Final Environmental Assessment

Satala Power Plant Replacement

Island of Tutuila, American Samoa

Territorial Office of Fiscal Reform
American Samoa Power Authority

February 2014

FEMA

THIS DOCUMENT WAS PREPARED FOR

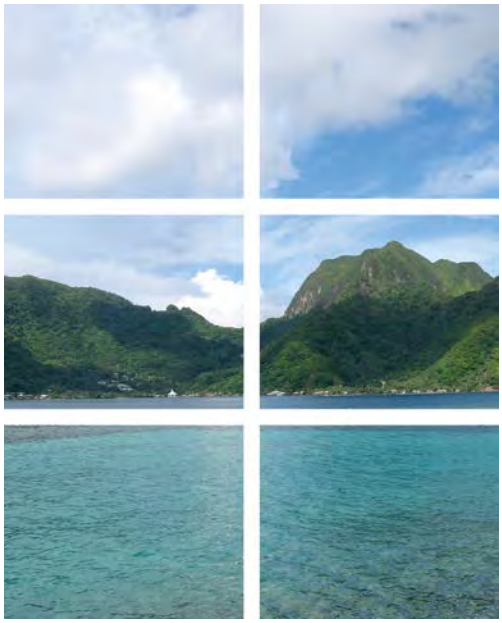
FEDERAL EMERGENCY MANAGEMENT AGENCY, REGION IX
U.S. DEPARTMENT OF HOMELAND SECURITY
1111 BROADWAY, SUITE 1200
OAKLAND, CA 94607

THIS DOCUMENT WAS PREPARED BY

AECOM
1420 KETTNER BOULEVARD, SUITE 500
SAN DIEGO, CA 92101

FEMA-1859-DR-AS, PW 200
CONTRACT NO. HSFEHQ-12-D-0879
TASK ORDER HSFE80-12-J-0012 P00005
AECOM # 60270080.0000

COVER PHOTO: SEVERAL SITES ALONG THE SHORELINE OF PAGO PAGO HARBOR WERE CONSIDERED.



FINAL ENVIRONMENTAL ASSESSMENT

SATALA POWER PLANT REPLACEMENT

ISLAND OF TUTUILA, AMERICAN SAMOA

TERRITORIAL OFFICE OF FISCAL REFORM

AMERICAN SAMOA POWER AUTHORITY

FEMA-1859-DR-AS, PW 200

FEBRUARY 2014

PREPARED BY

AECOM

1420 KETTNER BOULEVARD, SUITE 500

SAN DIEGO, CA 92101

PREPARED FOR

FEDERAL EMERGENCY MANAGEMENT AGENCY, REGION IX

U.S. DEPARTMENT OF HOMELAND SECURITY

1111 BROADWAY, SUITE 1200

OAKLAND, CA 94607

THIS DOCUMENT HAS BEEN PREPARED CONSISTENT WITH THE REQUIREMENTS OF SECTION 508 OF THE REHABILITATION ACT. SECTION 508 REQUIRES THAT FEDERAL EMPLOYEES AND MEMBERS OF THE PUBLIC WITH DISABILITIES SEEKING INFORMATION OR SERVICES FROM A FEDERAL AGENCY, HAVE ACCESS TO AND USE OF INFORMATION AND DATA THAT IS COMPARABLE TO THAT PROVIDED TO THE PUBLIC AND FEDERAL EMPLOYEES WHO ARE NOT INDIVIDUALS WITH DISABILITIES, UNLESS AN UNDUE BURDEN WOULD BE IMPOSED ON THE AGENCY.

This page intentionally left blank.

Table of Contents

Acronyms and Abbreviations iii
Executive Summary vii
1.0 Introduction 1
2.0 Purpose and Need for Action 5
2.1 Purpose 5
2.2 Need 5
3.0 Analysis of Alternatives 7
3.1 Analysis Criteria 8
3.2 Alternatives 13
3.3 Alternatives Considered but Not Carried Forward 26
4.0 Affected Environment, Impacts, and Mitigation 33
4.1 Air Quality and Greenhouse Gas Emissions 33
4.2 Biological Resources 40
4.3 Cultural Resources 52
4.4 Geology and Soils 56
4.5 Seismicity 61
4.6 Coastal Resources 63
4.7 Noise 66
4.8 Flood Hazards 70
4.9 Water Quality 71
4.10 Land Use and Planning 76
4.11 Traffic 78
4.12 Public Health and Safety 80
4.13 Visual Resources 83
4.14 Utilities 84
4.15 Environmental Justice 85
4.16 Cumulative Impacts 86
5.0 Public Participation and Agency Coordination 87
6.0 References 89

7.0 List of Preparers 93
7.1 Federal Emergency Management Agency 93
7.2 AECOM 93

Appendices 95
Appendix A: Cultural Resources Inventory Report 95
Appendix B: Agency Consultation 99
Appendix C: Public Scoping Notices and Agency Distribution List 109
Appendix D: Notice of Availability of Draft Environmental Assessment, Agency Distribution List, and Comment Letters Received during the Review Period 115

List of Figures

Figure 1-1: Location Map 2
Figure 3-1: Replacement Power Plant Concept Plan 9
Figure 3-2: Alternatives Location Map 10
Figure 3-3: Alternative 1: No Action 14
Figure 3-4: Alternative 2: Satala Site 16
Figure 3-5: Alternative 3: Leloaloa Site 19
Figure 3-6: Alternative 4: Utulei Site 21
Figure 3-7: Alternative 5: Tafuna Site 23
Figure 3-8: Eliminated Alternative A: Tafuna Expansion and Satala Site 27
Figure 3-9: Eliminated Alternative B: Tafuna Expansion and Leloaloa Site 28
Figure 3-10: Eliminated Alternative C: Malaloa Site 30
Figure 3-11: Eliminated Alternative D: Faga'alu Site 31

List of Tables

Table 3-1: Alternatives Summary 25
Table 4-1: National Ambient Air Quality Standards 34

Acronyms and Abbreviations

APE	area of potential effects
ASCMP	American Samoa Coastal Management Program
ASDMWR	American Samoa Department of Marine and Wildlife Resources
ASDOC	American Samoa Department of Commerce
ASDPW	American Samoa Department of Public Works
ASEPA	American Samoa Environmental Protection Agency
ASG	American Samoa Government
ASGWG	American Samoa GIS Working Group
ASHPO	American Samoa Historic Preservation Office
ASPA	American Samoa Power Authority
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency

FIRM	Flood Insurance Rate Map
GCR	General Conformity Rule
GHG	greenhouse gas
GRST	green sea turtle
HAST	hawksbill sea turtle
LEST	leatherback sea turtle
LOST	loggerhead sea turtle
LUP	Land Use Permit
MBTA	Migratory Bird Treaty Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act of 1976 as amended
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_x	oxides of nitrogen
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
N_2O	nitrous oxide
O_3	ozone
PA	Public Assistance
Pb	lead
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter

PM_{10}	particulate matter less than 10 microns in diameter
PNRS	Project Notification and Review System
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gases
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	oxides of sulfur
TOFR	Territorial Office of Fiscal Reform
U.S.	United States
U.S.C.	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

This page intentionally left blank.

Executive Summary

Through the American Samoa Territorial Office of Fiscal Reform, the American Samoa Power Authority (ASPA) has applied to the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) for funds to construct and operate a 23.5-megawatt (MW) power plant to replace the 23.5 MW of electrical power generation capacity lost when the Satala power plant was severely damaged by the September 29, 2009, earthquake, tsunami, and flooding disaster (FEMA-1859-DR-AS). Approval of this funding is a federal action subject to the National Environmental Policy Act of 1969 (NEPA); thus, FEMA has prepared this Environmental Assessment (EA) in compliance with NEPA.

The ASPA Satala power plant was a 23.5 MW diesel-powered electrical power generation plant located on 1.78 acres along the northern edge of Pago Pago Harbor. During the September 2009 disaster, the plant sustained severe damage at an elevation of approximately 8 feet above mean sea level and was subsequently demolished, eliminating the facility's ability to meet American Samoa's energy demands. Since the disaster, ASPA has been meeting demand through operation of temporary generators, which is inefficient and infeasible as a long-term solution. This EA examines the potential environmental effects of constructing and operating permanent replacement facilities (the Proposed Action).

Proposed Action

The Proposed Action by ASPA is construction and operation of a permanent power plant capable of reliably generating up to 23.5 MW of power, returning ASPA's power distribution network to pre-disaster capacity. Necessary components of the replacement facility, as identified by ASPA, include bulk storage tanks, a truck off-loading refueling rack system, a machine shop, parking areas, and power plant buildings housing diesel fuel-powered generators, switchgear, and auxiliary equipment. Based on these needs, a concept layout indicates that a minimum of 2 acres of generally level land would be required to adequately accommodate the program elements of the proposed replacement facility. The power generation facility itself and other critical equipment would need to be reasonably protected from foreseeable hazards and the proposed project would be in compliance with FEMA regulations and guidelines.

ASPA identified five potential alternatives that are analyzed in the EA:

- Alternative 1, the No Action Alternative, maintains the status quo with no project construction and no federal financial assistance from FEMA. For the purpose of this EA,

Alternative 1 assumes that ASPA would continue to operate temporary generators at the site of the former Satala power plant.

- Alternative 2 is ASPA's Preferred Alternative and would entail the construction of a 23.5 MW replacement power plant at the site of the destroyed Satala power plant, located in an industrial area on the northern edge of Pago Pago Harbor. The proposed facility would be constructed on an approximately 2.92-acre portion of the 5.29-acre ASPA property owned by the American Samoa Government.

- Alternative 3 would entail the construction of a 23.5 MW power plant on a minimum 2-acre portion of a 3.18-acre site on the northern edge of Pago Pago Harbor, approximately 0.7 mile east of the Satala site, referred to throughout the EA as the Leloaloa site. The Leloaloa site is the former location of a parochial school that closed sometime before 1989. None of the original buildings are still standing, though some foundation remnants and abandoned infrastructure fragments remain. Alternative 3 would require construction of a new substation at the Satala site in order to effectively transmit the energy produced by the proposed facility with the existing distribution network. This would also require installation of a new distribution line within the Highway 1 right-of-way between Leloaloa and Satala to make this connection.

- Alternative 4 would entail construction of a 23.5 MW power plant facility on 2.19 acres in an industrial area in Utulei, approximately 0.5 mile south of Pago Pago Harbor. The site currently contains two abandoned 100-foot-diameter aboveground petroleum storage tanks within a containment berm, all of which would be removed as part of Alternative 4. Access improvements may require land acquisition that would affect existing residences. Similar to Alternative 3, Alternative 4 would require construction of a new substation at the Satala site and installation of a new distribution line within the Highway 1 right-of-way between Utulei and Satala, a distance of 2.9 miles.

- Alternative 5 would entail the construction a 23.5 MW power plant facility on a 2.16-acre portion of the existing 13-acre ASPA Tafuna power plant property, which is located approximately 4 miles southwest of Pago Pago Harbor. ASPA currently uses the proposed 2.2-acre Tafuna site as an open laydown and temporary storage area, with a building used for vehicle repair located along the site's northern edge. Similar to Alternative 3 and Alternative 4, constructing the replacement facility at the Tafuna site would require a new substation at the Satala site. Alternative 5 would also require an upgrade of the existing 9.3-mile distribution line that runs within the Highway 1 right-of-way between Tafuna and Satala.

Environmental Analysis and Mitigation

The EA presents an examination of the Proposed Action's environmental effects with respect to the following issue areas: air quality and greenhouse gas emissions; biological resources; cultural resources; geology and soils; seismicity; coastal resources; noise; flood hazards; water quality; land use and planning; traffic; public health and safety; visual resources; utilities; and environmental justice.

The EA identifies several potential adverse effects, but concludes that effective implementation, enforcement, and monitoring of proposed best management practices (BMPs) and project-specific mitigation measures would prevent the Proposed Action from resulting in any adverse effects. As discussed in the respective sections of Chapter 4, BMPs or mitigation measures are identified for the following issue areas: air quality and greenhouse gas emissions; biological resources; cultural resources; geology and soils; coastal resources; noise; water quality; traffic; and public health and safety. With effective implementation, enforcement, and monitoring of proposed BMPs and mitigation measures, the Proposed Action would not result in adverse environmental effects.

X
FINAL

This page intentionally left blank.

1.0 Introduction

On September 29, 2009, a major earthquake occurred beneath the Pacific Ocean in the Tonga Trench, generating a tsunami that caused major devastation in the United States (U.S.) territory of American Samoa (American Samoa), 120 miles to the northeast. A Presidential Disaster (FEMA-1859-DR-AS) was declared, authorizing federal assistance.

Through the American Samoa Territorial Office of Fiscal Reform (TOFR), the American Samoa Power Authority (ASPA) has applied to the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) for funds to construct and operate a 23.5-megawatt (MW) power plant to replace the 23.5 MW of electrical power generation capacity lost when the Satala power plant was severely damaged by the disaster. Approval of this funding is a federal action subject to the National Environmental Policy Act of 1969 (NEPA); thus, FEMA has prepared this Environmental Assessment (EA) in compliance with NEPA.

American Samoa is a Pacific Ocean archipelago located approximately 2,200 miles south-southwest of Hawaii and 1,318 miles north-northeast of New Zealand (Figure 1-1). It consists primarily of five volcanic islands and two coral atolls. The proposed project is located on Tutuila, by far the largest island of the territory. Tutuila is approximately 54 square miles in area and home to approximately 90 percent of the population. American Samoa is an unorganized and unincorporated U.S. territory. As such, American Samoa is partially self-governing and administered by the Office of Insular Affairs, U.S. Department of the Interior. Unlike citizens of other U.S. territories, American Samoans are noncitizen U.S. Nationals.

FEMA proposes to provide federal financial assistance to the American Samoa TOFR pursuant to Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (42 U.S. Code [U.S.C.] § 5172) and Title 44 Code of Federal Regulations (CFR) Part 206.

FEMA is the federal agency responsible for the preparation of this EA. This EA has been prepared according to the requirements of NEPA, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500–1508), and FEMA's implementing regulations (44 CFR Part 10).

The EA process provides steps and procedures to evaluate the potential environmental, social, and economic impacts of the proposed project and its alternatives. These potential impacts are measured by their context and intensity, as defined in the CEQ regulations. This process

Source: American Samoa Department of Commerce Web Portal; FEMA; Google Earth Imnagery Data 01/14/12; AECOM

Figure 1-1
Location Map

includes an opportunity for the public and local, territorial, and federal agencies to provide input and/or submit comments.

Any change to the scope of work for the proposed project and its alternatives would require reevaluation for compliance with NEPA, other laws, and Executive Orders (EOs). This EA does not directly address all federal, American Samoa Government (ASG), and local requirements. Acceptance of federal funding requires the recipient (TOFR and ASPA) to comply with all federal, ASG, and local laws. Failure by TOFR and ASPA to obtain all appropriate federal, ASG, and local environmental permits and clearances may jeopardize federal funding.

This page intentionally left blank.

2.0 Purpose and Need for Action

2.1 Purpose

The objective of the FEMA Public Assistance (PA) program is to provide assistance to state, territorial, tribal, and local governments, as well as certain types of private nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA program, FEMA provides supplemental federal disaster grant assistance for debris removal; emergency protective measures; and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private nonprofit organizations. The PA program also encourages protection of these facilities from future disaster events by providing assistance for hazard mitigation during the recovery process. The purpose of the proposed federal action in American Samoa is to provide PA funding to the grantee, TOFR, and consequently the sub-grantee, ASPA, to restore the function served by the disaster-destroyed Satala power plant.

2.2 Need

The September 29, 2009, earthquake, tsunami, and flooding disaster (FEMA-1859-DR-AS) caused widespread destruction in coastal areas of American Samoa during an incident period lasting until October 6, 2009. The ASPA Satala power plant, a 23.5 MW diesel-powered electrical power generation plant, is located on 1.78 acres along the northern edge of Pago Pago Harbor and sustained severe damage at an elevation of approximately 8 feet above mean sea level. During the incident, the facilities became submerged in seawater, which caused extensive damage to the 13,215-square-foot main building housing electrical power generation equipment. The Satala facility was determined to be damaged beyond repair and was subsequently demolished, eliminating the facility's ability to meet American Samoa's energy demands. The Satala facility provided approximately 60 percent of ASPA's power generation capacity on Tutuila. (The remaining power generation capacity, provided by ASPA's Tafuna power plant located approximately 9 miles west of the Satala site, was not adversely affected by the disaster.)

FEMA's federal action under consideration in this EA is needed to provide federal funding assistance to ASPA through TOFR that would be used to restore a permanent facility capable of reliably generating up to 23.5 MW of power and return ASPA's power distribution network to pre-disaster capacity. With approximately 95 percent of American Samoa's population residing on Tutuila, a critical need exists for the permanent replacement of the electrical capacity of the

disaster-damaged facilities. Since the disaster, ASPA has been meeting demand through temporary replacement generators, which is inefficient and infeasible as a long-term solution. To effectively return the network to its prior capacity, ASPA determined that the permanent replacement needs to connect directly to the existing ASPA electrical distribution grid that serves eastern Tutuila and provides backup power to critical facilities and the rest of the island via a high-capacity tie line to the Tafuna power plant.

3.0 Analysis of Alternatives

ASPA is an entity within the executive branch of ASG. ASPA installs, operates, and maintains the public utility infrastructure of American Samoa providing power, water, wastewater, and solid waste services to over 60,000 residents. ASPA is directed by a five-member board of directors and administered by a Chief Executive Officer. Members are nominated to the board by American Samoa's Governor and confirmed by the Legislature [*fono*] (ASPA 2013).

