel to the west. The entire facility is enclosed by a large metal fence, and nearly all of the property is paved with concrete. The six units and their supporting equipment have been continuously maintained and upgraded since their construction. (See continuation sheet, page 3)

***D4. Boundary Description** (Describe limits of district and attach map showing boundary and district elements.): The district is roughly U-shaped and encompasses the Alamitos Generating Station property, approximately 120 acres. The boundaries are the parcel boundaries of the two continguous parcels that make up the Alamitos Generating Station property (7237018808 and 7237019808). It is roughly bounded by on the west by Los Cerritos Channel and North Studebaker Avenue, on the north by State Highway 22, on the east by the San Gabriel River, and on the south by Westminster Avenue/East 2nd Street.

***D5. Boundary Justification:** The boundaries include all of the relevant features of the Alamitos Generating Station. A large switchyard with transmission lines located immediately north of the Alamitos Generating Station boundary is owned by Southern California Edison. It is on a separate parcel and has a different owner, so although it services the Alamitos Generating Station, it is not included in the Alamitos Generating Station district. The area between the two intake channels once held fuel storage tanks for Alamitos Generating Station that have been removed. Because the tanks have been removed and the land has been sold, this vacant land is also not included in the district.

***D6. Significance: Theme:** Electric Power Generation **Area:** Southern Coastal California
Period of Significance: 1955 - 1990 **Applicable Criteria:** CRHR

The Alamitos Generating Station does not appear to be a historic resource for the purposes of CEQA. The power plant, primarily built between 1955 and 1967, is not associated with events that have made a significant contribution to the history of the local area, region or state (Criterion A and 1). The facility does not appear to be associated with a person who made significant contributions to local, state or national history (Criterion B and 2). The buildings and structures do not embody characteristics of a type, period, region or method of construction. They are not the work or a master and do not have high engineering value (Criterion C and 3). The buildings and structures are not likely to yield information important to understanding prehistory or history and information on the facility is recorded elsewhere (Criterion D and 4). This property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does appear to be a historical resource for the purposes of CEQA. (See Continuation Sheet, page 3)

***D7. References**: See continuation sheet, page 7

***D8. Evaluator:** Lori D. Price **Date:** July 22, 2013
Affiliation and Address: CH2MHILL - 6 Hutton Center Dr., Suite 700
Santa Ana, CA 92707

***Recorded by:** Lori D. Price ***Date:** July 22, 2013 ý Continuation o Update

***D3. Detailed Description continued**: Units 1 through 6 consist of a boiler, turbine, generator, control systems, and associated auxiliary equipment necessary to generate electric power. Auxiliary equipment associated with each unit includes condensate and feedwater piping, pumps and heaters, generator cooling systems, fuel delivery systems, boiler lancing systems, instrumentation, and circulating water system and pumps. These units use natural gas as their primary fuel source, but have back-up fuel oil burning capability for emergency situations. The units are arranged in pairs (1 and 2, 3 and 4, 5 and 6) with each pair sharing a control room. Each pair uses a different technology: 1 and 2 have a Babcock and Wilcox natural circulation boiler; 3 and 4 have a controlled circulation boiler; and 5 and 6 have a supercritical boiler (California Public Utilities Commission 2008).

Unit 7, which was a peaker unit (that is, one that is generally run only when there is a high demand for electricity, known as peak demand) , has a turbine that could run on natural gas or distillate fuel. It also has main and auxiliary transformers.

Shared systems or those that provide service to the entire station include closed equipment cooling water systems, condenser cooling water systems (including intake/outfall systems), fire protection systems, irrigation and general use water systems, air compressor systems, water treatment systems, lubricating oil storage and filtration systems, water purification systems and storage, chemical storage and delivery systems, and station-specific communications systems. Facilities also include administration buildings, maintenance shops, warehouses, locker room and showers, and hazardous waste storage.

***D6. Significance continued: Theme:** Electric Power Generation **Area:** Southern Coastal California
Period of Significance: 1955 - 1990 **Applicable Criteria:** N/A

General History of Steam Plants in California

Steam-powered turbines remain the principal technology used to generate electricity in the United States, accounting for nearly three-quarters of the total annual output (Tetra Tech 2008). When extracting electricity from steam, waste heat must be removed from the system. The most basic approach to remove waste heat is to circulate large volumes of water through a condenser and back to the water body, where the heat is dispersed to the surrounding environment. This is known as a single-pass, or once-through, system and is the most commonly used cooling method. This is the system used at the HBGS. There are currently more than 1,200 steam-generating units using this cooling method in the United States, including 18 in California. These are primarily found in southern California and withdraw cooling water directly from the Pacific Ocean or nearby estuaries. The average age of these California coastal fossil fuel facilities is 40 years (Tetra Tech 2008).

The first commercial central electrical generating stations were the Pearl Street Station in New York and the Holborn Viaduct power station in London, both of which opened in 1882 (Parsons 1940). Both of these stations used reciprocating steam engines, but the development of the steam turbine allowed larger and more efficient central generating stations to be built. Turbines offered higher speeds, more compact machinery, and stable speed regulation.British designer Sir Charles Parsons built the first multi-stage reaction steam turbine in 1884 and patented it in 1885 (Cambridge 2000). Almost immediately he and others began making improvements upon his original concept. By 1893 Parsons had a 300-kilowatt turbine generator (Skrabec 2007). George Westinghouse, Jr. bought the U.S. rights to the Parsons turbine in 1896, and improved the Parsons technology and increased its scale (Skrabec 2007). In 1903 Aegidius Elling of Norway built the first successful experimental gas turbine that was able to produce more power than it needed to run its own components. It used both rotary compressors and turbines, and is recognized as the first applied method of injecting steam into the combustion chambers of a gas turbine engine (Encyclopaedia Britannica 1995). By the beginning of the twentieth century, power plants with steam turbines began to replace the original steam engine power plants, and turbines entirely replaced reciprocating engines in large central stations after about 1905 (Parsons 1940). In less than thirty years, the technology of engines capable of supplying power and electricity had improved greatly.

In the early stages of steam turbine power plant development , the materials needed to withstand the high temperatures of modern turbines were not yet available. Technology and improvements for steam turbine engines continued to advance throughout the 1920s and 1930s, leading to a generation of more efficient turbine power plants in the 1950s.

In 1920, hydroelectric power accounted for 69% of all electrical power generated in California. By 1930, that figure had risen to 76%; by1940 it was up to 89% (Williams 1997; Herbert and Brookshear 2006). But after 1941, new thermal or steam-electric generating units accounted for most of the new power capacity in the state. By 1950, hydroelectricity accounted for only 59% of the total, falling to 27% in 1960 (Williams 1997; Herbert and Brookshear 2006).

Pacific Gas & Electric Company (PG&E) and Southern California Edison (SCE), California's largest electrical utility providers, made efforts to build large-scale steam generation plants as early as the 1920s. James Williams, a historian of energy policies and practices in California, noted that the decision by PG&E and SCE to build steam plants in the 1920s may be attributed to three things. First, a persistent drought in California from 1924 through the mid-1930s caused the major utilities to question the viability of systems that relied heavily on hydroelectricity. Second, new steam generation power plants on the East Coast were achieving far greater efficiencies than had previously been possible. Between 1900 and 1930, for example, the fuel efficiency of steam plants, measured in kilowatts per barrel of oil, increased more than nine-fold. Third, new natural gas lines were completed in the late 1920s that could bring new gas supplies to both northern and southern California from the San Joaquin Valley (Williams 1997).

SCE began constructing its steam generation plant at Long Beach on Terminal Island in 1911. The Los Angeles Department of Water and Power (LADWP) constructed a steam station at Seal Beach consisting of two units installed in 1925 and 1928. PG&E built a steam plant in Oakland in 1928. In 1929, the Great Western Power Company (which was absorbed by PG&E in 1930) built a large steam plant on San Francisco Bay, near the Hunters Point shipyard. (Herbert and Brookshear 2006).

The years following World War II were a time of expansive growth in Southern California. The population swelled in response to business and industrial development. Housing expanded into formerly agricultural areas, creating suburbs around Los Angeles and San Diego. The increased population and industry made greater power generation crucial and California's utility providers expanded their capacity to meet the demand. At this point, most of the more favorable hydroelectric sites in California had already been developed, and as previously noted, the viability of hydroelectricity had been called into question during the drought of the 1920s and 1930s. The technology of steam generation had progressed and abundant natural gas resources to help run them were now available. "Steam turbine power plants were cheaper and quicker to build than hydroelectric plants, so utilities companies moved away from hydroelectricity, establishing steam turbine power as the generator of choice" (Herbert and Brookshear 2006). The "momentum for steam had been established by war, by drought, and by a positive history of increased thermal power plant development" (Williams 1997).

Starting in the 1950s, dozens of new steam generation plants were built throughout California. In a detailed article in 1950 in *Civil Engineering*, I. C. Steele, Chief Engineer for PG&E, summarized the design criteria of four major steam plants the company had under construction at that time: Moss Landing, Contra Costa, Kern, and Hunters Point in San Francisco. The criteria were the same in all cases: build the facility close to load centers to reduce transmission costs, close to fuel supplies, near a water supply, and on a site where land was inexpensive and could support a good foundation (Steele 1950; Herbert and Brookshear 2006).

Between 1950 and 1970 steam generating capacity in California saw its greatest expansion. During this period, SCE built a series of similar steam plants in the Los Angeles Basin and in San Bernardino County. In 1952, the company began work on Redondo No. 2, which was adjacent to an earlier plant at Redondo Beach. In 1953, the Etiwanda plant went online, followed in 1955 by El Segundo, Alamitos in 1956, and Huntington Beach and Mandalay in 1958. By 1960, all SCE plants either had multiple units or had additional units in the planning stages. In 1950, PG&E operated 15 steam electric plants in California. Between 1950 and 1960 they added several new plants and expanded older ones. Chief among these were Contra Costa (1951-53), Moss Landing (1950-52), Morro Bay (1955), Hunters Point (addition 1958), Humboldt Bay (1956-58), and Pittsburg (1959-60) (Herbert and Brookshear 2006).