ASPA, in partnership with TOFR and FEMA, has implemented a three-tiered approach to respond to the loss of their electrical power generation capacity due to the destruction of the Satala power plant. Tier 1 involved the immediate deployment of portable generators to more than 10 sites on Tutuila to provide emergency power in areas affected by the loss of the Satala plant. Tier 2 involved the mobilization of 11 larger, containerized generators with a capacity of 18 MW at the site of the demolished Satala facility supplying a more efficient and reliable interim power source to the Satala facility's service area. These replaced the portable generators, which were removed from service. The 11 temporary containerized generators are still operating under current conditions. The 18 MW generation capacity provides a minimum capacity for the system; however, disruptions occur due to scheduled maintenance downtimes and lack of back-up generation capacity to respond to short-term outages. Although these temporary containerized generators have higher maintenance costs, longer downtimes, and more emissions compared to equipment designed for permanent use, they were deemed adequate as a temporary solution during the multi-year interim period. Tier 3, the proposed project, is planned as the permanent replacement for the destroyed 23.5 MW Satala power plant. ASPA plans to continue to operate the Tier 2 generators until the Tier 3 recovery is complete and a permanent facility is operational.

ASPA has determined the conceptual program requirements necessary for the 23.5 MW Tier 3 replacement facility (AECOM 2011). Necessary components of the replacement facility include bulk storage tanks, a truck off-loading refueling rack system, a machine shop, parking areas, and power plant buildings housing diesel fuel-powered generators, switchgear, and auxiliary equipment. Similar to the disaster-destroyed plant and the temporary containerized generators, the replacement facility would not involve a water cooling process, so no water intake structures would be constructed. Based on the replacement facility's needs, required separation distances, and functional adjacency requirements of some components, a concept layout was developed to determine an accurate estimate of the required acreage for a replacement facility. The concept layout indicates that a minimum of 2 acres of generally level land would be required to

adequately accommodate the program elements of the proposed replacement facility. The concept site plan layout for the proposed replacement facility is shown in Figure 3-1.[1] The proposed Tier 3 permanent equipment would use an ultra-low sulfur diesel fuel mix and possess better operating efficiency with lower maintenance costs and shorter downtimes compared to the Tier 2 temporary containerized generators. This solution would improve air quality, lower overall power generation costs, and maintain long-term system reliability, compared to the Tier 2 measures. The power generation facility itself and other critical equipment would need to be reasonably protected from foreseeable hazards and the proposed project would be in compliance with FEMA regulations and guidelines.

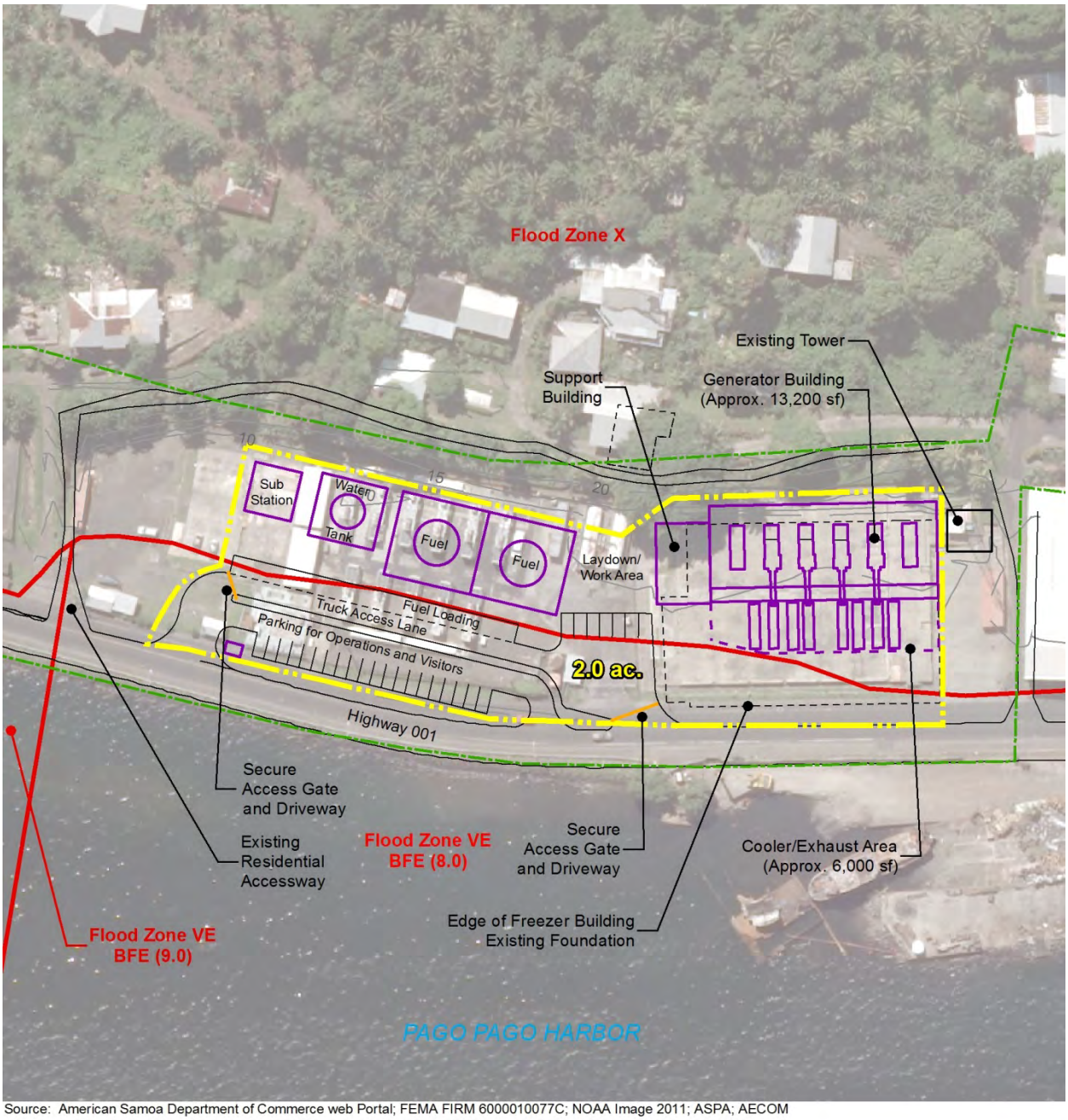
TOFR and ASPA identified several potential alternatives to replace the 23.5 MW of electrical power generation capacity, as described in this section. The alternatives-development effort was complicated by the natural topography of Tutuila, which is typically characterized by very steep mountain ridges surrounded by a very narrow and flat coastal plain. This results in a limited area of level land, much of which has already been developed. Thus, a challenge in developing viable alternatives for the proposed project was the identification of available sites suitable to accommodate the 2-acre proposed replacement power plant facility. However, TOFR and ASPA were able to identify 10 potentially viable preliminary alternatives for consideration.

Five of the 10 alternatives considered were carried forward for review in this EA (Section 3.2). These are Alternative 1: No Action; Alternative 2: Satala Site (ASPA's Preferred Alternative); Alternative 3: Leloaloa Site; Alternative 4: Utulei Site; and Alternative 5: Tafuna Site. The remaining five identified preliminary alternatives were considered but eliminated from further review (Section 3.3). The location of each of the 10 identified preliminary alternatives, including the five that were considered but eliminated and not carried forward for analysis in this document, is shown on the Alternatives Location Map (Figure 3-2).

3.1 Analysis Criteria

During the alternatives-development effort, alternatives were evaluated to determine whether each achieves three key project goals identified by TOFR and ASPA, as listed below. Each goal is supported by objectives that outline important factors to be addressed by each alternative. The alternatives that meet the proposed project's stated purpose and need, as well as achieve the three key project goals, were selected as alternatives to be carried forward for analysis in this EA.

[1] The 2.0-acre concept layout shown in Figure 3-1 is depicted on the Satala site for illustrative purposes only. All sites under consideration would be capable of containing a minimum of 2 acres of level area suitable to accommodate the proposed replacement power plant facilities.



Source: American Samoa Department of Commerce web Portal; FEMA FIRM 6000010077C; NOAA Image 2011; ASPA; AECOM

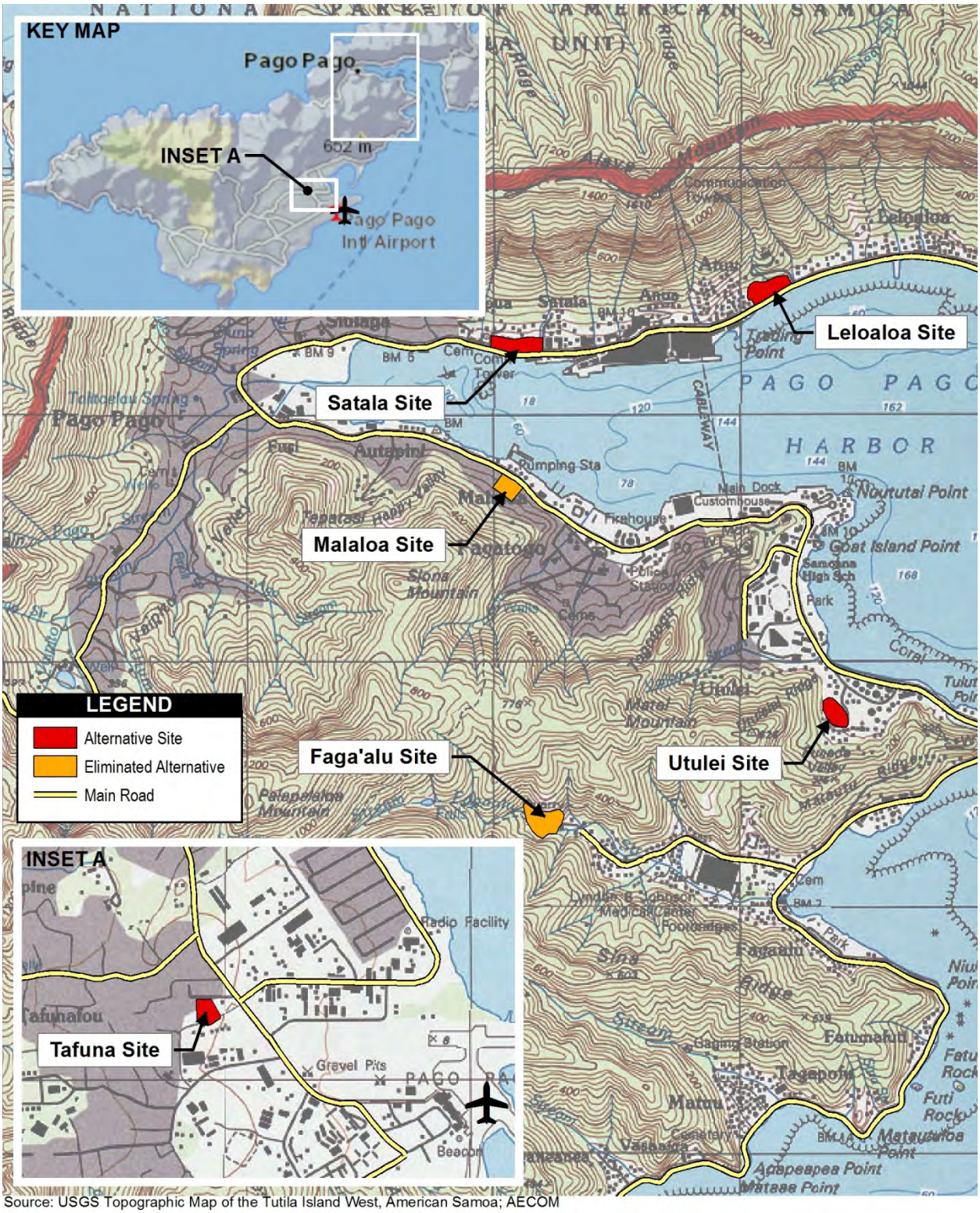
LEGEND

ASPA Ownership Boundary	Existing Foundation
Power Plant Boundary	Site Plan
FIRM Flood Zone Boundary	Access Gate
Proposed Power Plant	Topography

0 120 Feet 240

Scale: 1:1,440; 1 inch = 120 feet

Figure 3-1
Replacement Power Plant Concept Plan



Source: USGS Topographic Map of the Tutila Island West, American Samoa; AECOM

0 2,000 Feet 4,000

Scale: 1:24,000; 1 inch = 2,000 feet

Figure 3-2
Alternatives Location Map

TOFR and ASPA concluded that, to properly accomplish the purpose and meet the need stated in Section 2.0, the proposed project must meet the following three key goals:

1) A power plant facility is needed to replace the functionality, connectivity, and 23.5 MW capacity of the pre-disaster Satala facility.

2) The facility needs to be located on a site with reasonable protection from foreseeable hazards.

3) The process of implementing the proposed project needs to be accomplished in a manner that is both cost effective and time efficient.

The three key goals would be achieved by successfully addressing their supporting objectives, which are detailed below.

The first goal states that the facility needs to have pre-disaster functionality, connectivity, and capacity. The ability to retain the advantages of having dual power generation facilities (at Tafuna and another location) is an important functionality. Previously, Tutuila has been served by two power plants: the Tafuna power plant served the west and was linked to the Satala power plant that served the east. This allowed for the use of smaller diameter and less costly distribution lines extending shorter distances from each power plant to the local service areas. This scenario offers a lower initial cost by using smaller diameter power lines as well as a reduction in long-term operating costs since electrical resistance line loss is minimized, thus increasing line efficiency. The dual power generation facility scenario also provides the essential redundancy to reroute power through a parallel distribution line to critical facilities (e.g., LBJ Tropical Medical Center) in the event of local outages. Also, the proposed facility needs to link directly into the existing eastern electrical distribution grid connection point located at Satala. From this point, distribution lines extend to serve the eastern portion of Tutuila and are linked to the western grid at Tafuna via a high-capacity tie line. Foremost, the facility needs to be located on a generally flat site a minimum of 2 acres in area suitable to accommodate the ASPA power plant program requirements, principal of which is the capacity to generate up to 23.5 MW of power.

To achieve the second goal, the facility location needs to accommodate reasonable protection from foreseeable hazards. Any structure within the facility containing power generation equipment would be required to be located outside of coastal high hazard areas delineated on FEMA Flood Insurance Rate Maps (FIRM) (FEMA 2006), specifically VE Zones. High risk coastal areas with a 1 percent or greater chance of flooding (100-year flood) that are subject to an additional hazard of storm wave action are encompassed by VE and V Zones.

Additionally, the base flood elevation derived from in-depth analysis is indicated at selected intervals in the VE Zones on the FIRM to provide further detail. Additional protection of the replacement power generation facilities from future flooding events may be achieved by hazard mitigation measures (e.g., waterproof doors) to be incorporated as needed into the design of the new facilities.

The third goal would require implementation of the proposed project in both a cost-effective and time-efficient manner. TOFR and ASPA depend on FEMA to help defray a considerable portion of the cost of the proposed project and of operating under Tier 2 measures; however, they are responsible for the remaining cost, which would be covered by limited local funds. Lengthy administrative or regulatory permit processes, or prolonged construction timeframes could exhaust these available local funds; thus, there is an important need to devise a reasonable cost-effective and time-efficient solution for the above-described proposed project. The following major factors would influence the achievement of the most cost-effective and time-efficient solution.

- Locate the facility site outside of significant sensitive biological or cultural resource areas to avoid lengthy permit processing timeframes.
- If the generation capacity of a power plant is increased beyond existing levels or if a power plant is located on a new site, the proposed project would be subject to U.S. Environmental Protection Agency (USEPA) Prevention of Significant Deterioration (PSD) permit review, which would substantially increase the project timeframe.
- Locate the facility near the existing connection point to the eastern electrical distribution grid to reduce the initial cost and installation timeframe as well as preserve long-term operational efficiency of the grid.
- Locate the facility such that dual power generation functional redundancy within the distribution grid is provided while minimizing the cost and installation timeframe to extend or upgrade the tie line to the Tafuna power plant and the western grid.
- Minimize the need for lengthy new, extended, or upgraded underground electrical lines in order to avoid time-consuming disruption and potential damage to existing infrastructure within roadway rights-of-way that would need to be disturbed during construction.
- Locate the facility site close to the main roadway to minimize the length of an access roadway and reduce the cost and time that would be required to acquire, improve, and

widen an access roadway right-of-way, which would potentially involve multiple abutting property owners.

- Minimize site improvement costs by avoiding sites that require extensive grading, cut, excavation, or landslide protection measures; sites atop noncompacted fill soils that would necessitate increased foundation-related construction costs; and sites with contaminated soil that would require lengthy and costly remediation.

- Locate the facility on a site owned or controlled by ASG to avoid the cost and lengthy timeframe likely with potential complications of land acquisition. This is a key factor because the majority of land in American Samoa is communal and subject to *"Fa'amatai,"* the traditional form of governance that is central to the organization of Samoan society. *Fa'amatai* sets the protocols of the *"Fono"* (council) and the *"Matai"* (chief) system. The *Fa'amatai* and the *Fono* take place at all levels of the Samoan body politic, from the family, to the village, to the region, to national matters. The *Matai* and the *Fono* (which is itself made of *Matai*) make the decisions regarding distribution, family exchanges, and tenancy of communal land.

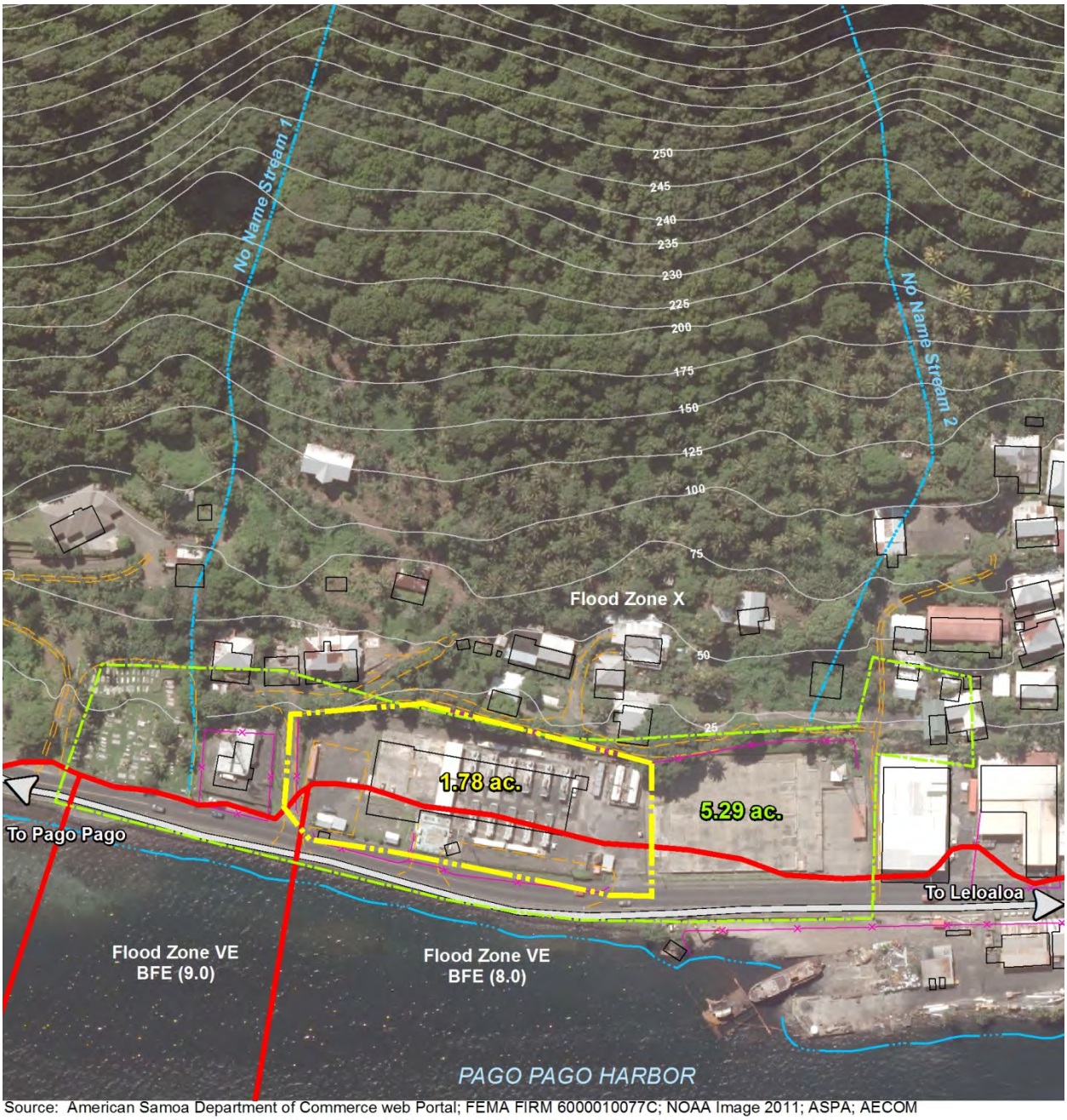
3.2 Alternatives

Based on the stated analysis criteria, ASPA identified five potential alternatives to implement the proposed project, as discussed below. A summary comparison of opportunities and constraints associated with each of the five potential alternatives for the proposed project is detailed in Section 3.2. Preliminary alternatives that were evaluated in the alternatives-development effort but not carried forward for further analysis in this EA are discussed in Section 3.3.

3.2.1 Alternative 1: No Action

A No Action Alternative is required to be included in the environmental analysis and documentation pursuant to CEQ regulations implementing NEPA. The No Action Alternative maintains the status quo with no project and no federal financial assistance. The No Action Alternative is used to evaluate the effects of not providing assistance for the proposal and provides a benchmark against which other alternatives may be evaluated (Figure 3-3).

For the purpose of this EA, under Alternative 1, it is assumed that ASPA would continue in Tier 2, with temporary containerized generators operating on an approximately 1.78-acre portion of the 5.29-acre ASPA property (owned by ASG) containing the site of the former Satala power plant. No new permanent facilities comparable to the functionality and 23.5 MW of power generation capacity of the pre-disaster Satala facility (requiring a minimum of 2 acres) would be constructed due to the lack of federal funding. This power generation would continue to have

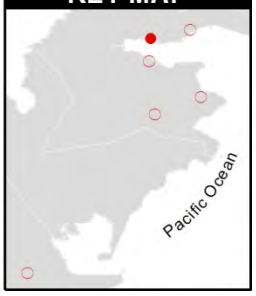


Source: American Samoa Department of Commerce web Portal; FEMA FIRM 6000010077C; NOAA Image 2011; ASPA; AECOM

LEGEND

- No Action Site Boundary
- ASPA Ownership Boundary
- FIRM Flood Zone Boundary
- Contour (25 foot interval)
- Vehicular Access Lane
- Streams
- Building
- Fence
- Shoreline
- Highway 001

KEY MAP



0 200 Feet 400

Scale: 1:2,400; 1 inch = 200 feet

Figure 3-3
Alternative 1: No Action

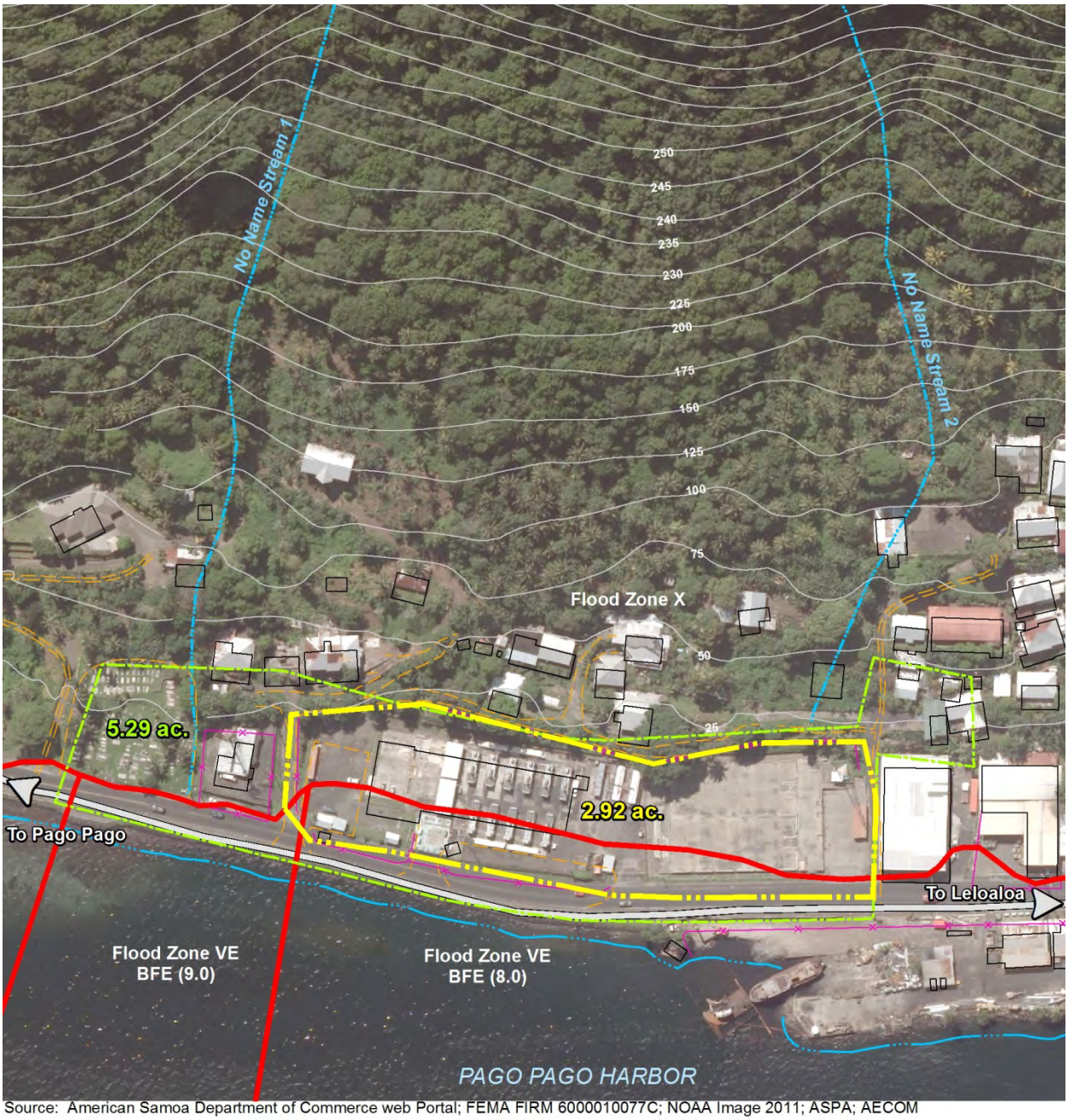
higher maintenance costs, less reliability, longer service downtimes, and higher emissions levels compared to a permanent replacement facility. The configuration of the existing Tier 2 temporary generators on the Satala site is visible on the aerial photograph base map for Alternative 1 in Figure 3-3.

Alternative 1: View east to existing Tier 2 generators that would remain in use with the No Action Alternative on the Satala site.

3.2.2 Alternative 2: Satala Site (ASPA's Preferred Alternative)

Alternative 2 would entail the construction of a 23.5 MW replacement power plant at the site of the Satala power plant destroyed by the 2009 tsunami. This site is referred to throughout this EA as the Satala site (Figure 3-4). The Satala site is located in an industrial area on the northern edge of Pago Pago Harbor. The proposed facility would be constructed on an approximately 2.92-acre portion of the 5.29-acre ASPA property (owned by ASG) containing the site of the former Satala power plant.

The pre-disaster power plant was located on the western portion of the site. A warehouse leased by ASG to a tuna cannery was located on the eastern side of the site. That lease expired in 2009 and the warehouse was subsequently demolished. Concrete foundations and other

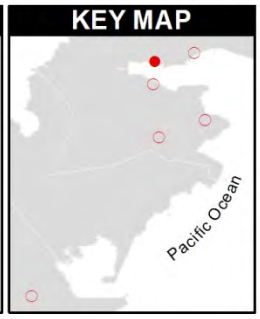


Source: American Samoa Department of Commerce web Portal; FEMA FIRM 6000010077C; NOAA Image 2011; ASPA; AECOM

LEGEND

- No Action Site Boundary
- ASPA Ownership Boundary
- FIRM Flood Zone Boundary
- Contour (25 foot interval)
- Vehicular Access Lane
- Streams
- Building
- Fence
- Shoreline
- Highway 001

KEY MAP



0 200 Feet 400

Scale: 1:2,400; 1 inch = 200 feet

Figure 3-4
Alternative 2: Satala Site

remnants of these former uses remain on the site. The site currently features the Tier 2 temporary containerized generators and other temporary structures supporting that use.

This site would allow the replacement facility to directly connect to the existing power distribution infrastructure that links the Satala site with the power generation facilities in Tafuna. Alternative 2 would not require construction of a new substation, nor would it require new or upgraded distribution lines (also referred to as tie lines) or distribution lines.

In Alternative 2, the power generation facility and critical infrastructure would be constructed on the eastern and northern portions of the site, which are at a higher elevation and outside of the VE Zone. Construction would require extending the existing warehouse foundation toward the north, into a partially disturbed area. Any infrastructure requiring protection from flood hazards would be sited outside of Zone VE. Only noncritical features such as parking, driveways, and access lanes would be sited in Zone VE. Figure 3-4 shows the relationship of the proposed construction area to the limits of Zone VE and Zone X. Zone X on the FIRM encompasses areas that are outside the limits of the 500-year floodplain.

Alternative 2: View southwest shows warehouse foundation on eastern portion of Satala site with Tier 2 generators (to be removed) on foundation of disaster-destroyed power plant (far background).

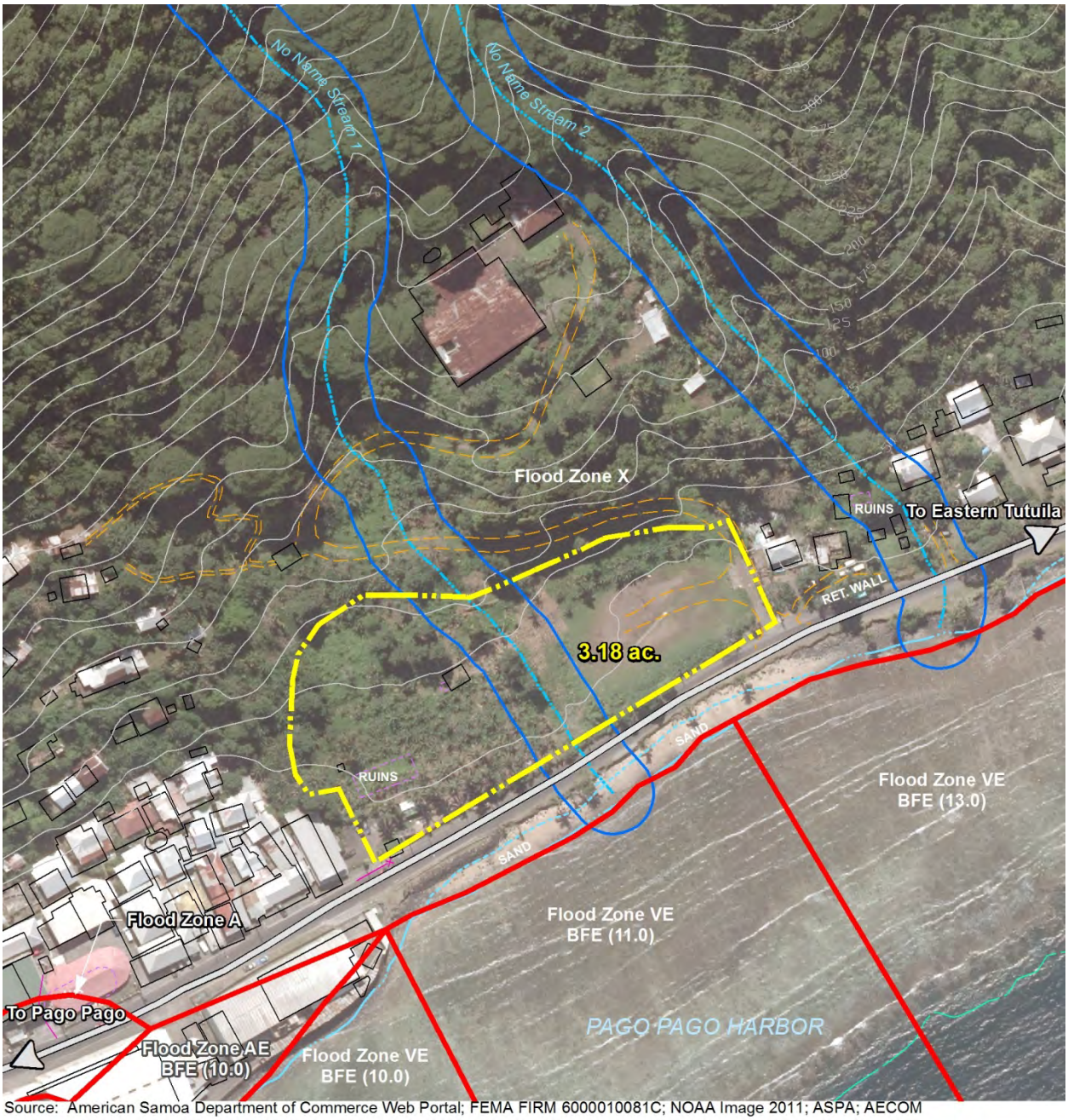
Alternative 2 has the benefit of directly tying into the existing power distribution network at the point of connection remaining from the pre-disaster Satala power plant. Also connecting at this point is a distribution line that forms a redundant loop in the power distribution network to ensure an uninterrupted supply of power to the LBJ Medical Center, a critical facility since it is the only hospital on the island. Unlike other alternative sites for the proposed project that would require the construction of an additional underground distribution line to connect to this line and preserve the critical facility redundant power supply, Alternative 2 would not entail extensive in-road work to install an underground distribution line.

This alternative was determined to meet the project goals outlined in Section 3.1 of this document; thus, it was carried forward for analysis in this EA. In addition, it is the only alternative to meet all the supporting objectives of the three project goals; thus, ASPA determined it is the Preferred Alternative.

3.2.3 Alternative 3: Leloaloa Site

This would entail the construction of a 23.5 MW power plant on a minimum 2-acre portion of a 3.18-acre site on the northern edge of Pago Pago Harbor, approximately 0.7 mile east of the Satala site, referred to throughout this EA as the Leloaloa site (Figure 3-5). The Leloaloa site

Alternative 3: View southeast from hillside above shows eastern portion of Leloaloa site.