Although SCE and PG&E were the major players, smaller utility companies also grew their facilities. The LADWP system consisted of five steam electric power plants by 1962: Seal Beach Plant (1925-28), Harbor Plant on Los Angeles Harbor (1943), Valley Plant in the San Fernando Valley (1954), Scattergood (1958), and Haynes (1961). San Diego Gas & Electric Company had three steam electric power plants by 1960: Silver Gate (1943), Encina (1954), and South Bay (1960). By the late 1970s, there were more than 20 fossil fuel thermal plants in California, clustered around San Francisco Bay, Santa Monica Bay, and in San Diego County, along with a few interior plants in San Bernardino, Riverside and Imperial Counties, as well as a few plants on the Central Coast (Herbert and Brookshear 2006).

Southern California Edison Company

The history of the Southern California Edison Company (SCE) dates to 1886, when a company called Holt and Knupps illuminated Visalia, California, with street lights. They became known as Visalia Electric Light & Gas Company, the earliest of several companies that became SCE (Edison International 2012). In 1896 a group of investors, including Elmer Peck and George Baker, established the West Side Lighting Company to provide electricity to Los Angeles and bought the franchise to operate the city's power system (Edison International 2012; Myers 1983). But that same year the city passed an ordinance prohibiting most overhead line construction, because the city streets had become a maze of overhead lines (Lundsten and Flick 2012). The ordinance established the "conduit district" in which new wiring had to be laid underground (Myers 1983). West Side Lighting decided that the best technology available was the Edison three-wire conduit technology, and this technology was neded to continue to grow their business. But Los Angeles Edison Electric, formed in 1894, owned the rights to the Edison name and patents (Lundsten and Flick 2012). The two companies came together and formed Edison Electric Company of Los Angeles in 1897 (Slade et al 2012). Edison Electric then purchased several smaller utility companies, including Visalia Electric Light & Gas Company, San Bernardino Electric Company, Santa Barbara Electric Light Company, and Ventura Land & Power. They also began to build new plants and transmission lines, and became the first company to install Edison-type DC-power underground conduits in the Southwest. The Los Angeles No. 2 substation opened in 1898, distributing power throughout the City of Los Angeles via the new conduit system (Myers 1983). Continuing to expand, they purchased the Southern California Power Company that same year (Myers 1983).

In 1899 their Santa Ana River No. 1 hydroelectric plant began operation, transmitting power to Los Angeles over the Santa Ana River Line, at the time the world's longest power line at 83 miles long (Edison International 2012) . The power line was the first to use "transposition" technology which has been used ever since for long-distance transmission lines (Myers 1983). In 1907 the company surpassed this achievement when their Kern River-Los Angeles Transmission Line began operation. At 118 miles and

75 kV, it was the world's longest, and highest voltage power line and the first transmission line in the nation to be supported entirely by steel towers (Edison International 2012) . The company continued to expand and on July 6, 1909, changed its name from Edison Electric Company of Los Angeles to Southern California Edison to reflect its expanded service area (Edison International 2012).

In 1917, SCE purchased the Pacific Light & Power Corporation, the Ventura County Power Company, and the Mount Whitney Power & Electric Company, making it the fifth-largest central-station power company in the United States (Slade et al 2012). The acquisition of Pacific Light & Power gave SCE the Big Creek Project, at the time the world's largest hydroelectric plant, energized in 1913 (Edison International 2012). By 1929 the eight powerhouses at Big Creek generated a total of 360,000 kilowatts, half of SCE's total power capacity (Slade et al 2012).

In 1912 the City of Los Angeles decided to develop its own power distribution system, known as the Los Angeles Department of Water and Power (LADWP). It was enshrined in the Charter of the City of Los Angeles in 1925, and by 1939 had become the sole general distributor of electric energy in Los Angeles (Lundsten and Flick 2012). SCE had to sell its Los Angeles distribution system to the Los Angeles City Council in 1922 (Slade et al 2012). But it continued to grow outside of the city limits, expanding its steam plants in Long Beach during the 1930s to include eleven new generators (Slade et al 2012).

After World War II, SCE grew substantially and installed its one millionth meter in 1951 (Slade et al 2012). By the early 1950s Edison was the fifth-largest investor-owned power company in the United States. Its service area covered 18,500 square miles and contained about 225 communities with a combined population of almost three million. SCE built 11 fossil-fuel powered stations between 1948 and 1973. They also expanded into nuclear power. In July 1957, at the Santa Susana Experimental Station, SCE became the first investor-owned utility to generate non-military nuclear power (Slade et al 2012). They broke ground on the San Onofre Nuclear Generating Station in 1963, and it began operation in 1968 (Edison International 2012). In January 1964 the California Electric Power Company, which served 450,000 people, merged with SCE (Slade et al 2012).

In 1988 SCE formed a parent holding company, which became known as Edison International in 1996. SCE sold the Alamitos Generating Station to the AES Corporation/AES Alamitos, LLC in 1998.

Founded in 1981, the AES Corporation built its first power plant in 1985 in Texas. They now operate on five continents and in 27 countries (AES 2013). They engage in power generation and distribution, and also operate utility companies. AES California operates three power plants: AES Huntington Beach, AES Redondo Beach, and AES Alamitos. They sell the power they generate to SCE for distribution in California.

Alamitos Generating Station

Alamitos Generating Station was built by SCE. Unit 1 began commercial operation in September, 1956. Unit 2 began in February, 1957. Unit 3 went online in December 1961, and Unit 4 in June,1962. Unit 5 started in March 1966, and Unit 6 in September, 1966. Unit 7 was added in July 1969, and decommissioned in January 2004 (AES 2010). All of these units are considered "outdoor" plants as they lack an exterior shell. The first plant with this exposed design was the Highgrove Generating Station in 1951 (Herbert and Brookshear 2006). Units 1 and 2 are 175 MW units with a Babcock and Wilcox natural circulation boiler; Units 3 and 4 are 320 MW with a controlled circulation boiler; and Units 5 and 6 are 480 MW with a supercritical boiler. Alamitos Generating Station uses a once-through cooling process with water drawn from Los Cerritos Channel.

As noted above, SCE built 11 fossil-fuel powered stations between 1948 and 1973. Alamitos Generating Station was one of several similar steam generating plants constructed during this time. Alamitos Generating Station utilized fuel oil for production of electricity through its six generating units until the late 1980s, when the generating units were converted to natural gas operation. The period of significance begins at the construction of the facility (1955) and ends at the date of the last major construction there (1990).

Evaluation

The Alamitos Generating Station does not appear to be a historic resource for the purposes of CEQA. The generating station does not appear to be significant in the context of the history of SCE, the history of steam generation of electricity, or the history of post-World War II steam generation plants (Criterion A and 1).

As discussed above, Alamitos Generating Station was one of several steam generating plants built by SCE in the mid-twentieth century. It was part of a trend for all electric companies in California to build steam generation plants to keep up with growing demand from new development and higher customer usage. The short time-frame for construction of these plants, and their similar technologies and designs, suggests that they were all being planned and designed at about the same time. These plants and their steam generation technology were the result of the exhaustion of available hydroelectric sites coinciding with a growing need for electricity. Together, the plants impacted the nature of power generation in southern California, overshadowing the importance of any single plant. As of 2008, 21 once-through cooling, steam generation units remained in southern California, including Alamitos Generating Station, all dating from the same general time period, with an average age of 40 years. More than 1,200 steam-generating units use this cooling method in the United States (TetraTech 2008). Placed in the context of the time and of other power plants, Alamitos Generating Station does not appear to be unique.

The buildings and structures at Alamitos Generating Station do not embody distinctive characteristics of a type, period, region or method of construction. They are not the work or a master and do not have high engineering value (Criterion C and 3). They are typical components of a mid-century electrical power generating facility, of which there are several similar remaining examples, as noted above. They do not display any architectural style and are unexceptional examples of standard designs.

Alamitos Generating Station does not appear to be associated with the life of a historically significant person (Criterion B and 2), nor is it significant under Criterion D and 4 as a potential source of data on human history. This property is well-documented through company records and construction documents and does not appear to be a principal source of important information. The plant has had minor alterations, yet as a whole it retains integrity of location, design, setting, materials, workmanship, feeling, and association.

This property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to be a historical resource for the purposes of CEQA.

***D7. References**:

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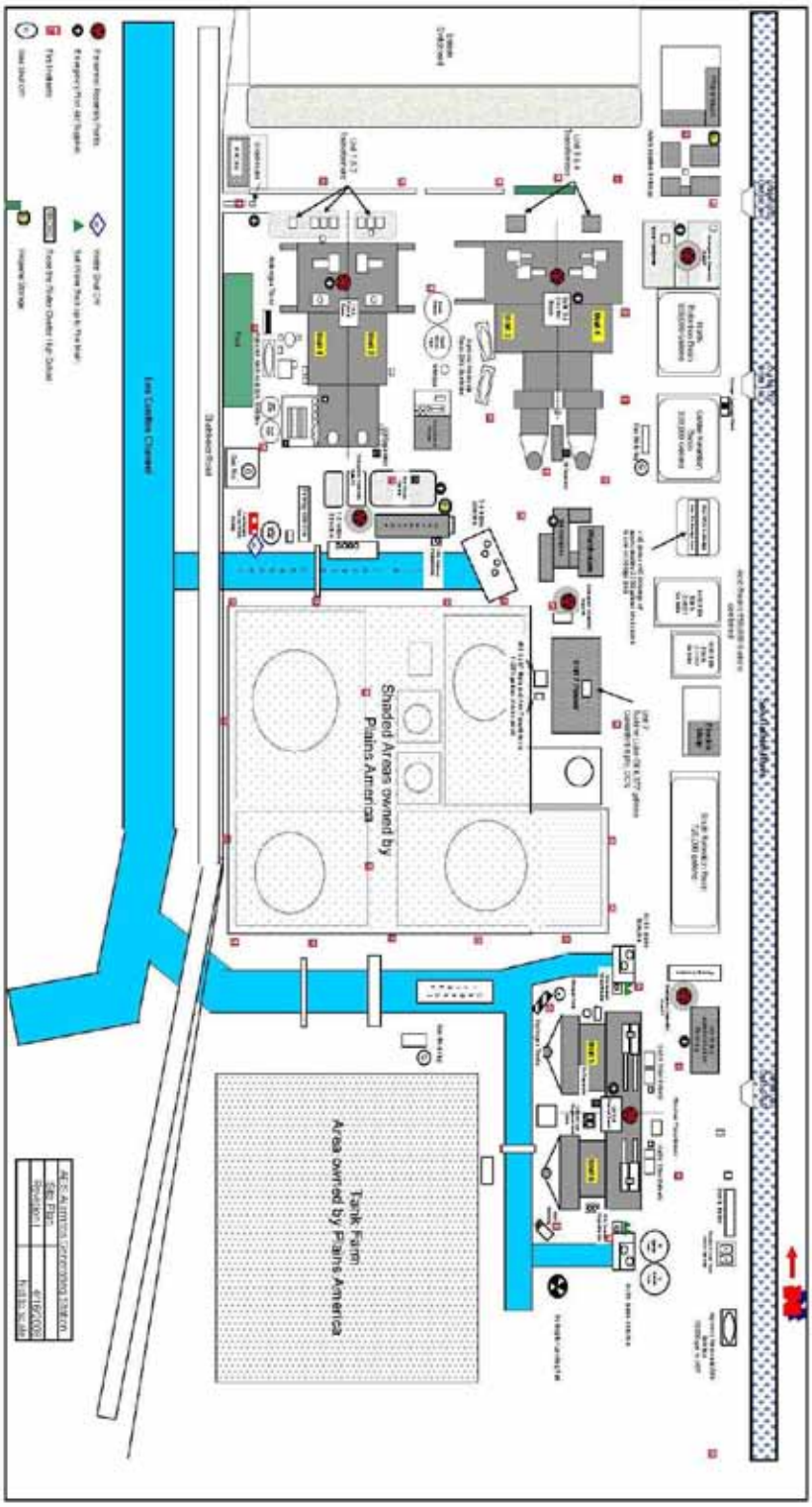
Aerial view of Alamitos Generating Station, view looking northwest, taken in 2006 before the fuel tanks in the center parcel were removed. Units 1 through 4 are at the upper left, Units 5 and 6 are on the far right. The San Gabriel River is near the top of the photo. (photo provided by AES Alamitos, LLC)

Aerial view of Alamitos Generating Station, view looking southwest, taken August 26, 1972.
(photo by Joseph Fadler, from the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

Unit pairs 1 and 2 (on the right) and 3 and 4 (on the left), aerial view looking south, October 1962. Photo from *Long Beach Press-Telegram* archive files. Construction facilities (no longer extant) are visible along the bottom of the photo.


Shaded Areas owned by
Plains America
Tank Farm
Area owned by Plains America
AES Alamitos
Facility Site Map


Legend
Project Boundary
Township 5S, Range 12W, Sections 2,3,11
Quad Name: Los Alamitos
0 250 500
Feet
N
Alamitos Generating Station
Alamitos Energy Center
Long Beach, California
CH2MHILL
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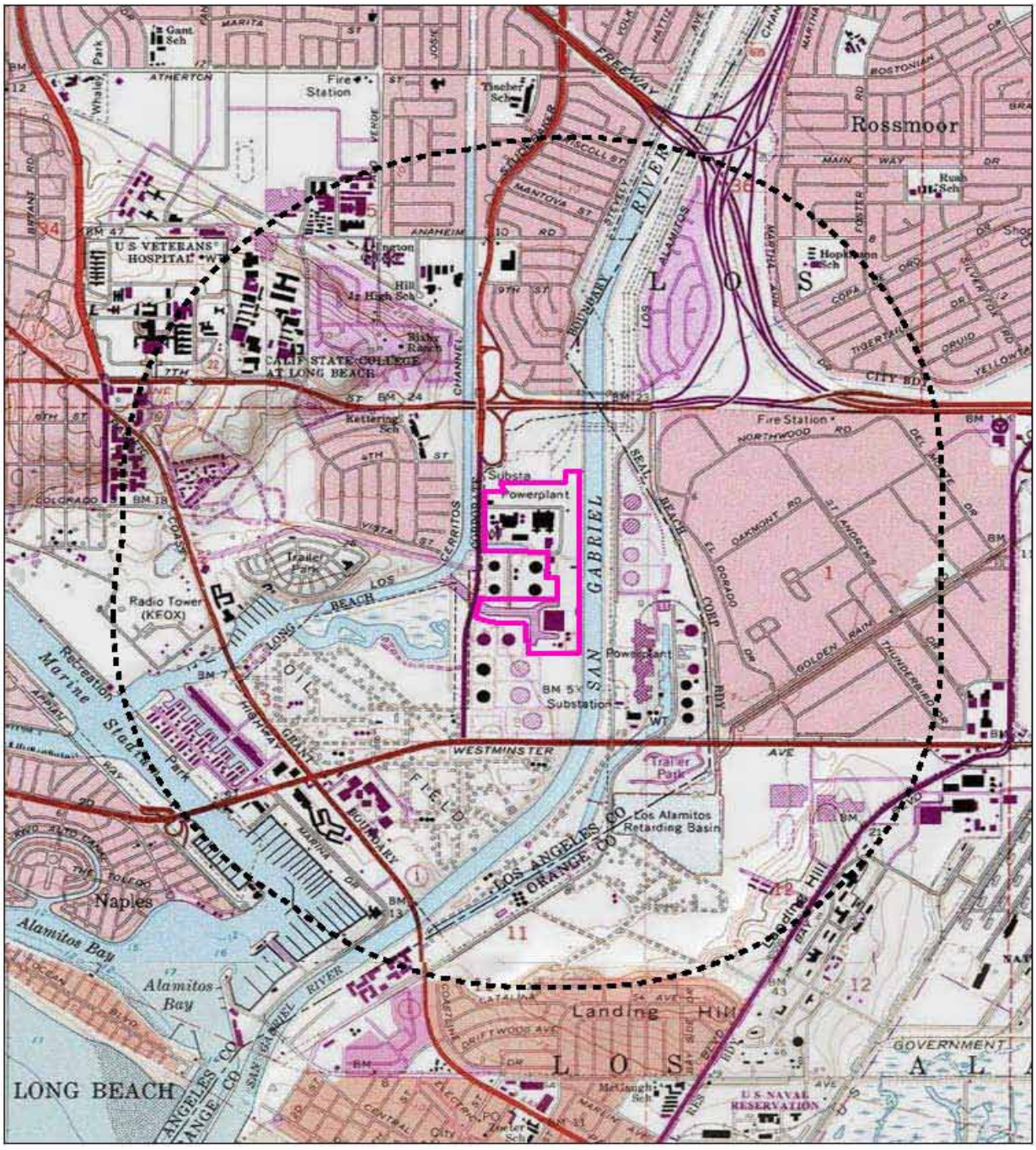
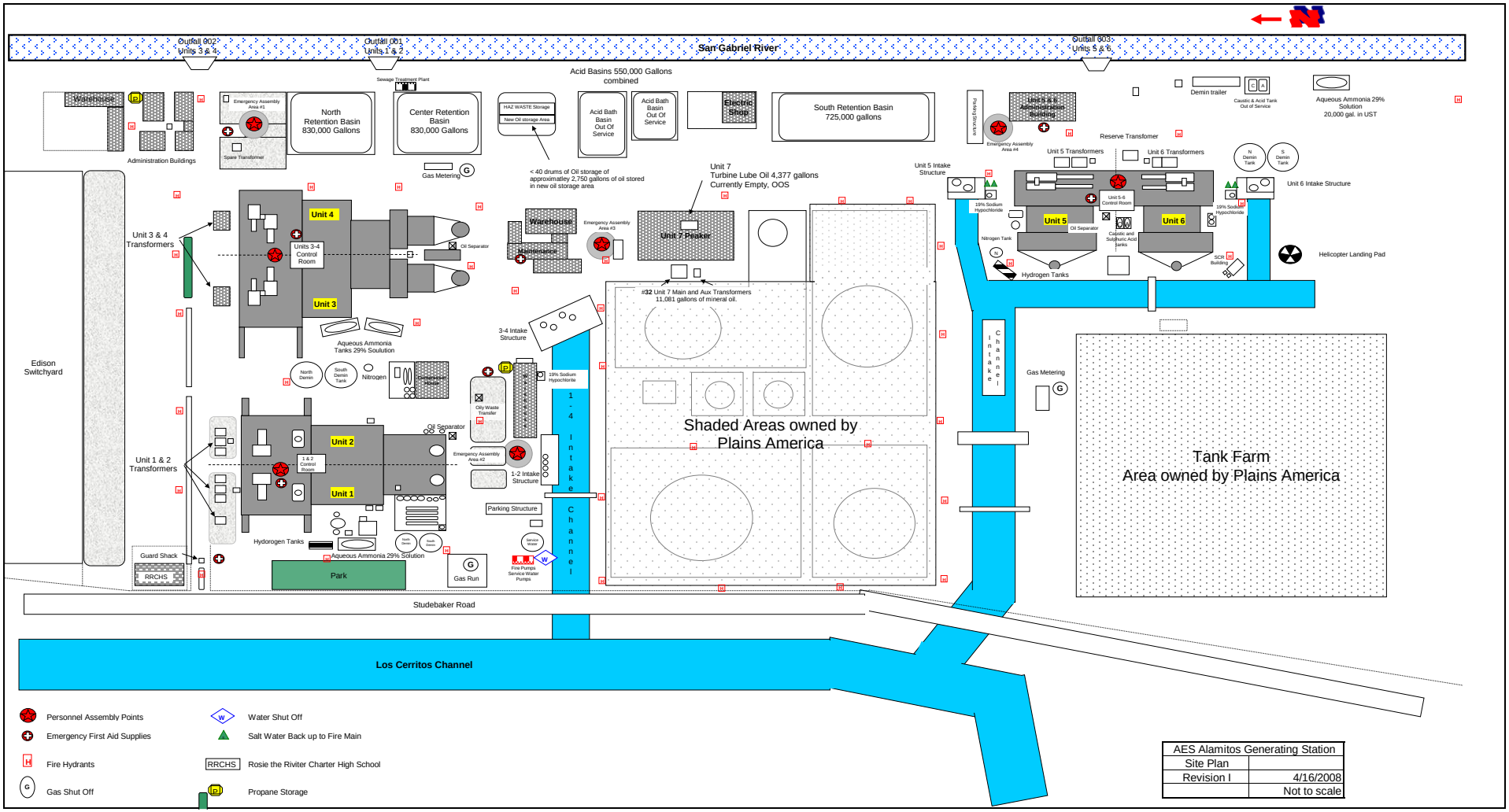
***Recorded by:** Lori D. Price ***Date:** July 22, 2013 ý Continuation o Update