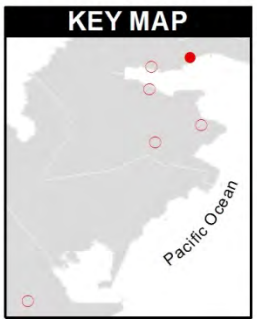


Source: American Samoa Department of Commerce Web Portal; FEMA FIRM 6000010081C; NOAA Image 2011; ASPA; AECOM

LEGEND

- Leloaloa Site Boundary
- FIRM Flood Zone Boundary
- 50 Foot Stream Buffer
- Streams
- Contour (25 foot interval)
- Vehicular Access Lane
- Building
- Fence
- Shoreline
- Stream
- Highway 001

KEY MAP



0 200 Feet 400

Scale: 1:2,400; 1 inch = 200 feet

Figure 3-5
Alternative 3: Leloaloa Site

is the former location of a parochial school that closed sometime before 1989. None of the original buildings are still standing, though some foundation remnants and abandoned infrastructure fragments remain. The eastern portion of the site has been graded into a large level terrace and is covered in nonnative grasses, while the western portion of the site transitions into a sloping informal taro and banana plantation on and around small terraces at the school building foundations. The Leloaloa site is not government owned, so building the replacement facility on this site would require land acquisition by ASPA. Additionally, much of the site consists of undocumented fill that would need to be compacted to support structures prior to installing the facility's foundation. The site is located outside the VE Zone.

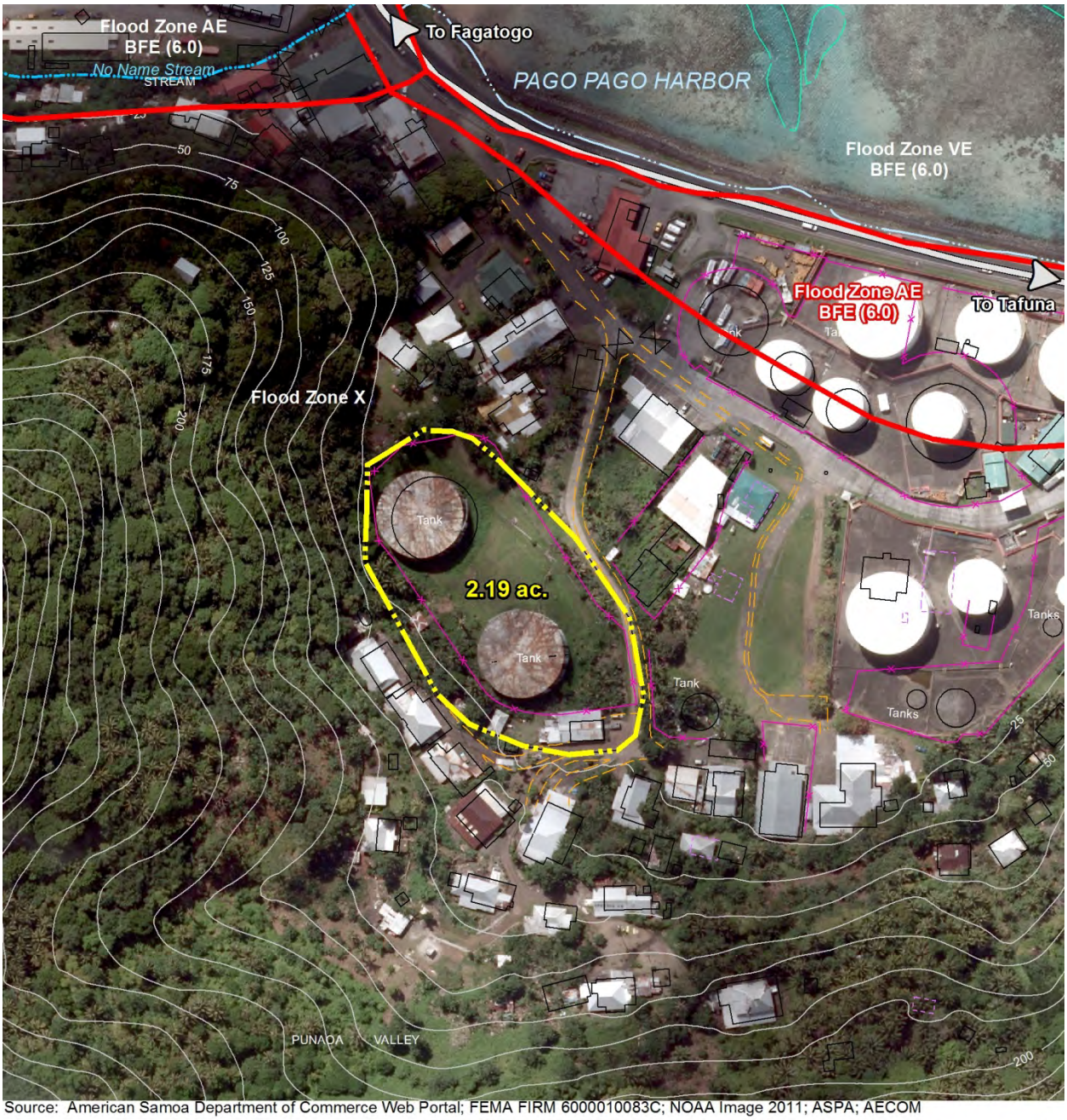
Alternative 3 would require construction of a new substation at the Satala site in order to effectively transmit the energy produced by the proposed facility to the existing distribution network. This would also require installation of a new distribution line between Leloaloa and Satala to make this connection. The distribution line would be relatively short, at approximately 0.7 mile in length, and constructed underground within the existing Highway 1 right-of-way that runs along the edge of Pago Pago Harbor.

Alternative 3 was identified as generally meeting all the goals identified in Section 3.1; thus, Alternative 3 was carried forward for analysis in this EA.

3.2.4 Alternative 4: Utulei Site

Alternative 4 would entail construction of a 23.5 MW power plant facility on 2.19 acres in an industrial area in Utulei, approximately 0.5 mile south of Pago Pago Harbor, referred to in this EA as the Utulei site (Figure 3-6). The site currently contains two abandoned 100-foot-diameter aboveground petroleum storage tanks within a containment berm, all of which would be removed as part of Alternative 4. There is some evidence of leakage and the soil is possibly contaminated, which would require soil remediation prior to constructing the proposed facility. The site is mainly vegetated with turf grass with a variety of nonnative trees at the perimeter. This site is on a slope bench that would require some grading and may complicate access to the site. The site is also adjacent to existing residences, and access to the site is limited. Access improvements may require land acquisition that would affect existing residences. The site is away from the coast and outside the VE Zone.

Similar to Alternative 3, Alternative 4 would require construction of a new substation at the Satala site in order to transmit the energy produced by the proposed facility to the existing power distribution network. This would also require installation of a new distribution line between Utulei and Satala to make this connection. The distribution line would be longer than in Alternative 3, at approximately 2.9 miles in length, and would be constructed underground

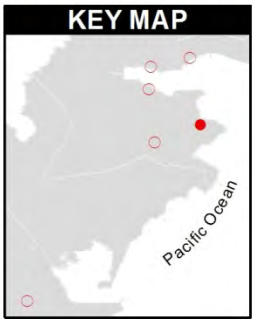


Source: American Samoa Department of Commerce Web Portal; FEMA FIRM 6000010083C; NOAA Image 2011; ASPA; AECOM

LEGEND

- Utulei Site Boundary
- FIRM Flood Zone Boundary
- Highway 001
- Contour (25 foot interval)
- Vehicular Access Lane
- Building
- Shoreline
- Fence
- Reef
- Sandtraps
- Stream

KEY MAP



0 200 Feet 400

Scale: 1:2,400; 1 inch = 200 feet

Figure 3-6
Alternative 4: Utulei Site

Alternative 4: View south to fuel storage tank on Utulei site with adjacent residence on hillside (background).

within the existing Highway 1 right-of-way that runs along the edge of Pago Pago Harbor. Alternative 4 would require removal of two aboveground petroleum storage tanks and possible soil remediation due to contaminated soil. Any required soil remediation would add to project cost and timeframe. Additionally, land acquisition of adjacent parcels to provide adequate access may be required for the Utulei site, substantially increasing cost and project timeframe. Alternative 4 was identified as generally meeting all the goals identified in Section 3.1; thus, Alternative 4 was carried forward for analysis in this EA.

3.2.5 Alternative 5: Tafuna Site

Alternative 5 would entail the construction a 23.5 MW power plant facility on a 2.16-acre portion of the existing 13-acre ASPA Tafuna power plant property, which is located approximately 4 miles southwest of Pago Pago Harbor (Figure 3-7). The Tafuna power plant provides electricity to western areas of Tutuila and backup power to eastern areas as needed. While some operational efficiency would be realized by expanding capacity at Tafuna, Alternative 5 would construct a separate power plant adjacent to the existing facility. ASPA currently uses the proposed 2.2-acre Tafuna site as an open laydown and temporary storage area, with a building used for vehicle repair located along the site's northern edge. Alternative 5 would require relocation of these existing uses on the ASPA-owned property and may require realignment of vehicular circulation patterns. The site is away from the coast and outside the FIRM VE Zone.

Source: American Samoa Department of Commerce Web Portal; NOAA Image 2011; ASPA; AECOM

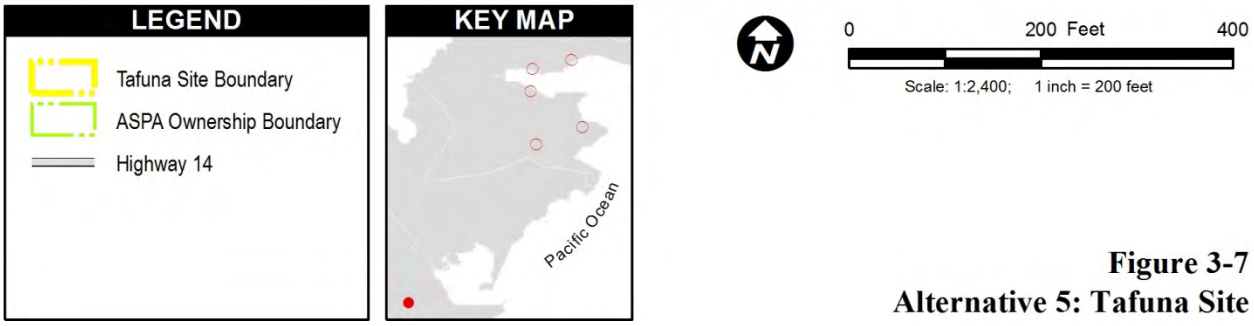


Figure 3-7
Alternative 5: Tafuna Site

Similar to Alternative 3 and Alternative 4, constructing the replacement facility at the Tafuna site would require a new substation at the Satala site to connect the energy produced by the proposed facility with the existing power distribution network. This would also require an upgrade of the existing 9.3-mile distribution line that runs within the Highway 1 right-of-way between Tafuna and Satala, resulting in a substantial amount of in-road construction and traffic disruption. Whereas the other alternatives would enable usage of an existing redundant distribution line that serves the LBJ Medical Center, Alternative 5 would require installation of a 6.2-mile feeder line to connect to this distribution line and provide redundant service to this critical facility, which would further increase the amount of in-road construction.

Alternative 5: View north of existing power plant at Tafuna site. Proposed project would be a similar facility constructed at the center of the ASPA compound.

The Tafuna site also is located far from the major industrial power customers that are currently served by electrical power generated from the Satala site, making it less efficient to serve these customers. Sending power generated at Tafuna to the new substation at Satala for distribution would result in a reduction in long-term efficiency, as the strength of electrical current diminishes with the distance it travels over a distribution line. Therefore, Alternative 5 would require more diesel fuel to produce the same amount of usable power than the other alternatives.

Alternative 5 was identified as generally meeting all the goals identified in Section 3.1; thus, Alternative 5 was carried forward for analysis in this EA.

3.2.6 Alternatives Summary

A summary comparison of the major constraints identified by ASPA that would affect the ability of each respective alternative to achieve the project goals is provided in Table 3-1. These potential constraints include capability to reliably generate 23.5 MW of power, construction feasibility, cost effectiveness, and time efficiency that would be associated with the implementation of each of the five potential alternatives for the proposed project. For each of the five alternatives, the constraints are graded as “high,” “medium,” or “low,” with “high” being the greatest level of potential constraint.

Table 3-1 Alternatives Summary

Extent of Constraint	Alternative 1 No Action	Alternative 2 Satala Site	Alternative 3 Leloaloa Site	Alternative 4 Utulei Site	Alternative 5 Tafuna Site
Capacity to generate 23.5 MW	HIGH	LOW	LOW	LOW	LOW
Vulnerability to system disruption	HIGH	LOW	LOW	LOW	LOW
Difficulty of land acquisition	LOW	LOW	HIGH	LOW	LOW
Construction/upgrade of electricity distribution line under Highway 1	LOW (n/a)	LOW (n/a)	MEDIUM (0.7 mile)	MEDIUM (2.9 miles)	HIGH (9.3 miles)
Construction of substation	LOW	LOW	HIGH	HIGH	HIGH
Foundation, grading, and access improvements	LOW	MEDIUM	HIGH	HIGH	LOW
Adjacent to residential development	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM

3.3 Alternatives Considered but Not Carried Forward

In addition to the alternatives currently under review by ASPA, five other alternatives for the replacement of the 23.5 MW of power generation capacity were considered during the initial planning process, but were deemed infeasible or in conflict with the evaluation criteria and were eliminated from further review in this EA (Figure 3-2).

Two of these alternatives proposed splitting the 23.5 MW of generation capacity between an expansion of capacity at the Tafuna power plant and construction of partial capacity at the Satala site or the Leloaloa site. Two other eliminated alternatives proposed constructing the full 23.5 MW of power generation capacity on a single site, the Malaloa site or the Faga'alu site. The fifth alternative to be eliminated was to replace the 23.5 MW of power generation capacity with renewable energy sources on multiple undetermined sites.

3.3.1 Eliminated Alternative A: Tafuna Expansion (12.5 MW) and Satala Site (11 MW)

This alternative would have split the replacement 23.5 MW of power generation capacity between the construction of a 12.5 MW expansion at the existing Tafuna power plant and construction of a smaller 11 MW facility at the Satala site (Figure 3-8).

While some operational efficiency would have been realized by expanding capacity at Tafuna, this alternative would have been inefficient because it would have required construction, operation, and staffing of two separate power plants. This would have substantially increased construction and ongoing operational costs. Another disincentive was the need to upgrade the existing high-capacity tie line between Tafuna and Satala to handle the increased electrical load. These critical issues led to the rejection of this alternative, and it is not considered in this EA.

3.3.2 Eliminated Alternative B: Tafuna Expansion (10.5 MW) and Leloaloa Site (13 MW)

This alternative would have split the replacement 23.5 MW of power generation capacity between the construction of a 10.5 MW expansion at the existing Tafuna power plant and construction of a smaller 13 MW facility at the Leloaloa site (Figure 3-9).

Similar to the rejected alternative described in Section 3.3.1, this alternative would have entailed construction and ongoing operation of two separate power plants, resulting in increased costs. As identified for Alternative 3 in Section 3.2.3, building a project on the Leloaloa site would require land acquisition by ASPA, as well as recompaction of undocumented fill in order to create an adequate foundation for the proposed facility. This alternative also would have required an upgrade and extension of the high-capacity tie line between Tafuna and Satala to

Source: American Samoa Department of Commerce Web Portal; GeoEye 01/01/2001; bing; ASPA; AECOM

0 3,500 Feet 7,000

Scale: 1:42,000; 1 inch = 3,500 feet

LEGEND

- Alternative Site
- Eliminated Alternative Site
- Dual Generation Alternative Site
- Upgraded Underground Electrical Power Tie-Line

Figure 3-8
Eliminated Alternative A:
Tafuna Expansion and Satala Site

Source: American Samoa Department of Commerce Web Portal; GeoEye 01/01/2001; bing; ASPA; AECOM

0 3,500 Feet 7,000

Scale: 1:42,000; 1 inch = 3,500 feet

LEGEND

- Alternative Site
- Eliminated Alternative Site
- Dual Generation Alternative Site
- Upgraded Underground Electrical Power Tie-Line

Figure 3-9
Eliminated Alternative B:
Tafuna Expansion and Leloaloa Site

carry the power from Leloaloa. These critical issues led to the rejection of this alternative, and it is not considered in this EA.

3.3.3 Eliminated Alternative C: Malaloa Site

This alternative would have replaced the 23.5 MW of power generation capacity by constructing a 23.5 MW power plant at a site on the southern edge of Pago Pago Harbor in Malaloa (Figure 3-10). The site is the former location of a U.S. Naval hospital built in 1912, and many foundation remnants still exist on the site, though none of the original structures are still standing.

This site is not optimal because it sits on a considerable slope that would require extensive grading. Constructing the facility there also would require acquisition of the site by ASPA and displacement of existing residential dwellings, which would substantially increase costs, complicate access, and increase project timeframe. A new substation at Satala would need to be constructed, and approximately 1.5 miles of tie line would need to be installed between the Malaloa site and this new substation. These critical issues led to the rejection of this alternative, and it is not considered in this EA.