AES Alamitos
Facility Site Map



AES Alamitos Generating Station	
Site Plan	
Revision I	4/16/2008
	Not to scale

State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **HRI #**

PRIMARY RECORD

Trinomial
NRHP Status Code 6Z

Other Listings
Review Code **Reviewer** **Date**

 ***Resource Name or #: Alamitos Generating Station – Units 1 and 2**

P1. Other Identifier:

***P2. Location:** o **Not for Publication** x **Unrestricted** ***a. County:** Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Los Alamitos **Date:** 1981 **T 5S** ; **R 12W** ; **¼ of ¼ of Sec 2 and 11;** M.D. **B.M.**

c. Address: 690 N. Studebaker Road City: Long Beach Zip: 90803

d. UTM: Zone: 11 ; 398034.911174/ 3737077.341691 (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Parcel number 7237018808

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Units 1 and 2, which operate as a pair, are located in the northwest section of the Alamitos Generating Station (AGS). They are conventional steam drum, outdoor units, each with an operating capacity of 175 MW. They were the first units constructed at AGS. Unit 1 began commercial operation in September 1956, and Unit 2 began in Feburary 1957. Units 1 and 2, like the rest of the AGS, runs on a once-through cooling process. Units 1 and 2 consist of a boiler, turbine, generator, control systems, and associated auxiliary equipment necessary to generate electric power. Auxiliary equipment associated with the units includes condensate and feedwater piping, pumps and heaters, generator cooling systems, fuel delivery systems, boiler, circulating water system and pumps, an intake channel and outfall structure, and a retention basin. These units use fuel gas as their primary fuel source, but have back-up fuel oil burning capability intended to be employed only in emergency situations. The main turbine for each unit is a Babcock and Wilcox natural circulation boiler. The units share a control room. They draw cooling water from the North Intake Channel, which feeds from Los Cerritos Channel and is located directly south of the units. Their outfall structure is located on the San Gabriel River, at the northeast end of the facility, behind the administration area. They share a hose house, located just north of the units, that was originally used for fire-fighting capabilities. It is now used for storage. They also share a retention basin, known as the North Basin, that was constructed between 1972 and 1976, according to aerial photos.

***P3b. Resource Attributes:** HP9 – public utility

***P4. Resources Present:** ¨ Building x Structure o Object o Site ¨ District x Element of District o Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo: View looking north at Units 1 and 2, September 29, 2011

***P6. Date Constructed/Age and Sources:** x Historic
o Prehistoric o Both
1955 to 1957
Source: AES Alamitos, LLC (property owner)

***P7. Owner and Address:**
AES Alamitos, LLC
690 N. Studebaker Road, Long Beach, CA 90803

***P8. Recorded by:**
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707

***P9. Date Recorded:** July 24, 2013

***P10. Survey Type:** Intensive

***P11. Report Citation:** Cardenas et al. 2013. *Cultural Resources Inventory Report for the Alamitos Energy Project – Los Angeles County, California*

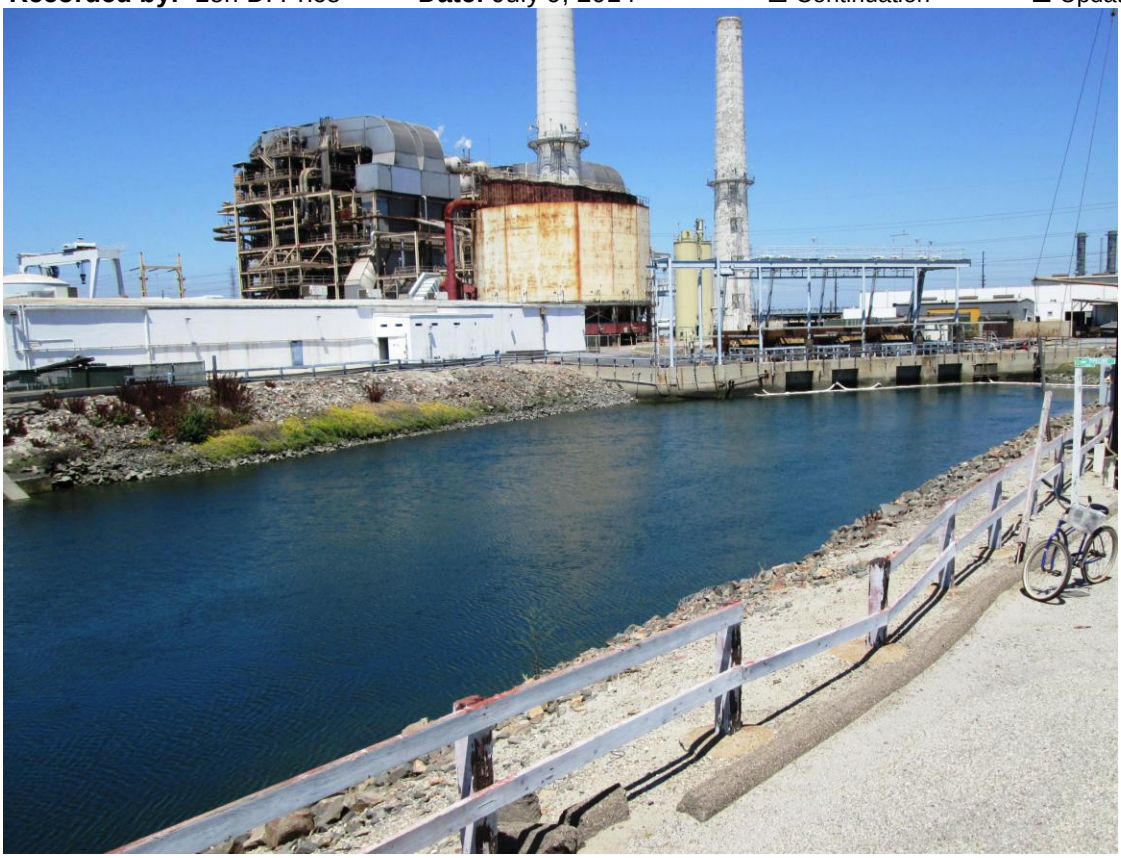
***Attachments:** o NONE x Location Map o Sketch Map x Continuation Sheet ¨ Building, Structure, and Object Record o Archaeological Record ý District Record o Linear Feature Record o Milling Station Record o Rock Art Record o Artifact Record o Photograph Record o Other (List):

Units 1 and 2, view looking southeast, September 1958.
(Photo from the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

Unit 1, view looking southeast.

Unit 1 storage tanks (hydrogen, aqueous ammonia, and demineralized water), view looking southeast.

Units 1 and 2 recirculating water intake – north intake channel is immediately south (not visible), view looking south. Units 5 and 6 are visible in the distance at left.



North Intake Channel, view looking northeast at intake structure for Units 3 & 4, which are visible in the background.

North Intake Channel, aerial view looking southwest

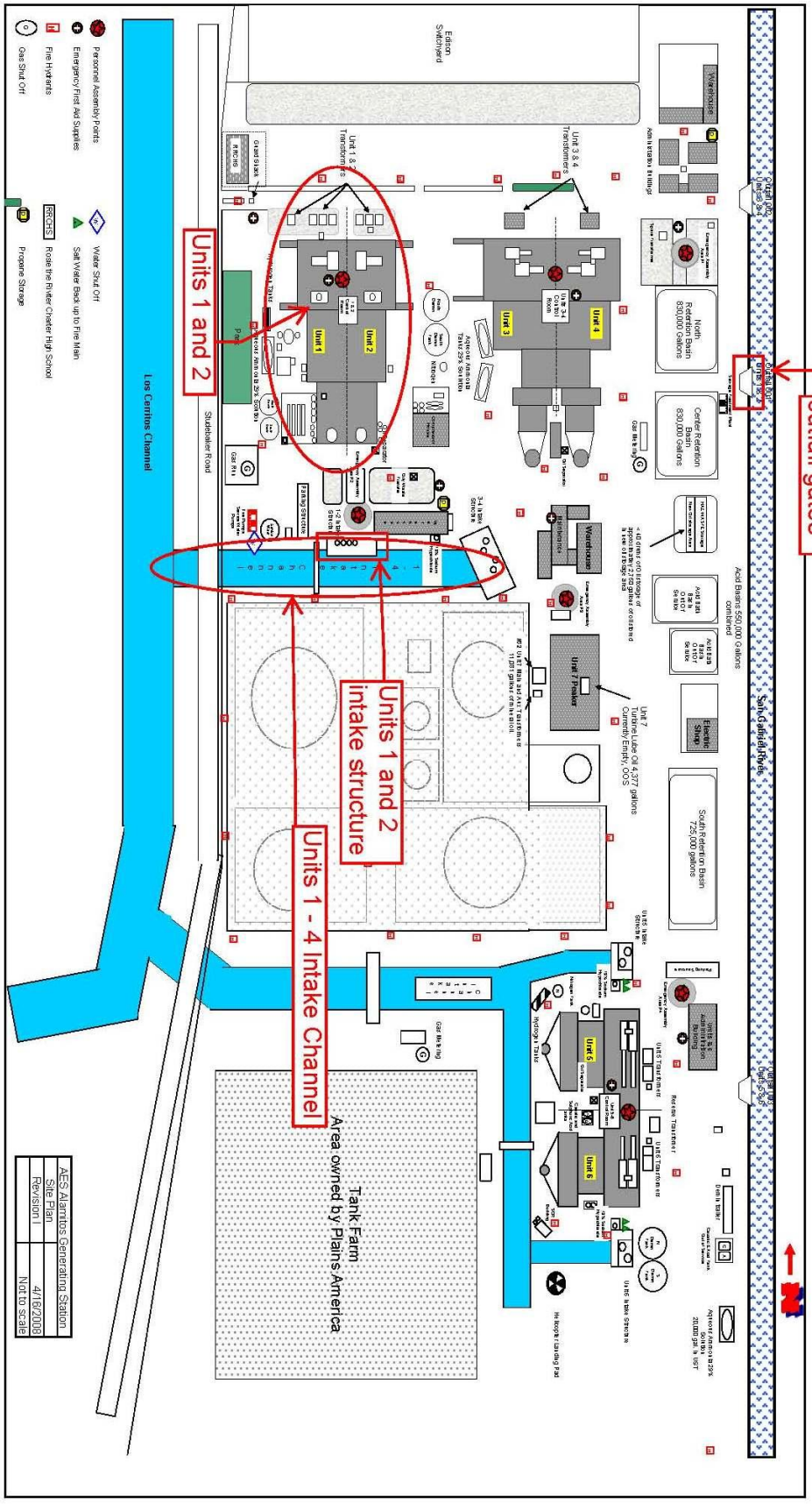
North Intake Channel, view looking southwest

North Intake Channel, view looking north at intake structure for Units 1 and 2

Units 1 and 2 Outfall Gates, view looking southeast.

Units 1 and 2 Hose House (typical of all hose houses on the facility), view looking northwest.

***Recorded by:** Lori D. Price ***Date:** July 24, 2013 ☒ Continuation ☐ Update



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z

Other Listings
Review Code Reviewer Date

 *Resource Name or #: Alamitos Generating Station – Units 3 and 4

P1. Other Identifier:
*P2. Location: o Not for Publication x Unrestricted *a. County: Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad: Los Alamitos Date: 1981 T 5S ; R 12W ; ¼ of ¼ of Sec 2 and 11; M.D. B.M.
c. Address: 690 N. Studebaker Road City: Long Beach Zip: 90803
d. UTM: Zone: 11 ; 398034.911174/ 3737077.341691 (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Parcel number 7237018808

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
Units 3 and 4, which operate as a pair, are located in the north central section of the Alamitos Generating Station (AGS). They are conventional steam drum, outdoor units, each with an operating capacity of 320 MW. They were the second pair of units constructed at AGS. Unit 3 began commercial operation in December 1961, and Unit 4 began in June 1962. Units 3 and 4, like the rest of the AGS, runs on a once-through cooling process. Units 3 and 4 consist of a boiler, turbine, generator, control systems, and associated auxiliary equipment necessary to generate electric power. Auxiliary equipment associated with the units includes condensate and feedwater piping, pumps and heaters, generator cooling systems, fuel delivery systems, boiler, circulating water system and pumps, intake channel, and retention basin. These units use fuel gas as their primary fuel source, but have back-up fuel oil burning capability intended to be employed only in emergency situations. The main turbine for each unit is a Babcock and Wilcox controlled circulation boiler. The units share a control room. They draw cooling water from the North Intake Channel, which feeds from Los Cerritos Channel and is located directly south of the units. Their outfall structure is located on the San Gabriel River directly east of the units. The units share the Central Retention Basin, located northeast of the units, between them and the San Gabriel River. Unit 3 has a bag house, which is an air pollution control device that removes particulates out of air to control emission of air pollutants. It was designed to remove pollutants from the boiler flue gases. An experimental innovation at the time, bag houses came into common use in the 1970s (Neundorfer 2013). In 1968, Southern California Edison won the annual Engineering Achievement Award from the Long Beach Chapter, California Society of Professional Engineers, for the installation of the bag house at AGS (Long Beach Press-Telegram 1958).

*P3b. Resource Attributes: HP9 – public utility
*P4. Resources Present: ¨ Building x Structure o Object o Site ¨ District x Element of District o Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo:
View looking north at Units 3 and 4 – bag house is visible on the left. September 29, 2011

*P6. Date Constructed/Age and Sources: x Historic
o Prehistoric o Both
1961 to 1962
Source: AES Alamitos, LLC (property owner)

*P7. Owner and Address:
AES Alamitos, LLC
690 N. Studebaker Road, Long Beach, CA 90803

*P8. Recorded by:
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707
*P9. Date Recorded: July 24, 2013

*P10. Survey Type: Intensive

*P11. Report Citation: Cardenas et al. 2013. *Cultural Resources Inventory Report for the Alamitos Energy Project – Los Angeles County, California*

*Attachments: o NONE x Location Map o Sketch Map x Continuation Sheet ¨ Building, Structure, and Object Record
o Archaeological Record ý District Record o Linear Feature Record o Milling Station Record o Rock Art Record
o Artifact Record o Photograph Record o Other (List):

Units 3 and 4, view looking northwest, December 21, 1961. Units are under construction. Unit 3 is in middle of photo, Unit 4 is on the right. Units 1 and 2 are visible on the far left.
(Photo by Joseph Fadler. From the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

Unit 3 with bag house, view looking northwest. Units 1 and 2 are visible at the far left. 1960s photo. (Photo by Doug White. From the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

Units 3 and 4with maintenance/locker room in the foreground, view looking northeast.

Unit 3 bag house, view looking northeast. Unit 4 stack is visible on the right.

Unit 3 Ingersoll-Rand condenser, view looking east.

Units 3 and 4 Distilled water tanks, view looking northeast.

Units 3 and 4 Screen well at intake, view looking northwest. North intake channel is visible on the far left; Units 1 and 2 are on the right.

Units 3 and 4 Outfall Gate, view looking northeast.

North intake channel – aerial view to southwest

North intake channel – view to north

North intake channel – view to northeast of intake structure for Units 3 and 4

North intake channel – view to northeast looking towards intake structure for Units 3 and 4

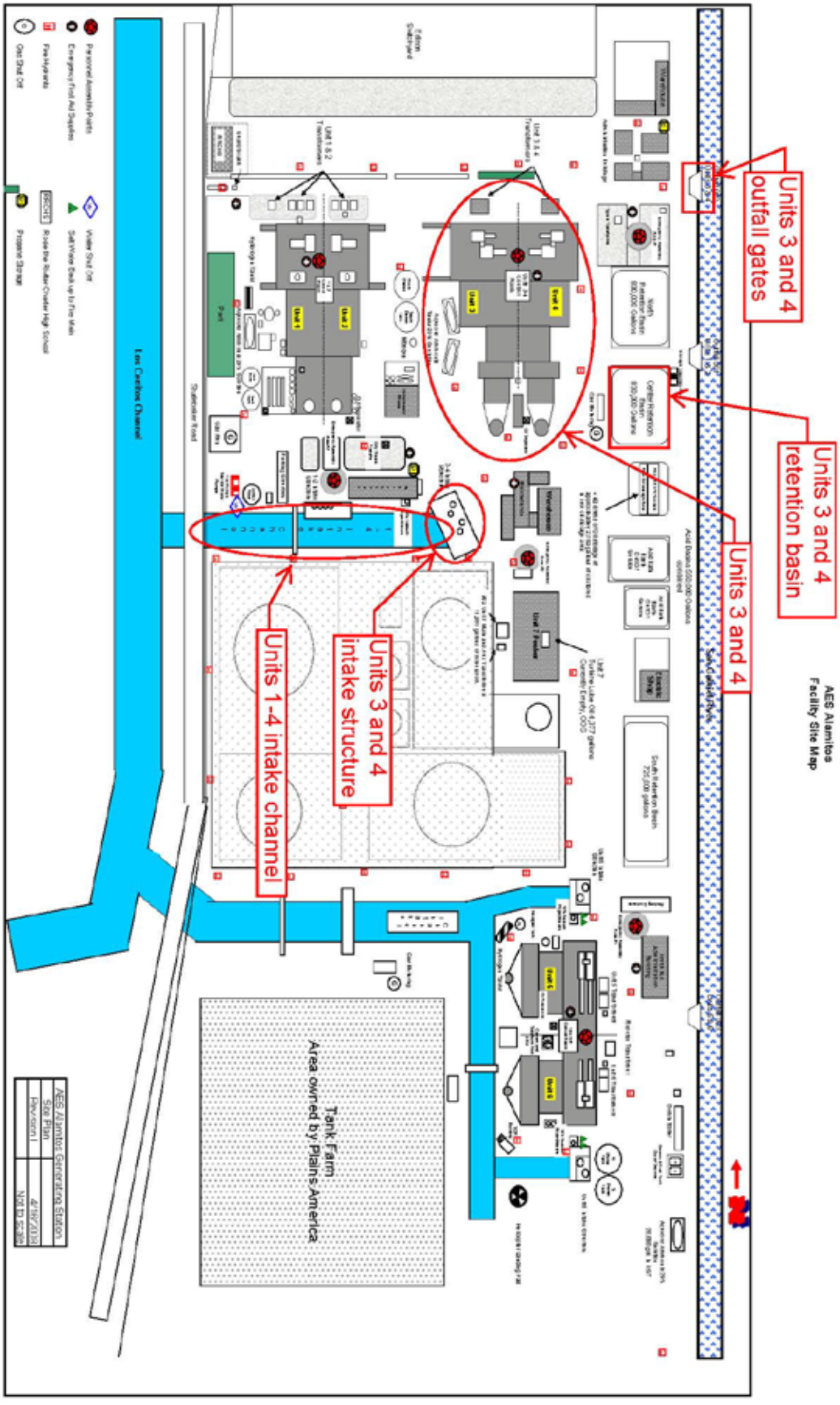
South end of Central Retention Basin – view to east