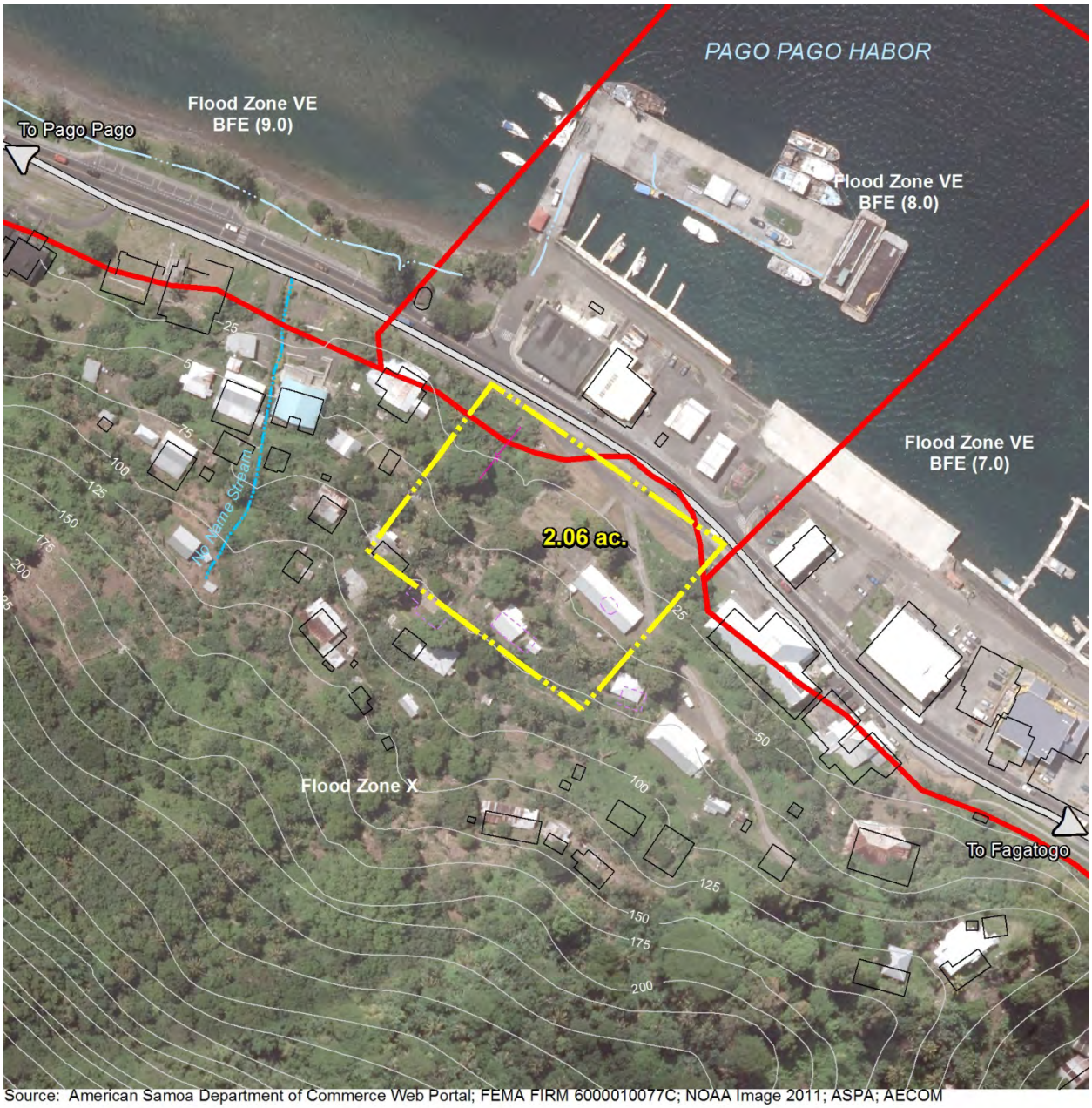
3.3.4 Eliminated Alternative D: Faga'alu Site

This alternative would have replaced the 23.5 MW of power generation capacity by constructing a 23.5 MW power plant facility at a rock quarry site in Faga'alu, located inland approximately 0.75 mile south of Pago Pago Harbor (Figure 3-11). This site is currently an active commercial quarry and would have required acquisition by ASPA. It directly abuts a stream, which would have resulted in complicated permitting issues and ongoing flood risks.

Access to the site is via a long narrow residential lane that would need to be improved and widened, which in turn would have displaced multiple adjacent residential properties and increased costs and project timeframe. Finally, this alternative would require a new substation at the Satala site and a 4.5-mile tie line connecting the Faga'alu site to the new substation for connection to the eastern Tutuila grid. These critical issues led to the rejection of this alternative, and it is not considered in this EA.

3.3.5 Eliminated Alternative E: Renewable Resources Power Generation (Multiple Sites)

The concept of replacing the entire 23.5 MW of power generation capacity with renewable energy sources through the use of solar panels, wind turbines, and/or tidal energy generation facilities at various locations on Tutuila or in in the coastal waters was deemed infeasible and not carried forward for consideration in this EA. To date, American Samoa has been almost totally reliant on conventional combustion of diesel fuel for power generation. American Samoa is dependent on the expensive system of delivery of diesel fuel via ships. While considerably



Source: American Samoa Department of Commerce Web Portal; FEMA FIRM 6000010077C; NOAA Image 2011; ASPA; AECOM

0 200 Feet 400

Scale: 1:2,400; 1 inch = 200 feet

LEGEND

- Malaloa Site Boundary
- FIRM Flood Zone Boundary
- Highway 001
- Contour (25 ft Interval)
- Building
- Shoreline
- Fence
- Sandtraps
- Stream

KEY MAP

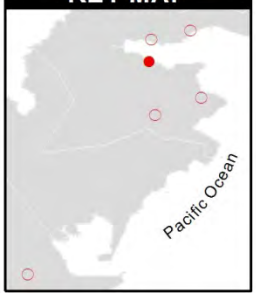
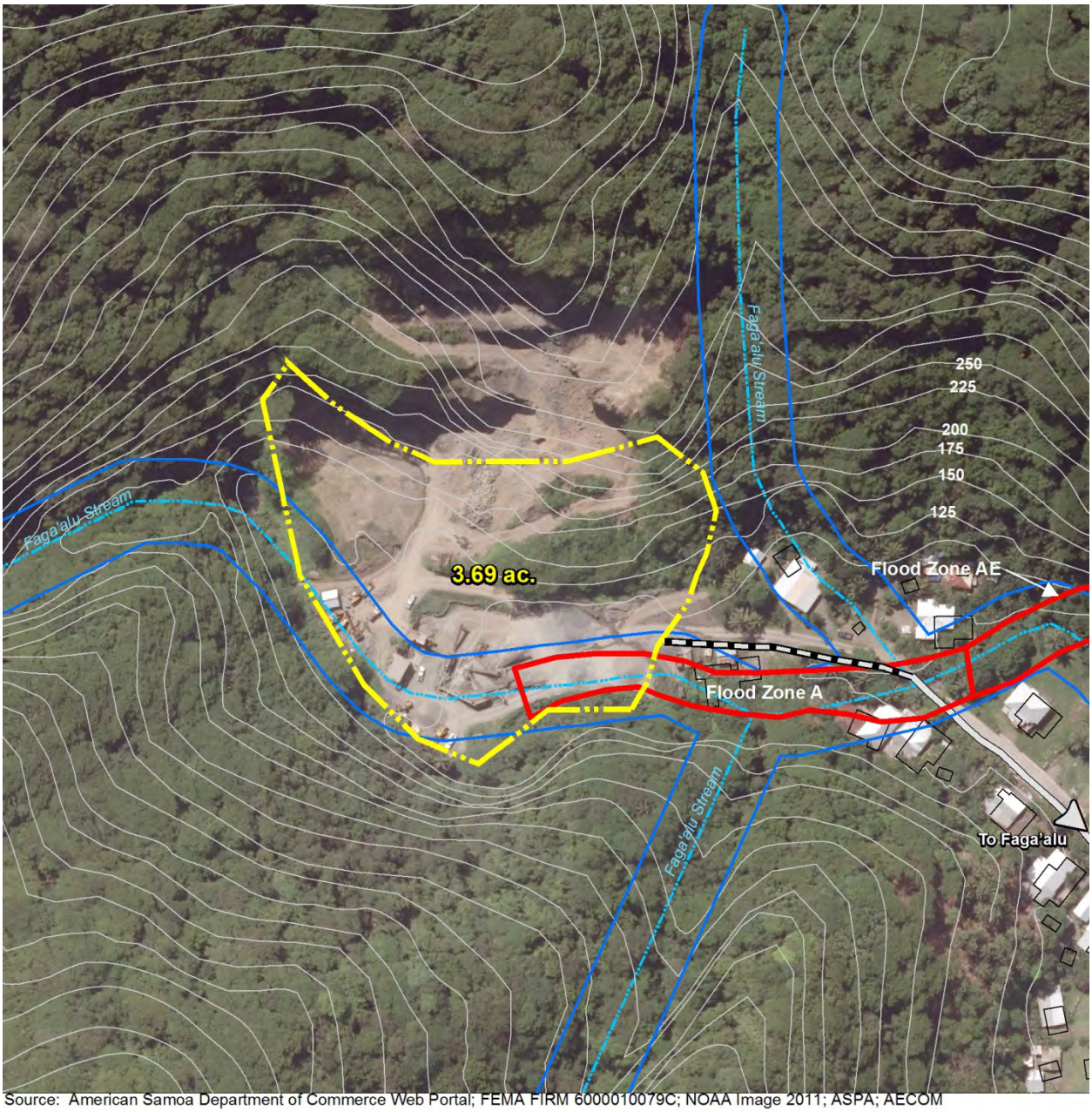


Fig 3-10
Eliminated Alternative C:
Malaloa Site

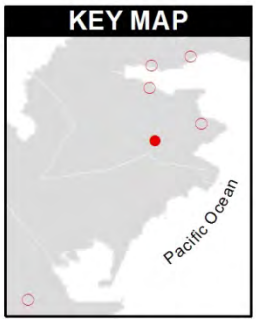


Source: American Samoa Department of Commerce Web Portal; FEMA FIRM 6000010079C; NOAA Image 2011; ASPA; AECOM

LEGEND

- Faga'alu Site Boundary
- FIRM Flood Zone Boundary
- Stream 50 feet Buffer
- Contour (25 foot interval)
- Building
- Stream
- Local Road
- Dirt Road

KEY MAP



0 200 Feet 400

Scale: 1:2,400; 1 inch = 200 feet

Figure 3-11
Eliminated Alternative D:
Faga'alu Site

reducing or eliminating this dependence is a logical long-term goal, current technology and economic conditions preclude the feasibility of such large-scale generation of power though renewable energy resources. This is due to the logistical constraints inherent in the territory's remote location, the intermittent nature of renewable energy generation capacity, and the considerable land acquisition and cost challenges that would be associated with generating comparable quantities of energy from renewable resources. Therefore, the alternatives under consideration in this EA all propose replacement of the power generation capacity through the construction of a plant that is powered by diesel generators.

4.0 Affected Environment, Impacts, and Mitigation

The assessment of the alternatives is detailed below through the description of existing conditions in each of the four alternative project sites, discussions of each alternative, including the potential of each to result in direct and indirect effects on the environment, and, if necessary, a description of mitigation measures or best management practices (BMPs) that would be effectively implemented, enforced, and monitored to avoid or minimize these effects. The assessment pursuant to NEPA (42 U.S.C. 4321 et seq.) is focused on the environmental resources for which some level of effect may result: air quality and greenhouse gas emissions, biological resources, cultural resources, geology and soils, seismicity, coastal resources, noise, flood hazards, water quality, land use and planning, traffic, public health and safety, visual resources, utilities, and environmental justice.

4.1 Air Quality and Greenhouse Gas Emissions

The Federal Clean Air Act (CAA) of 1970 was enacted to regulate air emissions from area, stationary, and mobile sources. The CAA authorized USEPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The major pollutants of concern, or "criteria pollutants," are identified by USEPA: carbon monoxide (CO); lead (Pb); nitrogen dioxide (NO_2); ozone (O_3); sulfur dioxide (SO_2); and particulate matter (PM), which is subdivided as matter less than 10 micrometers (PM_{10}) and matter less than 2.5 micrometers ($PM_{2.5}$). The NAAQS represent the allowable concentrations for these pollutants (Table 4-1).

Specific geographic areas or air basins are designated by USEPA as either "attainment" or "nonattainment" for NAAQS standards of each criteria pollutant, based on air quality monitoring data submitted to USEPA and the number of days in which standards were exceeded. The CAA requires each state or territory to develop a State Implementation Plan (SIP) for areas in nonattainment of NAAQS. Pursuant to current USEPA listings, American Samoa is in attainment or is unclassified of all criteria pollutant NAAQS and, as a result, is not required to have an SIP in place for any criteria pollutant (USEPA 2012).

The CAA requires USEPA to promulgate rules to ensure that federal actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans, including SIPs. These rules, known as the General Conformity

Table 4-1 National Ambient Air Quality Standards

Pollutant		Averaging Time	Primary Standard	Secondary Standard	Form of Standard
Ozone[1]		8 hours	0.075 ppm (147 µg/m^3)	Same as primary	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter (PM)	(PM_{10})	24 hours	150 µg/m^3	Same as primary	98th percentile, averaged over 3 years
	($PM_{2.5}$)	24 hours	35 µg/m^3	Same as primary	Annual mean, averaged over 3 years
		Annual	12 µg/m^3	15 µg/m^3	Annual mean, averaged over 3 years
Carbon monoxide		8 hours	9 ppm (10 mg/m^3)	None	Not to be exceeded more than once per year
		1 hour	35 ppm (40 mg/m^3)		
Nitrogen Dioxide		Annual	0.053 ppm (100 µg/m^3)	Same as primary	Annual Mean
		1 hour	0.100 ppm (188 µg/m^3)	None	98th percentile, averaged over 3 years
Sulfur Dioxide		3 hours	–	0.5 ppm (1,300 µg/m^3)	Not to be exceeded more than once per year
		1 hour	0.075 ppm (196 µg/m^3)	–	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Lead[2]		Calendar quarter	1.5 µg/m^3 (for certain areas)	Same as primary	Not to be exceeded

pm = parts per million; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

Source: USEPA 2012.

Notes: [1] Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

[2] Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Rule (GCR) (40 CFR Parts 51.850–51.860 and 93.150-93.160), require any federal agency that is responsible for an action in a federal nonattainment or maintenance area to demonstrate conformity to the applicable SIP, either by determining that the action is exempt from the GCR requirements or by making a formal conformity determination. As stated above, American Samoa is currently in attainment or unclassified of all NAAQS; therefore, conformity determination requirements currently do not apply to projects in American Samoa.

In addition to criteria air pollutants of direct concern for human health, other air emissions are emitted as a result of natural processes and human activities, including greenhouse gases

(GHGs), which trap heat in the atmosphere. The most common GHGs emitted due to humans include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

Scientific evidence indicates a trend of increasing global temperatures (i.e., global warming) over the past century due to an increase in global GHG emissions. Climate change associated with global warming is predicted to produce negative environmental, economic, and social consequences across the globe. Recent observed changes include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (IPCC 2007). Predictions of long-term negative environmental impacts include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack.

EO 10A-2007 was issued by the Governor of American Samoa to address the issue of climate change in the territory. EO 10A-2007 identified the significant repercussions of global warming and climate change to American Samoa, including loss of land mass and shoreline from sea level rise, increased food cost and dependence on off-island food sources, potential need for population relocation and the resulting loss of spiritual connection, and loss of coral reefs and the resulting increase in mortality and economic loss from lack of reef protection.

In 2009, USEPA issued a rule requiring high-emitting stationary sources to report emissions. The threshold considered “high-emitting” is 25,000 metric tons or more of CO_2 equivalent emissions per year. In 2010, CEQ issued a draft guidance document regarding the addition of GHG analysis in NEPA documents. The guidance does not include a threshold but states that projects emitting 25,000 metric tons or more of CO_2 equivalent per year may warrant additional analysis of GHGs (CEQ 2010). In addition to USEPA regulations, American Samoa Environmental Protection Agency (ASEPA) regulations would apply to the proposed project.

Comments received during the public review period for the Draft EA indicated concern for localized air quality under existing conditions due to emissions from the temporary generators at the Satala site, as perceived by residents of the community north of the facility. The letters express concern for air pollutant emissions, elevated air temperatures, and odors due to operation of the temporary generators.

For purposes of this environmental review, this section addresses the issues of odors and localized air temperature elevation, in addition to the issues of criteria pollutants and GHG emissions.

4.1.1 Alternative 1: No Action

Alternative 1 would result in ongoing air pollutant emissions from operation of the temporary containerized generators currently in place at the Satala site. Localized air quality conditions perceived by residents of the community north of the facility would persist under Alternative 1. The primary emissions would be nitrogen oxides (NO_X), sulfur oxides (SO_X), CO, reactive organic gases (ROG), $PM_{2.5}$, and PM_{10} due to diesel combustion. These temporary generators are not as efficient as the permanent generators that would be installed as part of the proposed project, which would feature new and state-of-the-art equipment designed to minimize emissions. Therefore, the No Action Alternative would continue to emit air pollutants at higher concentrations than the proposed project. Alternative 1 would not result in construction-related emissions because no site improvements would occur.

4.1.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail construction activity at the Satala site, resulting in temporary emissions of such pollutants as fugitive dust emissions (PM_{10} and $PM_{2.5}$) from earth movement (grading) activities, and exhaust emissions (NO_X, SO_X, CO, ROG, $PM_{2.5}$, and PM_{10}) from construction equipment and vehicles. Due to the small scale of the proposed construction, pollutant emissions would not be of a concentration that would create health concerns or affect air quality. To minimize temporary air quality effects, ASPA would require contractors to employ the following BMPs to limit emissions, fugitive dust, and exhaust:

- maintain and cover spoils piles,
- cover the load of haul vehicles containing fill or cut,
- keep construction equipment properly tuned, and
- place a limitation on idling time for construction vehicles.