North end of Central Retention Basin – view to east

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION **CONTINUATION SHEET**	Primary # HRI# Trinomial

Page 9 of 9 ***Resource Name or #:** Alamitos Generating Station – Units 3 and 4

***Recorded by:** Lori D. Price ***Date:** July 9, 2014 ý Continuation o Update



State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **HRI #**

PRIMARY RECORD

Trinomial
NRHP Status Code 6Z

Other Listings
Review Code **Reviewer** **Date**

 ***Resource Name or #: Alamitos Generating Station – Units 5 and 6**

P1. Other Identifier:

***P2. Location:** o **Not for Publication** x **Unrestricted** ***a. County:** Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Los Alamitos **Date:** 1981 **T 5S** ; **R 12W** ; **¼ of ¼ of Sec 2 and 11;** M.D. **B.M.**

c. Address: 690 N. Studebaker Road City: Long Beach Zip: 90803

d. UTM: Zone: 11 ; 398034.911174/ 3737077.341691 (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Parcel number 7237019808

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Units 5 and 6, which operate as a pair, are located in the southeast section of the Alamitos Generating Station (AGS). They are conventional steam drum, outdoor units, each with an operating capacity of 480 MW. They were the third and final pair of units constructed at AGS. Unit 5 began commercial operation in March 1966, and Unit 6 began in September 1966. Units 5 and 6, like the rest of the AGS, runs on a once-through cooling process. Units 5 and 6 consist of a boiler, turbine, generator, control systems, and associated auxiliary equipment necessary to generate electric power. Auxiliary equipment associated with the units includes condensate and feedwater piping, pumps and heaters, generator cooling systems, fuel delivery systems, boiler, circulating water system and pumps, intake channel, and retention basin. These units use fuel gas as their primary fuel source, but have back-up fuel oil burning capability intended to be employed only in emergency situations. The main turbine for each unit is a Babcock and Wilcox natural supercritical boiler. The units share a control room. They draw cooling water from the South Intake Channel, which feeds from Los Cerritos Channel and is located directly west of the units. The intake channel forms a U around the units. Their outfall structure is located on the San Gabriel River directly east of the units. They share the South Retention Basin which is located northwest of the units. They have two hose houses that were originally used for fire-fighting capabilities but are now used for storage; one is on the east side of the units and one is on the west. They also have their own administration building, located east of Unit 5.

***P3b. Resource Attributes:** HP9 – public utility

***P4. Resources Present:** x Building x Structure o Object o Site ¨ District x Element of District o Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo: View looking northwest at Units 5 and 6, September 29, 2011

***P6. Date Constructed/Age and Sources:** x Historic
o Prehistoric o Both
1965 to 1966
Source: AES Alamitos, LLC (property owner)

***P7. Owner and Address:**
AES Alamitos, LLC
690 N. Studebaker Road, Long Beach, CA 90803

***P8. Recorded by:**
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707

***P9. Date Recorded:** July 25, 2013

***P10. Survey Type:** Intensive

***P11. Report Citation:** Cardenas et al. 2013. *Cultural Resources Inventory Report for the Alamitos Energy Project – Los Angeles County, California*

***Attachments:** o NONE x Location Map o Sketch Map x Continuation Sheet ¨ Building, Structure, and Object Record o Archaeological Record ý District Record o Linear Feature Record o Milling Station Record o Rock Art Record o Artifact Record o Photograph Record o Other (List):

Units 5 and 6, aerial view looking west, July 5, 1967
(Photo by Joseph Fadler. From the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

Units 5 and 6, view looking northwest, July 5, 1967. Units 1 and 2 are visible in the center of the photo; Units 3 and 4 are visible in the upper right. (Photo by Joseph Fadler. From the Edison Archive. Courtesy of The Huntington Library, San Marino, CA)

Units 5 and 6 Stacks, view looking north.

Unit 6, view looking northwest.

Gantry crane for Units 5 and 6, view looking east.

Interior view - control panel in control room for Units 5 and 6.

Interior view – chemistry lab for Units 5 and 6.

Circulating Pump Control House for Units 5 and 6, view looking northeast

Units 5 and 6 Circulating Pumps at intake, view looking southwest

Unit 6 Screen Wash Controls House, view looking northeast

Intake Channel, view looking west

Intake Channel, view looking east, Units 5 and 6 in background

Intake Channel, view looking southwest at southwest corner of channel

Intake Channel, view looking southeast at intake structure for Unit 6

South Retention Basin, view looking northeast; San Gabriel River in the background

South Retention Basin, view looking northeast

Mud Controls Building for Units 5 and 6, view looking northeast

Interior view – Mud Controls Building for Units 5 and 6.

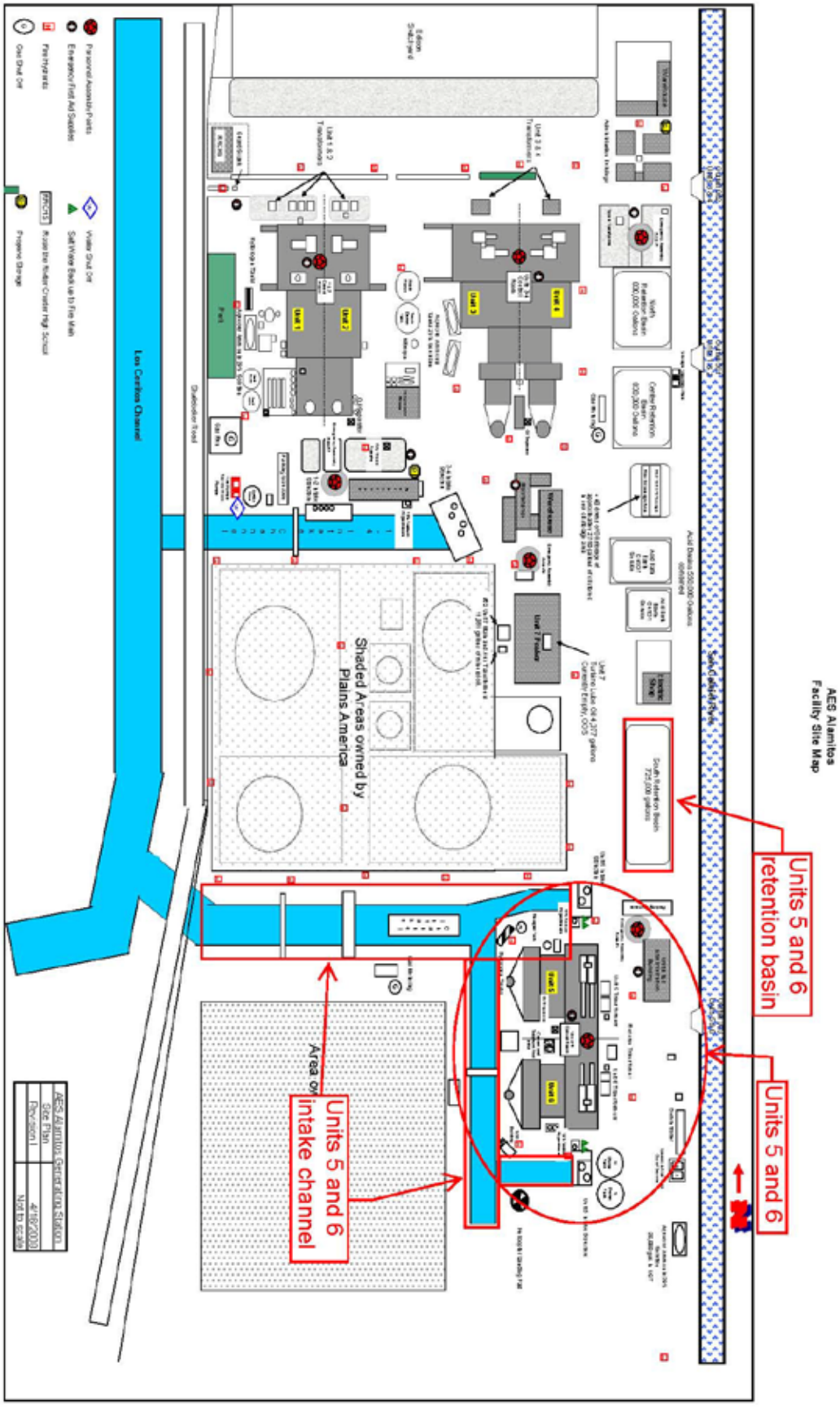
Brine tank for Units 5 and 6, view looking east.

Outfall gates for Units 5 and 6, view looking southeast

Units 5 and 6 west side hose house, view looking southwest

Units 5 and 6 east side hose house, view looking southeast

Units 5 and 6 Administration Building, view looking southeast


AES Alamitos
Facility Site Map
Los Cerritos Channel
Shaded Areas owned by
Plains America
Units 5 and 6
retention basin
Units 5 and 6
Units 5 and 6
intake channel
Area of
AES Alamitos Generation Station
Site Plan
Revision 1
4/18/2003
Not to scale

Attachment DR47-1
Department of Parks and Recreation Form 523A for the Los Cerritos Channel within the AEC Project Area

***Recorded by:** Lori D. Price ***Date:** July 15, 2014 ý Continuation o Update

***P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)**

This segment of the Los Cerritos Channel is part of the soft-bottomed channel below the tidal prism, bounded by the East 7th Street (State Highway 22) crossing to the north, by N. Studebaker Road and the Alamitos Generating Station to the east, by the south side of the South Intake Channel for Alamitos Generating Station on the south, just below the Loynes Drive crossing, and by the Bixby Village neighborhood on the west. The banks of the Channel in this segment are a combination of dirt, vegetation, and rock. The Los Cerritos Channel branches off to form the north and south intake channels at the Alamitos Generating Station and that is also included in this segment. The historical topographic map from 1947 shows that the Los Cerritos Channel does not yet exist. It first appears in the topographic map from 1950, starting at Anaheim Street and ending at a natural estuary that flows into Marine Stadium Park (USGS quadrangle Downey 1947; USGS quadrangle Los Alamitos 1950). According to LACFCD records and plans, the Los Cerritos Channel was constructed in three segments dating from 1955, 1966, and 1967 from plans dated 1954 (LACDPW 2014a). However, the plans note in several places that there is an existing channel with associated levees and bridges. It is likely that a channel had been dug prior to 1950, and that it was substantially improved by the LACFCD, leading to their dates for completion of construction through the 1960s. The Palo Verde Lateral section, which runs from Woodruff Avenue to Atherton Street, is lined with reinforced concrete cement and is noted as completed in 1955 by LACFCD. The middle section of the channel is noted as completed in 1967. It has a soft bottom without concrete lining (plans note it is to be lined with decomposed granite) and runs from Atherton Street to 7th Street. The final section, which contains the segment addressed in this evaluation, is noted as completed in 1966 and is also a soft bottom channel, running from just below 7th Street to south of the Pacific Coast Highway where the Los Cerritos Channel ends in the Marine Stadium (LACDPW 2014a; LACFCD 1954).

The Los Cerritos Channel is part of the extensive Los Angeles basin flood control system. Records indicate that there were 17 floods in the Los Angeles basin between 1815 and 1938 (Salazar 2013). With the rapid increase in population in the twentieth century, controlling the recurrent flooding gained increasing importance. The 1914 flood caused $10 million in damages and in response, the LACFCD was formed in 1915. Taxpayers approved bond issues in 1917 and 1924 to build dams, but there were not enough funds for the necessary infrastructure downstream of the dams (LACDPW 2014b). Severe floods happened again in 1934 and 1938. In the 1938 flood, “115 people lost their lives, thousands more were evacuated, over 6000 homes were damaged or destroyed, and 108,000 acres - one third of Los Angeles - was flooded” (Cram 2012). The disaster prompted a request for federal assistance. The LACFCD requested funding from the Works Progress Administration to address flood control, including channelization of the Los Angeles and San Gabriel rivers. They also received funding through the federal Flood Control Act. The Flood Control Act of 1936 redefined the role of the U.S. Army Corps of Engineers (USACE), allowing them to oversee permanent future flood control plans for the Los Angeles, Rio Hondo, and San Gabriel rivers. The Act also authorized $70 million in federal dollars for flood control (LACDPW 1996). Under authorization of the Flood Control Act of 1936, the Los Angeles County Drainage Area Plan was formulated. This plan was approved by Congress in 1941 with an authorization of $230 million for construction of a comprehensive flood control system (LACDPW 1996).The flood control plan had three major components: (1) channelize, straighten, and deepen the rivers; (2) install debris basins in foothills to protect against debris flows during storm events; and (3) construct dams in the mountains to impound storm runoff and permit controlled release of those waters (State of California Resources Agency 2001). The USACE took the lead implementing the massive project. It is likely that the Los Cerritos Channel was a result of this plan. The two intake channels for AES Alamitos were built feeding from this segment of the Los Cerritos Channel at the same time as the power plants they serve – 1956-59 (AES 2010).

The overall linear resource of the Los Cerritos Channel has not been evaluated for the NRHP or CRHR, but is likely eligible under Criterion A/1 as part of the Los Angeles basin flood control system for its association with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage. The massive flood control program which included substantial changes to the San Gabriel and Los Angeles rivers, and instigated the design and constructon of the Los Cerritos Channel allowed for modern development in the Los Angeles basin and protected “the momentous growth of population and industry in southern California” (Turhollow 1975)**.** It allowed for development and growth in the second half of the 20th century that would otherwise not have been feasible, and prevented the loss of life and property in subsequent flood events, such as the flood of 1969. This segment would contribute to the potential eligibility of the Los Cerritos Channel as a contributing element to the greater resource of the Los Angeles basin flood control system. Although much of the setting of the Channel has been altered by intensive modern development, this segment of the Channel appears to have had few physical changes and retains good integrity.

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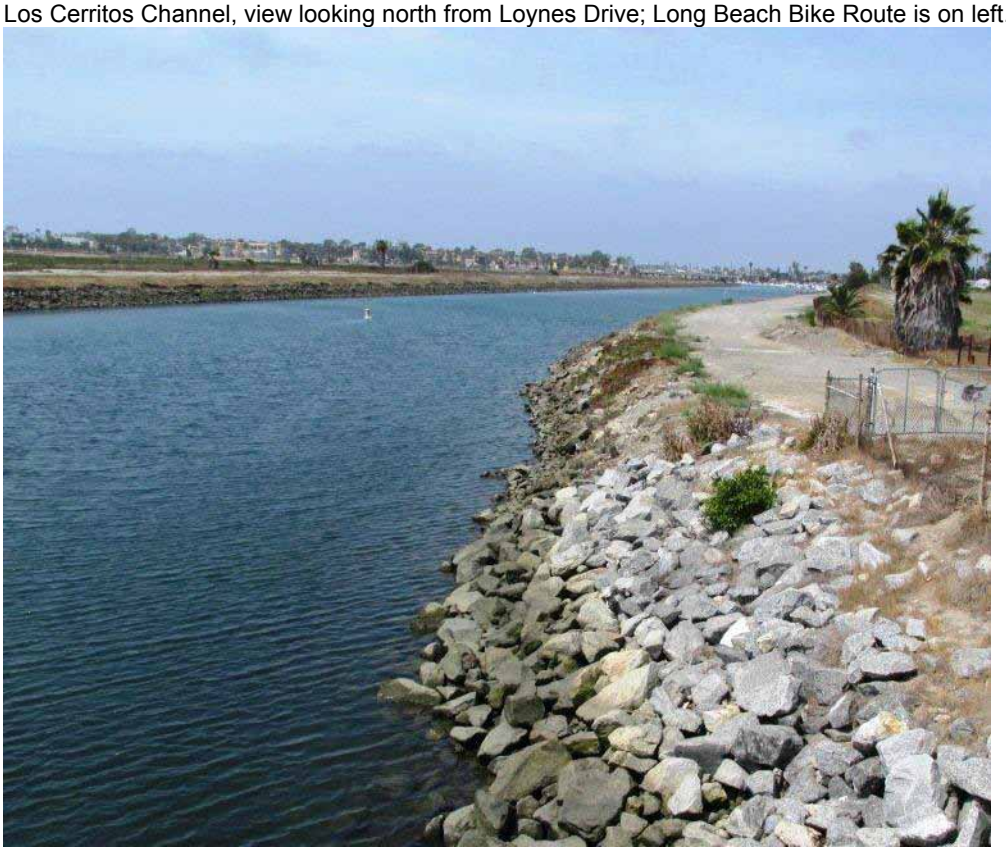
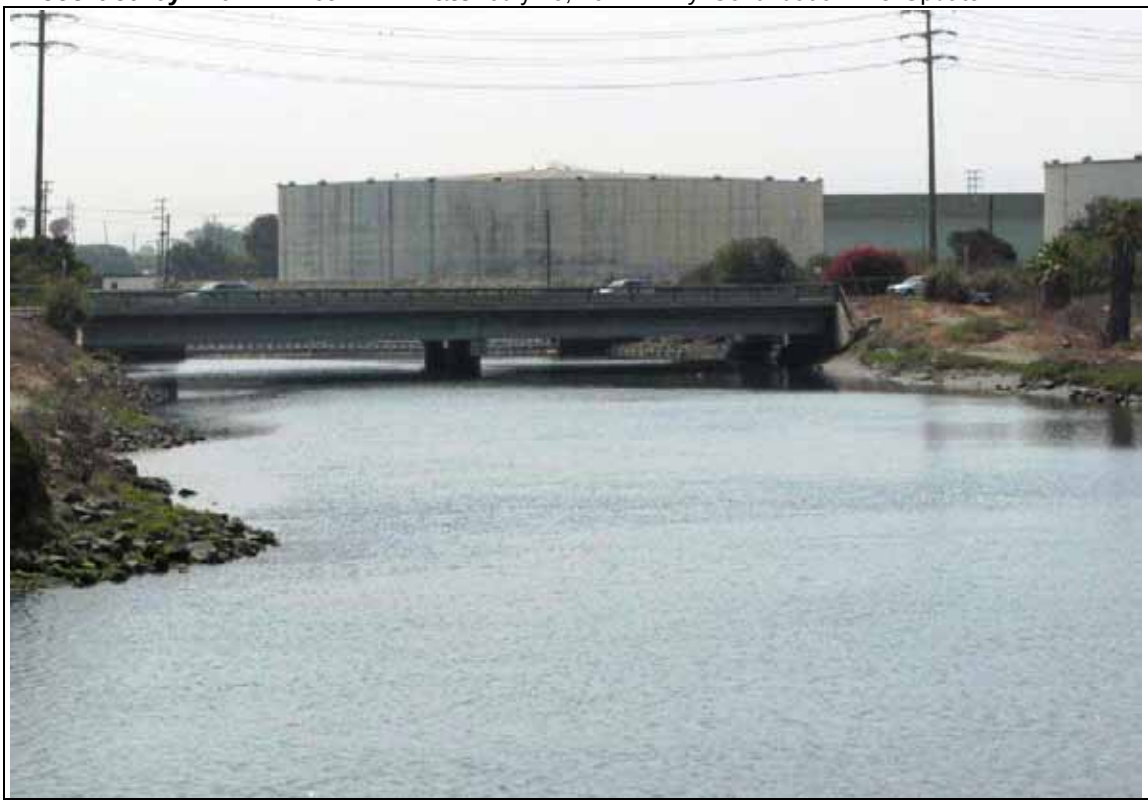
USGS quadrangle Downey, CA. 15 minute series. 1947.