Operation of the proposed facilities would produce air pollutant emissions. However, these operational emissions would be less than under existing conditions, as the proposed power plant would feature larger stationary state-of-the-art generators with emissions-reducing technology, resulting in both greater fuel efficiency and lesser emissions than are produced by smaller temporary containerized generators. The current industry standard technology enhances the control of emissions by optimizing the combustion temperature and improving combustion efficiency of the generator. Preliminary estimates by ASPA indicate that the replacement plant would be approximately 20 percent more efficient than the temporary generators that are currently operating on the site (AECOM 2011). Comments received during the public review period indicated concern from a neighboring resident that, while Alternative 2

would improve localized air quality conditions compared to Alternative 1, the improvement would not completely eliminate these issues and the facility would continue to emit air pollutants, elevate air temperatures, and produce odors that would be perceived by local residents.

Because of the improvement in air quality conditions compared to Alternative 1, Alternative 2 would not result in a considerable adverse effect with respect to pollutant emissions and would have a net beneficial effect with respect to air quality for purposes of this EA.

It should also be noted that the permanent replacement generators would emit less pollutants than the pre-disaster Satala power plant, which had older generators that were not as efficient or did not control emissions as well as the proposed current technology generators. USEPA has indicated that, based on the likely reduction in pollutant emissions of the replacement generators versus the pre-disaster generators, the fact that the proposed replacement facility is located within the same parcel as the pre-disaster facility, and the fact that the proposed replacement facility would not increase power generation capacity beyond the pre-disaster 23.5 MW capacity, the proposed replacement plant would likely be exempt from a PSD permit. To achieve this exemption, Alternative 2 would require preparation of a net-emissions analysis, comparing emissions data from the pre-disaster power plant to estimated emissions from the proposed replacement plant (AECOM 2011).

4.1.3 Alternative 3: Leloaloa Site

Temporary and permanent pollutant emissions under Alternative 3 would be similar to those under Alternative 2. With respect to construction, Alternative 3 would result in a slightly greater amount of temporary emissions due to more extensive site grading and soil compaction, the additional effort required to build proposed substation at Satala required to boost power received from Leloaloa, and the installation of the tie line between the replacement plant and the new substation. This increase in temporary construction emissions would be minimal. Alternative 3 would be required to implement the same construction measures stated above for Alternative 2 to ensure temporary emissions are reduced to the greatest extent feasible.

Similar to Alternative 2, the replacement plant under Alternative 3 would result in a net beneficial effect on air quality due to the increased efficiency and emissions-reducing technology of the replacement generators compared to ongoing operation of the temporary generators under Alternative 1. Alternative 3 also has the added benefit of siting the replacement plant farther from existing residences than under Alternative 2, resulting in fewer immediately adjacent receivers of the plant's emissions. Nonetheless, localized impacts from air pollutants, elevated air temperatures, and odors would affect residents in the immediate vicinity of the Leloaloa site in the same manner as discussed for Alternatives 1 and 2.

Alternative 3 would not result in adverse air quality effects because it would represent a substantial reduction in emissions when compared to operation of the temporary generators under existing conditions. It should also be noted that the permanent replacement generators would emit less pollutants than the pre-disaster Satala power plant, which had older generators that were not as efficient or did not control emissions as well as the proposed current technology generators. Because it entails operating the replacement power plant at a new location outside the parcel boundary of the pre-disaster power plant, Alternative 3 would be required to obtain a PSD permit from USEPA, which would entail a quantified emissions analysis comparing the proposed facility emissions to those of the pre-disaster facility, and could be subject to additional conditions.

4.1.4 Alternative 4: Utulei Site

Temporary and permanent pollutant emissions under Alternative 4 would be similar to those stated above for Alternative 2 and Alternative 3, though construction emissions would be slightly higher due to the larger construction effort. Increased construction emissions would result from the greater amount of grading required to form a level pad for the power plant building foundations, from construction of the proposed substation at Satala, and from construction over a longer distance of the proposed tie line between the replacement plant at the Utulei site and the proposed substation at Satala required to boost power received from Utulei. This increase in temporary construction emissions would be minimal. Alternative 4 would be required to implement the same construction measures stated above for Alternative 2 to ensure their temporary emissions are reduced to the greatest extent feasible.

Similar to Alternative 2 and Alternative 3, the replacement plant under Alternative 4 would result in a net beneficial effect on air quality due to the increased efficiency and emissions-reducing technology of the replacement generators compared to ongoing operation of the temporary generators under Alternative 1. Alternative 4 would construct the replacement plant near residences located to the southwest, south, and southeast; more residences are within the immediate vicinity of the Utulei site than the Satala site. Because the Utulei site currently has no emissions generators, operating the replacement plant there would represent a new source of air pollutants, increased air temperatures, and odors adjacent to sensitive receptors, causing effects to residents in the immediate vicinity of the Utulei site in the same manner as discussed for Alternatives 1 and 2 at the Satala site. If Alternative 4 is selected, additional investigation of localized emissions from the power plant and their effect on sensitive receptors, and potential mitigation measures would be required.

Alternative 4 would not result in adverse air quality effects because it would represent a substantial reduction in emissions when compared to operation of the temporary generators

under existing conditions. It should also be noted that the permanent replacement generators would emit less pollutants than the pre-disaster Satala power plant, which had older generators that were not as efficient or did not control emissions as well as the proposed current technology generators. Because it entails operating the replacement power plant at a new location outside the parcel boundary of the pre-disaster power plant, Alternative 4 would be required to obtain a PSD permit from USEPA, which would entail a quantified emissions analysis comparing the proposed facility emissions to those of the pre-disaster facility, and could be subject to additional conditions.

4.1.5 Alternative 5: Tafuna Plant Site

Temporary and permanent pollutant emissions under Alternative 5 would be similar to those stated above for Alternatives 2, 3, and 4. Construction emissions from Alternative 5 would be slightly higher than Alternative 2 due to building the proposed substation at Satala required to boost power received from Tafuna and upgrading the existing tie line between the replacement plant at Tafuna and the new substation at Satala. This increase in temporary construction emissions would be minimal and, due to its flat site, Alternative 5 would not entail the extensive grading needed for Alternative 3 and Alternative 4. Alternative 5 would be required to implement the same construction measures stated above for Alternative 2 to ensure temporary emissions are reduced to the greatest extent feasible.

Similar to Alternatives 2, 3, and 4, the replacement plant under Alternative 5 would result in a net beneficial effect on air quality due to the increased efficiency and emissions-reducing technology of the replacement generators compared to ongoing operation of the temporary generators under Alternative 1. Alternative 5 has the added benefit of siting the replacement power plant in a primarily industrial and commercial area, farther from existing residences than under Alternatives 1 or 2, resulting in fewer immediately adjacent receivers of the plant's emissions. Nonetheless, localized impacts from air pollutants, elevated air temperatures, and odors would affect residents, workers, and customers in the immediate vicinity of the Tafuna site in the same manner as discussed for Alternatives 1 and 2.

Alternative 5 would not result in adverse air quality effects because it would represent a substantial reduction in emissions when compared to operation of the temporary generators under existing conditions. It should also be noted that the permanent replacement generators would emit less pollutants than the pre-disaster Satala power plant, which had older generators that were not as efficient or did not control emissions as well as the proposed current technology generators. Because it entails operating the replacement power plant at a new location outside the parcel boundary of the pre-disaster power plant, Alternative 5 would be required to obtain a PSD permit from USEPA, which would entail a quantified emissions

analysis comparing the proposed facility emissions to those of the pre-disaster facility, and could be subject to additional conditions.

4.2 Biological Resources

On November 30, 2011, biological reconnaissance surveys were conducted for the various alternative sites for the proposed project. The sites are generally located in industrial and disturbed areas that have experienced heavy influence from human use and activity and, as a result, are devoid of sensitive natural features.

The Satala site consists of a previously developed property with existing concrete foundations and a fringe of vegetation on the north side of the site. A concrete-lined surface runoff diversion channel is located along the northern and western perimeter of the site. Vegetation in this narrow band is dominated by invasive, ornamental, or agricultural species.

The Leloaloa site is located on a former school site, a portion of which has been recently converted into an unofficial sports field. The majority of this site consists of nonnative grass, adjacent to ornamental and crop plantings.

The Utulei site is located in a disturbed area containing two abandoned aboveground storage tanks. Vegetation at the site consists of nonnative plantings, including coconut trees, banana trees, ornamental lawn, and a variety of invasive grasses.

The Tafuna site is located in an industrial area that consists of existing buildings and equipment-storage yards. There are small areas of vegetation at the site, consisting of nonnative and invasive species such as African tulip tree / fa' apasi (*Spathodea campanulata*) and Mexican rubber tree / pulu mamoe (*Castilla elastica*), as well as planted coconut trees.

Wildlife resources associated with the alternative areas include a variety of introduced and native bird species. Common nonnative bird species observed during project surveys include jungle myna (*Acridotheres fuscus*), red junglefowl (*Gallus gallus*), and red-vented bulbul / manu palagi (*Pycnonotus cafer*). Resident bird species noted flying above or adjacent to the proposed project area include species such as white-tailed tropicbird / tava'esina (*Phaethon rubricauda*) and gray-backed tern / gogosina (*Sterna lunata*). Other introduced wildlife species observed during project surveys included marine toad (*Bufo marinus*), house gecko (*Hemidactylus frenatus*), and mosquitofish (*Gambusia affinis*). A narrow ring around the island contains shallow coastal habitats that support coral reef ecosystems. Deepwater habitats around the island reach depths of 2,000 feet and are located between 0.5 and 2 miles from the coast (Craig 2005). Therefore, the proposed project area does not contain coral reef or deepwater habitat.

4.2.1 Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. § 1536(a)(2)) requires federal agencies to determine whether projects they propose to carry out or fund have any potential to affect species listed or proposed for listing as threatened or endangered or designated critical habitat.

AECOM, as a consultant to FEMA, coordinated with the U.S. Fish and Wildlife Service (USFWS) to obtain a list of species that are identified as endangered, threatened, or proposed for listing as endangered or threatened under the ESA that may occur in the vicinity of the alternative areas (USFWS 2011a, 2011b). Based on the sites' regional location, the list identified federally listed wildlife and plant species that have potential to occur in the vicinity of the alternative sites for the proposed project. A literature review was conducted to identify habitat requirements and distribution of these species. Based on the data compilation, AECOM conducted biological investigations of the alternative sites for the proposed project and concluded areas are in proximity to habitats suitable to support four federally listed wildlife species regulated by USFWS and the National Marine Fisheries Service (NMFS) under the ESA, as follows:

- **Hawksbill sea turtle** / **laumei uga** (*Eretmochelys imbriacata*) **(Endangered)**: Hawksbill sea turtles (HAST) are distributed worldwide in tropical seas. The species has been documented throughout the Pacific, frequently associated with deepwater coral and seagrass beds. The sandy beaches on American Samoa provide nesting habitat for the HAST, including approximately 16 kilometers of sandy beaches on Tutuila Island (Tuato'o-Bartley et al. 1993). Tutuila supported an estimated 50 nesting female HAST per year through the 1990s (NMFS and USFWS 1998a). However, recent monitoring studies conducted by the ASG Department of Marine and Wildlife Resources (ASDMWR) between 2005 and 2010 indicate that fewer than 30 female HAST nest on the beaches of American Samoa (NMFS and USFWS 2013).

- **Green sea turtle** / **laumei ena'ena** or **fonu** (*Chelonia mydas*) **(Threatened – Pacific Population)**: The green sea turtle (GRST) nests on the sandy beaches of American Samoa and forages in the open ocean and coastal waters associated with deepwater coral and seagrass beds. GRST occur in the waters off Tutuila, with an estimated low nesting population on the island (NMFS and USFWS 1998b).

- **Leatherback sea turtle** (*Dermochelys coriacea*) **(Endangered)**: The leatherback sea turtle (LEST) has the widest distributional range of all sea turtles. However, the species does not nest on American Samoa. One juvenile LEST has been documented in the

waters off of American Samoa, south of Swains Island, caught by a scientific research longline fishing vessel in 1994 (NMFS and USFWS 1998c).

- **Loggerhead sea turtle** (*Caretta caretta*) **(Threatened)**: Loggerhead sea turtles (LOST) are circumglobal, inhabiting bays, lagoons, and open seas of the Atlantic, Pacific, and Indian oceans. Although the proposed project area is adjacent to Pago Pago Harbor, which is suitable foraging habitat for the LOST, no documented observations of this species have been made on the beaches of American Samoa, or in the waters surrounding the islands (NMFS and USFWS 1998d).

No designated critical habitat for HAST, GRST, or LEST is located in or adjacent to the proposed project area. Neither NMFS nor USFWS has designated or proposed critical habitat for the LOST in or adjacent to the project area. Biological resources surveys of the alternative sites for the proposed project included observing for presence of these listed species. One HAST, on two separate occasions, was observed in the vicinity of the Utulei site during the project surveys. None of the other species were observed.

Alternative 1: No Action

Under Alternative 1, no construction would occur and, therefore, no effects would occur to federally listed or species proposed for federal listing under the ESA.

Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail construction activities located primarily on a previously developed concrete foundation, with an extension of the existing concrete pad inland, to the north, into nonnative plantings. No suitable sea turtle nesting beaches are located within the Satala site.

Existing development along the edge of Pago Pago Harbor, including industrial uses and the island's main road (Route 1), would provide a buffer between the Alternative 2 construction activities and any sea turtle foraging habitat in the adjacent harbor. As such, no direct effects on sea turtles or their habitat would occur under Alternative 2. To avoid any indirect impacts to sea turtle foraging habitat, ASPA would require incorporation of standard BMPs into the project design and construction drawings, including the implementation of erosion control measures to prevent construction-related sediment transport into the harbor. Standard BMPs would follow ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the ASEPA Guidance Manual for Runoff Control (ASG and ASEPA 2001).

To ensure that project construction avoids potential effects on protected species to the greatest extent possible, NMFS provided a list of BMPs related to in- and near-water work. These BMPs are attached to the NMFS comment letter provided in Appendix D of this EA. BMPs listed under

subset "A" in the NMFS list are not relevant to this project because they pertain to in-water work, which is not proposed. Near-water measures are listed in subset "B" of that list, spelling out methods for preventing fuel and hazardous materials spills, siltation, and other contamination of nearshore waters. ASPA will require the construction contractor to incorporate the relevant NMFS BMPs into project construction.

With the implementation of BMP measures to avoid indirect impacts, Alternative 2 would have no effect on any federally listed threatened or endangered species.

Alternative 3: Leloaloa Site

Alternative 3 would entail earthwork and other construction activities near the edge of Pago Pago Harbor. No suitable sea turtle nesting beaches are located within the Leloaloa site; therefore, Alternative 3 would not result in direct effects on these federally listed species. Though Route 1 would provide a buffer between project-related construction and the nearby waters, turtles passing through Pago Pago Harbor could be affected by a temporary and transitory decrease in water quality due to construction activities. To avoid any indirect effects on sea turtle foraging habitat in Pago Pago Harbor, ASPA would require incorporation of standard BMPs into the project design and construction drawings, as discussed above for Alternative 2, along with the relevant BMPs identified in the NMFS comment letter. With the implementation of BMP measures to avoid indirect impacts, Alternative 3 would have no effect on any federally listed threatened or endangered species.

Alternative 4: Utulei Site

Alternative 4 would entail construction on a disturbed site approximately 500 feet from Pago Pago Harbor. During project surveys, one sea turtle was observed swimming in Pago Pago Harbor, near the Utulei site. Although no sea turtle nesting habitat occurs at the site, sea turtles transiting through the harbor could be affected by the temporary decrease in water quality due to construction activities. To avoid any indirect impacts to sea turtle foraging habitat in Pago Pago Harbor, ASPA would require incorporation of standard BMPs into the project design and construction drawings, as discussed above for Alternative 2, along with the relevant BMPs identified in the NMFS comment letter. With the implementation of BMP measures to avoid indirect impacts, Alternative 4 would have no effect on any federally listed threatened or endangered species.

Alternative 5: Tafuna Site

Alternative 5 entails construction in an industrial area located approximately 1 mile north of the coast. The Tafuna site is predominantly developed and consists of existing buildings and storage yards for vehicles and equipment. The site and immediately surrounding areas are

completely land-locked, and Alternative 5 development of this site would not affect any coastal or aquatic habitats; therefore, no direct or indirect effects on sea turtles would occur.

4.2.2 Executive Order 13112: Invasive Species

EO 13112, Invasive Species of 1999, requires federal agencies to prevent the introduction of invasive species; provide for their control; and minimize the economic, ecological, and human health impacts that invasive species cause. EO 13112 requires that federal agencies not authorize, fund, or implement actions that are likely to introduce or spread invasive species unless the agency has determined that the benefits of the action(s) outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize harm caused by invasive species will be implemented in conjunction with the action(s).

Alternative 1: No Action

Under Alternative 1, no ground-disturbing activities would occur; therefore, this alternative would not contribute to the spread of invasive species.

Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 has limited potential to contribute to the spread of invasive species at the Satala site. The majority of the proposed activities occur in or adjacent to land that has been previously developed. With the exception of a narrow area on the north side of the property, the Satala site consists of existing concrete foundations where the original power plant and former warehouse facility were located. The area to the north of the concrete foundations consists of vegetation dominated by nonnative species. The construction staging area would be located on-site, either within existing foundations or cleared areas covered in compacted gravel. No disturbance of vegetated areas would be necessary for project staging. ASPA would require the construction contractor to take measures to prevent the introduction of invasive weeds at the construction site, including cleaning all equipment before accessing the site and using only certified, weed-free erosion control materials. On completion of Alternative 2 construction activity, any temporarily cleared areas would be revegetated with native species or noninvasive ornamental species, as appropriate, thus decreasing the amount of invasive species in the proposed project area. ASPA would ensure that any imported fill or other construction materials would be certified as being free of invasive species.