USGS quadrangle Los Alamitos, CA. 1947. 7.5 minute series. 1950.

Los Cerritos Channel, view looking north from Loynes Drive; Long Beach Bike Route is on left. July 2013.



Los Cerritos Channel, view looking southwest from Loynes Drive. July 2013.



Los Cerritos Channel where it branches into AES Alamitos South Intake Channel, view looking southeast towards Studebaker Road bridge. July 2013.

Los Cerritos Channel, view looking northeast towards Loynes Drive bridge. July 2013.

***Recorded by:** Lori D. Price ***Date:** July 15, 2014 ý Continuation o Update

Legend

Property Boundary

Township 5S, Range 12W, Section 2
Quad Name: Los Alamitos

0 1,000 2,000 Feet N

Los Cerritos Channel Segment
Alamitos Energy Center
Long Beach, California

CH2MHILL

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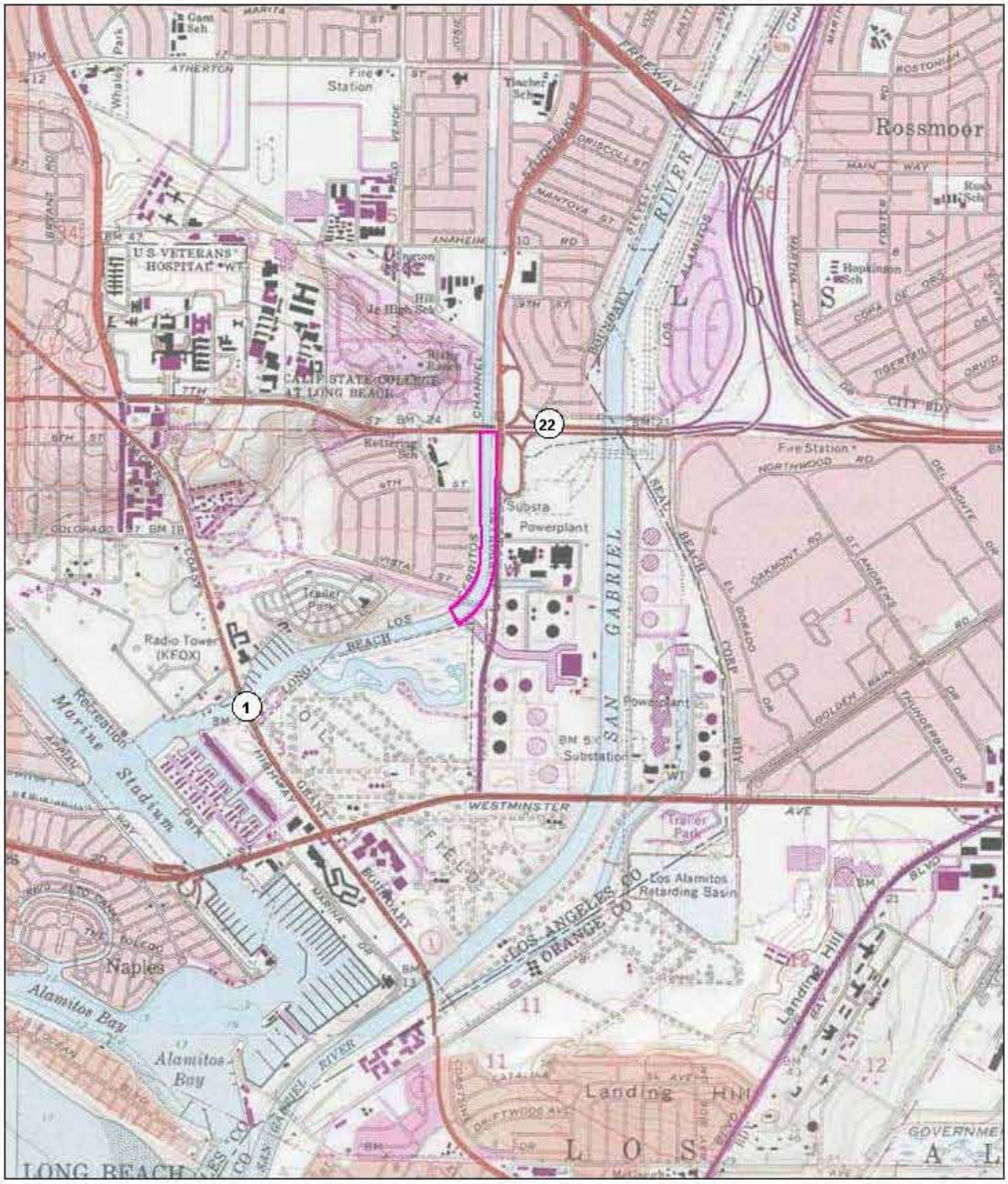

Legend

Property Boundary

Township 5S, Range 12W, Section 2
Quad Name: Los Alamitos

0 1,000 2,000 Feet

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Los Cerritos Channel Segment
Alamitos Energy Center
Long Beach, California

CH2MHILL

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State of California — The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI #

LINEAR FEATURE RECORD

Trinomial

 Resource Name or #: Los Cerritos Channel segment

L1. Historic and/or Common Name: Same

L2a. Portion Described: o Entire Resource x Segment o Point Observation **Designation:** portion of Los Cerritos Channel

b. Location of point or segment: This segment of the Los Cerritos Channel is part of the soft-bottomed channel below the tidal prism, bounded by the East 7th Street (State Highway 22) crossing to the north, by N. Studebaker Road and the Alamitos Generating Station to the east, by the south side of the South Intake Channel for Alamitos Generating Station on the south, just below the Loynes Drive crossing, and by the Bixby Village neighborhood on the west.
UTMs: North end at center of channel 397806.436188; 3737653.99412. South end at center of channel 397654.915386; 3736838.5056

L3. Description: This segment of the Channel is a soft bottom channel with banks that are a combination of dirt, vegetation, and rock. In this segment the Channel branches off to form the north and south intake channels at the Alamitos Generating Station. The Channel is crossed by the Loynes Drive bridge.

L4. Dimensions: (In feet for historic features and meters for prehistoric features) Measurements extrapolated from map
a. Top Width: 158
b. Bottom Width: unknown
c. Height or Depth: unknown
d. Length of Segment: 2,933.51

L4e. Sketch of Cross-Section (include scale) **Facing:**

L5. Associated Resources: N/A

L6. Setting: This segment of the Channel is flanked by N. Studebaker Road on the east and also has a large industrial facility (power generation plant) on the east. The west bank above the Loynes Drive bridge has a paved bike path (Long Beach Bikeway Route 10). The portion of the Channel has a mid-century residential neighborhood west of the bike path. South of Loynes Drive the Channel is flanked on both sides by undeveloped wetlands. A vehicular access road runs along both banks, and the Channel is enclosed by a chain link fence.The banks near the bridge crossing are armored with riprap.

L7. Integrity Considerations: This segment of the Los Cerritos retains a soft bottom and has had no visible alterations. The setting has been altered by intensive modern developments in some areas of the Channel, but this segment appears to retain good integrity.

L8b. Description of Photo, Map, or Drawing View southwest from Loynes Drive, July 2013.

L9. Remarks: The overall linear resource of the Los Cerritos Channel has not been evaluated for the NRHP or CRHR, but is likely eligible under Criterion A/1 as part of the Los Angeles basin flood control system for its association with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. The massive flood control program which included substantial changes to the San Gabriel and Los Angeles rivers, and instigated the design and constructon of the Los Cerritos Channel allowed for modern development in the Los Angeles basin and protected "the momentous growth of population and industry in southern California" (Turhollow 1975). It allowed for development and growth in the second half of the 20th century that would otherwise not have been feasible, and prevented the loss of life and property in subsequent flood events, such as the flood of 1969. This segment would contribute to the potential eligibility of the Los Cerritos Channel as a contributing element to the greater resource of the Los Angeles basin flood control system. This segment of the Channel appears to have had few physical changes and retains good integrity.

L8a. Photograph, Map or Drawing

L10. Form Prepared by:
Lori D. Price
CH2M HILL
6 Hutton Center Dr., Suite 700
Santa Ana, CA, 92707

L11. Date: July 15, 2014