The potential for Alternative 2 to contribute to the spread of invasive species is minimal, and this alternative would comply with EO 13112. Therefore, Alternative 2 is anticipated to result in negligible short-term direct and indirect impacts with respect to invasive species.

Alternative 3: Leloaloa Site

Alternative 3 would impact a larger area of vegetation than Alternative 2, but the plant communities associated with this site are dominated by nonnative species and the potential for Alternative 3 to contribute to the spread of invasive species is expected to be minimal. If this alternative is selected, ASPA would require the contractor to take measures to prevent the introduction of invasive weeds at the construction site, as outlined in the discussion of Alternative 2 above.

The potential for Alternative 3 to contribute to the spread of invasive species is minimal, and this alternative would comply with EO 13112. Therefore, the development of the Leloaloa site is anticipated to result in negligible short-term direct and indirect effects with respect to invasive species.

Alternative 4: Utulei Site

Similar to Alternative 3, Alternative 4 would entail construction on a disturbed area in which plant communities are dominated by nonnative species, and the contribution of Alternative 4 to the spread of invasive species is expected to be minimal. If this alternative is selected, ASPA would require the contractor to take measures to prevent the introduction of invasive weeds at the construction site, by implementing the measures outlined above for Alternative 2.

The potential for Alternative 4 to contribute to the spread of invasive species is minimal, and this alternative would comply with EO 13112. Therefore, the development of the Utulei site is anticipated to result in negligible short-term direct and indirect effects with respect to invasive species.

Alternative 5: Tafuna Site

Alternative 5 would entail construction in an unvegetated area, with the exception of small pockets of nonnative crop and ornamental plantings. Implementation of the proposed project at this site would be expected to remove invasive/ornamental plantings and would not be expected to result in the spread of invasive species. Therefore, the development of Alternative 5 would comply with EO 13112 and would have no effect with respect to invasive species.

4.2.3 Executive Order 11990: Protection of Wetlands

EO 11990 requires federal agencies to take measures to minimize the destruction or modification of wetlands by considering both direct and indirect impacts to wetlands that may result from federally funded actions. FEMA's regulations for complying with EO 11990 are found in 44 CFR Part 9, Floodplain Management and Protection of Wetlands.

The island of Tutuila has both saltwater and freshwater swamps and marshes, cultivated and ruderal wetlands, and perennial streams. The most important wetlands on American Samoa are mangrove swamps and coastal freshwater marshes (Scott 1993). No wetlands were observed on any of the alternative sites for the proposed project during the site reconnaissance.

Alternative 1: No Action

Under the Alternative 1, no ground-disturbing activities would occur, and this alternative would therefore have no wetland impacts.

Alternative 2: Satala Site (Preferred Alternative)

A review of the wetlands database compiled by the American Samoa GIS Working Group (ASGWG 2012) indicated that no wetlands occur within or adjacent to the Satala site, or within any area in the surrounding villages. Field surveys documented a concrete surface water diversion channel along the north edge of the existing concrete foundations at the site, but no features that could be considered wetlands or jurisdictional waters of the United States. The concrete channel would have to be diverted around the proposed expansion of the concrete foundation for purposes of storm water drainage; however, because this feature is not a wetland, Alternative 2 would not result in the modification of any wetlands. Therefore, Alternative 2 would not result in direct or indirect effects on wetlands or jurisdictional waters, and Alternative 2 would comply with EO 11990.

Alternative 3: Leloaloa Site

The ASGWG wetlands database does not indicate that wetlands occur within the Leloaloa site or the surrounding village of Leloaloa (ASGWG 2012). Site visits confirmed that wetland features are not associated with the site or any areas immediately adjacent to the property. Implementation of Alternative 3 would not result in direct or indirect effects on wetlands or jurisdictional waters and would be in compliance with EO 11990.

Alternative 4: Utulei Site

A review of the ASGWG wetlands database indicates that no wetlands occur within or immediately adjacent to the Utulei site (ASGWG 2012), which was confirmed during a site visit. ASDMWR indicated that there is a freshwater marsh in the general vicinity of the Utulei site, but that the location of the proposed activities is such that no direct or indirect impacts would occur to the wetland. Therefore, implementation of Alternative 4 would not result in direct or indirect effects on wetlands or jurisdictional waters and would be in compliance with EO 11990.

Alternative 5: Tafuna Site

The ASGWG wetlands database does not identify any wetlands on the Tafuna site or the surrounding area (ASGWG 2012), which was confirmed by a site visit. Therefore,

implementation of Alternative 5 would not result in direct or indirect effects on wetlands or jurisdictional waters and would be in compliance with EO 11990.

4.2.4 Executive Order 13089: Coral Reef Protection

EO 13089 requires federal agencies to ensure that actions they authorize, fund, or implement will not degrade the conditions of coral reef ecosystems. The island of Tutuila is surrounded by a fringing coral reef. Coral reefs surrounding Tutuila are impacted by poor water quality (USEPA 2007). Natural phenomena such as hurricanes and disease have always taken their toll on reefs, but their effects are exacerbated by human activities in the ocean and on land. Besides destructive fishing practices and coral collecting, impacts come from sediments eroded from agricultural and construction operations, sewage, and other effluents. Au'a Reef is located on the eastern mouth of Pago Pago Harbor and is the closest coral reef, relative to the Satala, Leloaloa, and Utulei alternative sites for the proposed project (Brainard 2008; ASGWG 2012).

Alternative 1: No Action

Under Alternative 1, no ground-disturbing activities would occur; therefore, this alternative would have no new effect on coral reefs.

Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail construction activities that would occur away from any documented coral reefs. As such, no direct effects would occur to coral reefs through implementation of Alternative 2. To avoid any indirect impacts to coral reefs, ASPA would require incorporation of standard BMPs into the project design and construction drawings, including the implementation of erosion control measures to prevent construction-related sediment transport into the harbor. Standard BMPs would follow ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the ASEPA Guidance Manual for Runoff Control (ASG and ASEPA 2001). ASPA would also require incorporation of the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1. With the implementation of measures to avoid indirect impacts, the proposed project would not affect any coral reefs. Therefore, Alternative 2 is expected to comply with EO 13089.

Alternative 3: Leloaloa Site

Similar to Alternative 2, Alternative 3 would not directly affect any coral reefs due to its location away from identified reefs. Alternative 3 would require a greater amount of earthwork than Alternative 2, which has the potential to result in additional erosion and sediment runoff into Pago Pago Harbor. Coral reefs could be indirectly impacted by a temporary and transitory decrease in water quality due to an increase in sedimentation into Pago Pago Harbor as a result of construction activities at the Leloaloa Site. To avoid any indirect impacts to coral reefs, ASPA

would require incorporation of standard BMPs into the project design and construction drawings, as discussed above under Alternative 2, along with the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1. With the implementation of measures to avoid indirect impacts, the development of Alternative 3 would not result in an indirect effect on any coral reefs, and the alternative would comply with EO 13089.

Alternative 4: Utulei Site

The Utulei site is not located near any coral reefs, so Alternative 4 construction would not directly affect any coral reefs. Similar to the Leloaloa site, development of the Utulei site would require earthwork, with the associated potential to result in erosion and sediment runoff to occur in Pago Pago Harbor. ASPA would require incorporation of standard BMPs into the project design and construction drawings, as discussed above under Alternative 2, along with the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1. With the implementation of measures to avoid indirect impacts, the development of Alternative 4 would not result in an indirect effect on any coral reefs, and the alternative would comply with EO 13089.

Alternative 5: Tafuna Site

The Tafuna site is far removed from the coast; therefore, implementation of this alternative is not expected to directly or indirectly affect any of the coral reef systems surrounding the island. Therefore, implementation of the proposed project at the Tafuna site would be in compliance with EO 13089.

4.2.5 Protection of Fisheries Resources

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 as amended (MSA) (16 U.S.C. 1801 et seq.) provides for the conservation and management of sustainable fisheries within U.S. coastal waters. In 1996, the MSA was amended to require the identification and management of Essential Fish Habitat (EFH) for managed species (16 U.S.C. §305[b]). EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The MSA mandates that federal action agencies which fund, permit, or carry out activities that may adversely affect EFH of federally managed fish species to consult with NMFS. For the waters surrounding Tutuila, American Samoa (including Pago Pago Harbor) EFH has been designated by the Western Pacific Regional Fishery Management Council as the water column and bottom habitat from the shoreline to the outer boundary of the Exclusive Economic Zone to a depth of 50 fathoms (Blyth-Skyrme et al.). Recent studies of Pago Pago Harbor recorded 562 marine species, including 268 fishes, 200 invertebrates, and 93 algae and seagrass species (Coles et al. 2003).

Alternative 1: No Action

Under Alternative 1, no ground-disturbing or vegetation-clearing activities would occur; therefore, this alternative would have no impact on EFH.

Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 construction activities would occur on land, approximately 35 feet from the shoreline and a distance from any EFH. To protect the EFH within Pago Pago Harbor, ASPA would be required to effectively implement, enforce, and monitor the BMPs described in Section 4.9.2 of this document, along with the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1, which would minimize any project-related effects on EFH. With the effective implementation of the proposed impact avoidance and minimization measures described in Section 4.9.2, there would be no discharge or runoff of sediment to the marine environment due to this project. Therefore, Alternative 2 would not affect EFH. If ASPA cannot for any reason implement Alternative 2 without adversely affecting EFH, work must halt and ASPA must immediately notify FEMA, so that FEMA can consult with NMFS pursuant to MSA.

Alternative 3: Leloaloa Site

Alternative 3 would disturb wildlife and vegetation at the Leloaloa site due to clearing, earthwork, and construction activities. Similar to Alternative 2, while the site is in proximity (i.e., approximately 30 feet) to the shoreline, it is relatively distant from EFH within Pago Pago Harbor. Similarly, under Alternative 3, ASPA would be required to effectively implement, enforce, and monitor the BMPs described in Section 4.9.2 and the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1, minimizing any project-related effects to EFH. With the effective implementation of the proposed impact avoidance and minimization measures, no discharge or runoff of sediment to the marine environment would occur through the implementation of Alternative 3, and no effects to EFH would result. If ASPA cannot for any reason implement the Alternative 3 without adversely affecting EFH, work must halt and ASPA must immediately notify FEMA, so that FEMA can consult with NMFS pursuant to MSA.

Alternative 4: Utulei Site

Alternative 4 is approximately 450 feet from the shoreline at Pago Pago Harbor. ASPA would be required to effectively implement, enforce, and monitor the BMPs described in Section 4.9.2 and the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1, minimizing any project-related effects to EFH. With the effective implementation of the proposed impact avoidance and minimization measures, no discharge or runoff of sediment to the marine environment would occur through the implementation of Alternative 4, and no effects to EFH would result. If ASPA cannot for any reason implement Alternative 4 without adversely affecting

EFH, work must halt and ASPA must immediately notify FEMA, so that FEMA can consult with NMFS pursuant to MSA.

Alternative 5: Tafuna Site

The Tafuna site is entirely surrounded by existing development, with pockets of nonnative plantings and ornamental plant species, and the surrounding topography is such that the site is not directly upslope from any coastal waters. As such, readily identifiable pathways to EFH do not exist. Therefore, Alternative 5 is not expected to result in impacts to EFH. However, since migration of erosion and sediment could occur to off-site areas, ASPA would be required to effectively implement, enforce, and monitor the BMPs described in Section 4.9.2.

4.2.6 Wildlife and Vegetation

On December 1, 2011, FEMA, AECOM, and ASDMWR met to discuss potential biological resource issues related to the proposed project, including to sensitive resources that are not federally listed pursuant to the ESA. A follow-up meeting was held between AECOM as FEMA's consultant and ASDMWR's project biologist on December 3, 2011, to discuss detailed biological resources information for Tutuila, relative to the alternative sites for the proposed project. The primary special-status biological resources actively monitored on Tutuila by ASDMWR include colonies of fruit bat / pe'a (including Samoan fruit bat / pe'a vao [*Pteropus samoensis*], and white-naped fruit bat / pe'a fanua [*Pteropus tonganus*]), and populations of several species of endemic land snails. However, based upon ASDMWR's review of the boundaries of the alternative sites for the proposed project, no fruit bat roosts or populations of endemic land snails are known to inhabit the project boundaries.

Alternative 1: No Action

Under Alternative 1, no ground-disturbing or vegetation-clearing activities would occur, and this alternative would therefore have no impact on wildlife or vegetation.

Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 construction activities would result in a minor potential to disturb wildlife in the vicinity of the proposed project. Expansion of the existing concrete foundations would involve removing trees and other vegetation in the Satala site, specifically within a narrow band on the north side of the property, where the existing concrete pad would be extended. Small mammals, reptiles, amphibians, and insects may suffer injury or mortality during construction. Ground disturbance during construction would also result in associated loss of vegetation, which may be suitable habitat for these species. During construction, animal species in the vicinity would experience short-term loss of habitat, and harassment from noise and dust from equipment movement. Accordingly, Alternative 2 has minor potential to result in direct and indirect effects

on nonlisted plant and wildlife species. Based on the project review provided by ASDMWR, no fruit bat roosts or populations of endemic land snails would be impacted by Alternative 2.

Several bird species were observed within and adjacent to the Satala site during field reconnaissance. The federal Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703–712) (MBTA) affords protection to a wide variety of both resident and migratory birds. ASPA would be responsible for complying with the MBTA for all construction-related activities, by minimizing the potential for "take" of MBTA-covered species during the migratory bird breeding season. The regulatory definition of take, as defined by 50 CFR 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Impact minimization measures would include scheduling construction outside of the bird nesting season (generally accepted as starting on February 15 and ending on September 15). If construction cannot be avoided during the nesting season, pre-construction nesting bird surveys would be required to determine if birds are nesting within the Satala site and a 500-foot buffer around the site. If nesting is documented, a biologist would be required to monitor any active nests and to coordinate with ASPA and the construction manager to minimize any potentially adverse effects to MBTA-covered species. By requiring compliance with the MBTA, ASPA would ensure that any effects on wildlife would be minor.

Alternative 3: Leloaloa Site

Alternative 3 would disturb wildlife and vegetation at the Leloaloa site due to clearing, earthwork, and construction activities, resulting in a slightly greater potential for direct and indirect effects than under Alternative 2. While the site is dominated by nonnative grasses, ornamental plantings, and agricultural species, the vegetated landscape does provide habitat for a variety of nonlisted wildlife species. Based on the project review provided by ASDMWR, no fruit bat roosts or populations of endemic land snails would be impacted by Alternative 3. Implementation of the proposed project at this site would result in the permanent loss of vegetation and wildlife habitat throughout the site. As under Alternative 2, direct effects on wildlife could include mortality or injury during construction. Indirect effects could occur through increased noise and fugitive dust associated with the use of construction equipment. ASPA would be responsible for MBTA compliance. By requiring compliance with the MBTA, ASPA would ensure that any effects on wildlife would be minor.

Alternative 4: Utulei Site

Similar to Alternative 3, Alternative 4 would require clearing, earthwork, and construction activities that could potentially result in direct mortality or injury of nonlisted wildlife species, though the Utulei site is more disturbed than the Leloaloa site, so the potential effects would not be as great under Alternative 4. Based on the project review provided by ASDMWR, no fruit bat

roosts or populations of endemic land snails would be impacted by Alternative 4. By requiring compliance with the MBTA, ASPA would ensure that any effects on wildlife would be minor.

Alternative 5: Tafuna Site

The Tafuna site is entirely disturbed, so the potential for wildlife and plant resources to be affected by implementing Alternative 5 would be minimal. However, the small pockets of nonnative ornamental and crop plantings would be expected to provide a low-level resource to wildlife species as foraging, nesting, and protective cover habitats. Based on the project review provided by ASDMWR, no fruit bat roosts or populations of endemic land snails would be impacted by Alternative 5. By requiring compliance with the MBTA, ASPA would ensure that any effects on wildlife would be minor.

4.3 Cultural Resources

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA). Requirements include identifying significant historic properties and districts that may be affected by a federal action and mitigating adverse effects to those resources.

Cultural resources surveys were conducted at the six identified sites (Satala, Leloaloa, Utulei, Tafuna, Malaloa, and Faga'alu) totaling 16.2 acres, within which nine of the 10 preliminary alternatives for the proposed project would be configured. Six alternatives would comprise the six surveyed individual sites themselves and the other three alternatives would occur within the boundaries of the six surveyed sites in various arrangements. The No Action Alternative would be on a portion of the Satala site, and the two dual power generation preliminary alternatives would be on a portion of the Tafuna site and either the Satala or Leloaloa site. However, the renewable resources power generation alternative would occur both within the area of the six surveyed sites as well as on multiple other sites as well. The five alternatives considered in this EA are described in Section 3.2 of this EA and the five eliminated alternatives not carried forward for consideration in this EA are described in Section 3.3 of this EA. The Cultural Resources Inventory Report (FEMA 2013) detailing the results of the surveys and literature search is referenced in Appendix A of this EA. Because Malaloa and Faga'alu were eliminated from consideration as alternatives in this EA, the remainder of this section only addresses Satala, Leloaloa, Utulei, and Tafuna.

FEMA determined that the area of potential effects (APE) is defined as the total area encompassing approximately 10.5 acres potentially subject to ground disturbance across the four alternative sites examined in this EA (Satala, Leloaloa, Utulei, and Tafuna). The proposed

project requires documentation and consultation under Section 106 of the NHPA of 1966, as amended, and its implementing regulations (36 CFR Part 800).

The cultural resources investigation included consultation with the American Samoa Historic Preservation Office (ASHPO), background and archival research, and an archaeological survey. The cultural resources investigation was conducted by AECOM, as a consultant to FEMA, to identify and evaluate historic properties. An archaeological survey of a 10.5-acre APE was conducted by AECOM as a consultant to FEMA between November 28, 2011, and December 5, 2011.[2] During the cultural resources investigation, no historic properties were identified within the APE.

During the surveys of the four APE sites, cultural resources were identified within three APEs: Satala, Leloaloa, and Utulei. The resources identified include the former Satala power plant at the Satala site APE, the former Marist Brothers School at the Leloaloa site APE, and the U.S. Navy fuel storage tanks at the Utulei site APE.

4.3.1 Alternative 1: No Action

Under Alternative 1, no construction would occur; therefore, no impacts on cultural resources would occur.

4.3.2 Alternative 2: Satala Site (Preferred Alternative)

The cultural resources survey identified the site as the former location of the Satala Power Plant building, which was originally constructed in 1962, and a warehouse, both of which no longer stand on the site, though the foundations remain. The Satala Power Plant building was damaged beyond the scope of repair during the disaster and was demolished after consultation, with ASHPO and concurrence from ASHPO with FEMA's finding of "no historic properties affected." Documentation of that correspondence with ASHPO is provided in Appendix B of this EA. Only a modern communications tower, some modern electrical transformers, and concrete foundations remain. The site lacks sufficient integrity to be considered a resource eligible for the National Register of Historic Places (NRHP) under any criteria. Therefore, Alternative 2 would not result in adverse effects on any known cultural resources.

FEMA determined that implementation of Alternative 2 would result in a finding of "no historic properties affected" under 36 CFR 800.4(d). As documented in correspondence provided in

[2] The APE described in the Cultural Resources Inventory Report includes a total of 16.2 acres, including the 10.5-acre APE for the four sites considered in this EA, as well as additional area for the Malaloa and Faga'alu sites that were initially under consideration as alternatives.

Appendix B of this EA, FEMA consulted with ASHPO regarding the findings of the Cultural Resources Inventory Report, and ASHPO concurred with the finding of "no historic properties affected."

Although the potential is low, unexpected subsurface historic properties could be discovered during ground-disturbing activities. Therefore, ASPA (including its contractors and agents) would be responsible for halting work in the event of an unanticipated discovery during construction, and notifying TOFR and FEMA as soon as practicable. If FEMA determines that the discovery has the potential to be a significant historical property, FEMA would require ASPA to stop all construction in the vicinity of the discovery and to take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with ASHPO, pursuant to 36 CFR Part 800.13(b). If the property is determined eligible for the NRHP, and cannot be avoided, a Memorandum of Agreement with ASHPO would be required.

4.3.3 Alternative 3: Leloaloa Site

The cultural resources survey identified the Leloaloa site as the former site of the Marist Brothers School, a parochial school that was abandoned sometime prior to 1989. None of the original buildings have survived, though there are remnants of foundations and other infrastructure. As a result, the integrity of setting, feeling, and association of the sites has been significantly compromised and the resources do not retain sufficient integrity to be eligible for listing in the NRHP. This site was not recommended for NRHP listing, and no other cultural resources were identified within the Leloaloa site. Therefore, Alternative 3 would not result in adverse effects on any known cultural resources.

FEMA determined that implementation of Alternative 3 would result in a finding of "no historic properties affected" under 36 CFR 800.4(d). As documented in correspondence provided in Appendix B of this EA, FEMA consulted with ASHPO regarding the findings of the Cultural Resources Inventory Report, and ASHPO concurred with the finding of "no historic properties affected."

Although the potential is low, unexpected subsurface historic properties could be discovered during ground-disturbing activities. Therefore, ASPA (including its contractors and agents) would be responsible for halting work in the event of an unanticipated discovery during construction, and notifying TOFR and FEMA as soon as practicable. If FEMA determines that the discovery has the potential to be a significant historical property, FEMA would require ASPA to stop all construction in the vicinity of the discovery and to take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with ASHPO,

pursuant to 36 CFR Part 800.13(b). If the property is determined eligible for the NRHP, and cannot be avoided, a Memorandum of Agreement with ASHPO would be required.

4.3.4 Alternative 4: Utulei Site

The cultural resources survey identified the Utulei site as the location of two abandoned 55,000-gallon fuel tanks that date to World War II. The Utulei fuel storage tanks, while retaining their integrity of setting, do not have a strong enough association with significant historical events to be considered an eligible resource for the NRHP. No other cultural resources were identified within the Utulei site. Therefore, Alternative 4 would not result in adverse effects on any known cultural resources.

FEMA determined that implementation of Alternative 4 would result in a finding of “no historic properties affected” under 36 CFR 800.4(d). As documented in correspondence provided in Appendix B of this EA, FEMA consulted with ASHPO regarding the findings of the Cultural Resources Inventory Report, and ASHPO concurred with the finding of “no historic properties affected.”

Although the potential is low, unexpected subsurface historic properties could be discovered during ground-disturbing activities. Therefore, ASPA (including its contractors and agents) would be responsible for halting work in the event of an unanticipated discovery during construction, and notifying TOFR and FEMA as soon as practicable. If FEMA determines that the discovery has the potential to be a significant historical property, FEMA would require ASPA to stop all construction in the vicinity of the discovery and to take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with ASHPO, pursuant to 36 CFR Part 800.13(b). If the property is determined eligible for the NRHP, and cannot be avoided, a Memorandum of Agreement with ASHPO would be required.

4.3.5 Alternative 5: Tafuna Site

No cultural resources were identified at the Tafuna site during the survey. Therefore, Alternative 5 would not result in adverse effects on any known cultural resources.

FEMA determined that implementation of Alternative 5 would result in a finding of “no historic properties affected” under 36 CFR 800.4(d). As documented in correspondence provided in Appendix B of this EA, FEMA consulted with ASHPO regarding the findings of the Cultural Resources Inventory Report, and ASHPO concurred with the finding of “no historic properties affected.”

Although the potential is low, unexpected subsurface historic properties could be discovered during ground-disturbing activities. Therefore, ASPA (including its contractors and agents)

would be responsible for halting work in the event of an unanticipated discovery during construction, and notifying TOFR and FEMA as soon as practicable. If FEMA determines that the discovery has the potential to be a significant historical property, FEMA would require ASPA to stop all construction in the vicinity of the discovery and to take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with ASHPO, pursuant to 36 CFR Part 800.13(b). If the property is determined eligible for the NRHP, and cannot be avoided, a Memorandum of Agreement with ASHPO would be required.

4.4 Geology and Soils

The island of Tutuila is of volcanic origin and is characterized by steep mountainsides, small valleys, and a narrow coastal fringe of relatively level land. The island is a narrow mountain range consisting of basic igneous rock with small amounts of andesite and trachyte. The mountains extend approximately 20 miles from east to west. The highest peak is approximately 2,142 feet, and the land slopes steeply from the tops of the mountain ridges down to the ocean (FEMA 2008).

Geologic hazards on Tutuila include landslides, volcanic eruptions, earthquakes, cyclones, and tsunamis. Landslides are primarily caused by gravity acting on overly steep slopes. However, many other factors, such as saturation by rainfall, removal of deep-rooted vegetation, and erosion by water channels, contribute to the occurrence of landslides. On Tutuila, landslides often occur when heavy rainfall saturates unstable earth on the island's steep slopes (FEMA 2008).

The only active volcano in the American Samoa region is the volcanic seamount Vanilulu'u located approximately 100 miles east of Tutuila. The Ofu-Olosega volcano last erupted in 1866, and other volcanoes in the region have been silent for thousands of years. No active volcanoes exist on the island; however, many craters are still visible on the landscape (FEMA 2008).

Earthquakes in American Samoa mainly originate from the Tonga Trench, approximately 120 miles southwest of Tutuila. The Tonga Trench is located where the Pacific and Australian tectonic plates collide. The trench is considered an area of high seismic activity and generates large but distant earthquakes that are felt on Tutuila. Such earthquakes can be precursors to volcanic activity but generally do not present a seismic threat to the islands (FEMA 2008). Tsunamis (huge water waves) that affect Tutuila are generated by earthquakes from fault movements along the Tonga Trench, the Pacific Rim in the Aleutian Islands, South America, and other locations.

In 1868 and 1960, tsunamis originating in Chile caused damage in the Samoan Islands. The tsunami that hit Tutuila in 2009 was the result of an earthquake that occurred along the Tonga Trench and caused widespread destruction on Tutuila, including complete destruction of the Satala power plant. The National Oceanic and Atmospheric Administration and National Weather Service operate the Pacific Tsunami Warning Center, which monitors sudden earth movements throughout the Pacific Basin. Warnings are broadcast by the news media on radio and television (FEMA 2008).

U.S. Soil Conservation Service (National Resources Conservation Service) identified one soil classification within the developed portions of the Pago Pago watershed proposed for all of the alternative sites except Alternative 5 (Tafuna site). The predominant soil classification in this area is Urban Land-Aua-Leafu complex, which characterizes the shoreline of Pago Pago Harbor and relatively flat areas where development has occurred. This complex is a combination of two soils types—Aua and Leafu soils—that have moderately rapid permeability rates, moderate potential for runoff, and slight to moderate erosion potential. The Satala, Leloaloa, and Utulei sites all feature this soil classification (ASEPA and ASCMP 2000).

The Tafuna site is in a developed area characterized by soils known as Tafuna Extremely Stony Muck, which is a deep, well-drained soil overtop of lava flow bedrock featuring pieces of fragmented lava. These soils have a low potential for water erosion and storm water runoff rates are typically very slow. These soils can also be poorly suited for development due to the depth to bedrock and the presence of large stones (ASEPA and ASCMP 2000).

Map 15 of the 2008 Revision and Update of the Territory Hazard Mitigation Plan (ASG 2008) identifies landslide hazards in the Pago Pago Harbor area. The Satala site and Leloaloa site are shown as having medium landslide risk, while the Utulei site is shown as having low landslide risk. However, all three of these sites are adjacent to steep slopes that are listed as having high landslide risk. Map 16 of the same document shows the Tafuna site and surrounding areas as having low landslide risk.

4.4.1 Alternative 1: No Action

Under the No Action Alternative, geologic conditions on all of the alternative sites would remain the same as they are under existing conditions; therefore, no project-related effects would occur. Additionally, no ground-disturbing activities would occur at any alternative sites. The continued operation of temporary generators at the Satala site would not affect existing geology or soil. However, the temporary facility is located at the base of a steep slope that is listed as having medium landslide risk, so Alternative 1 would entail the continued exposure of the temporary facility to potential landslides.

4.4.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail soil disturbance due to grading and vegetation removal at the Satala site to extend the existing building foundations on the site toward the north. The Satala site is in an area identified as having slight to moderate potential for erosion, and construction activities could leave on-site soils exposed and susceptible to water and wind erosion.

To minimize potential erosion caused by construction activities, ASPA would require the contractor to prepare and implement an erosion control plan. The erosion control plan would include phased construction to minimize the amount of exposed soil at any given time and would require all work to cease during heavy rains. The plan would require that all soil stockpiled on-site for use as fill, or that has been excavated from the action area, be covered and surrounded by a sediment barrier to prevent sediment loss.

Additionally, the plan would include a debris disposal plan to ensure that all excavated material is transferred to a designated and preapproved debris disposal site as described in ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the ASEPA Guidance Manual for Runoff Control (ASG and ASEPA 2001). Once construction is completed, ASPA would implement permanent erosion control measures at the replacement facility, where appropriate, pursuant to the American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011).

ASPA would require preparation of an engineering-level geotechnical investigation prior to final project design to identify any unforeseen geological conditions such as expansive soils that would affect Alternative 2. The geotechnical investigation would identify engineering measures in the foundation and structural design needed to account for the presence of erodible soils. ASPA would require the project architect and civil engineer to design the site to mitigate any adverse geological or soil conditions identified in the geotechnical report.

Adherence to the erosion control plan during construction and implementation of engineering recommendations identified in the geotechnical report would ensure that Alternative 2 would not result in any adverse effects on geology or soils at the Satala site.

Comments received during the public review period for the Draft EA indicated concern from neighboring residents about constructing the replacement facility in an area that is near the coast and susceptible to damage from a future tsunami. One of the goals of the proposed project is to reduce the risk of flood hazards by moving the structures and critical components of the replacement facility outside the VE Zone; relocating the facility to a higher elevation, as

proposed in Alternative 2, would also move it into an area that would be less susceptible to damage during a tsunami.

The Satala site is at the base of a steep slope that is listed as having medium landslide risk, and a comment letter received on the Draft EA indicated concern for building the replacement facility in an area susceptible to landslides. Alternative 2 would reduce potential landslide risks when compared to existing conditions by building a permanent facility with site features that would be able to withstand future landslide conditions better than the temporary facility. Final design of the Alternative 2 facility would need to consider the potential for landslides to affect the project site.

4.4.3 Alternative 3: Leloaloa Site

Alternative 3 would entail soil disturbance due to grading, vegetation removal, and removal of existing foundations related to prior uses at the Leloaloa site, as needed to create a flat area for development of a foundation for the replacement facility. Because the Leloaloa site is not flat and slopes up gently toward the north, Alternative 3 would require a greater amount of grading than the other proposed alternatives. Additionally, much of the site consists of undocumented fill that would need to be recompacted to support structures prior to installing the facility's foundation. Alternative 3 also would require earth disturbance for constructing a trench along Highway 1 between the Leloaloa site and the Satala site for installation of a distribution line. The Leloaloa site and Highway 1 between the Leloaloa site and the Satala site are in an area identified as having slight to moderate potential for erosion, and construction activities could leave on-site soils exposed and susceptible to water and wind erosion.

Similar to that discussed under Alternative 2, ASPA would require preparation and implementation of a site-specific erosion control plan under Alternative 3 to minimize the amount of exposed soil and the potential for erosion and sediment loss. Also, as discussed for Alternative 2, ASPA would require preparation of an engineering-level geotechnical investigation prior to final project design under Alternative 3 to identify any unforeseen geological conditions and identify proper engineering measures in the foundation and structural design to address geological and soils conditions. ASPA would require the project architect and civil engineer to design the site to mitigate any adverse geological or soil conditions identified in the geotechnical report.

Adherence to the erosion control plan during construction and implementation of engineering recommendations identified in the geotechnical report would ensure that Alternative 3 would not result in any adverse effects on geology or soils at the Leloaloa site and the trench along Highway 1.

Similar to the Satala site (Alternatives 1 and 2), the Leloaloa site is in an area listed as having medium landslide risk. Final design of the Alternative 3 facility would need to consider the potential for landslides to affect the project site.

4.4.4 Alternative 4: Utulei Site

Alternative 4 would entail soil disturbance due to grading, vegetation removal, and removal of the existing petroleum tanks at the Utulei site. Because the Utulei site is on a slope bench, Alternative 4 would require site grading to create a flat pad for construction of the replacement power plant facility's foundation. Tank removal also may require soil remediation that would increase the amount of earthwork proposed under Alternative 4, as would construction of a trench along Highway 1 between the Utulei site and the Satala site for installation of a distribution line. The Utulei site and the proposed trench alignment are in an area identified as having slight to moderate potential for erosion, and construction activities could leave on-site soils exposed and susceptible to water and wind erosion.

Similar to that discussed under Alternative 2, ASPA would require preparation and implementation of a site-specific erosion control plan under Alternative 4 to minimize the amount of exposed soil and the potential for erosion and sediment loss. Also, as discussed for Alternative 2, ASPA would require preparation of an engineering-level geotechnical investigation prior to final project design under Alternative 4 to identify any unforeseen geological conditions and identify proper engineering measures in the foundation and structural design to address geological and soils conditions. ASPA would require the project architect and civil engineer to design the site to mitigate any adverse geological or soil conditions identified in the geotechnical report.

Adherence to the erosion control plan during construction and implementation of engineering recommendations identified in the geotechnical report would ensure that Alternative 4 would not result in any adverse effects on geology or soils at the Leloaloa site and the trench along Highway 1. The Utulei site is listed as having low landslide risk, so construction of Alternative 3 would not place the proposed facilities in an area generally susceptible to landslides.

4.4.5 Alternative 5: Tafuna Site

Alternative 5 would entail soil disturbance due to grading and demolition of existing facilities at the Tafuna site. Alternative 5 also would require additional grading to construct a trench along Highway 1 for expansion of the existing distribution line between the Tafuna site and the Satala site.

Similar to that discussed for the other alternatives, ASPA would require preparation and implementation of a site-specific erosion control plan under Alternative 5 to minimize the amount of exposed soil and the potential for erosion and sediment loss. Also, as discussed for the other alternatives, ASPA would require preparation of an engineering-level geotechnical investigation prior to final project design under Alternative 5 to identify any unforeseen geological conditions and identify proper engineering measures in the foundation and structural design to address geological and soils conditions. The Tafuna site contains soil identified as being poorly suited for development, and the geotechnical investigation would need to provide special measures for installation of foundations and structures on the site. ASPA would require the project architect and civil engineer to design the site to mitigate any adverse geological or soil conditions identified in the geotechnical report.

Adherence to the erosion control plan during construction and implementation of engineering recommendations identified in the geotechnical report would ensure that Alternative 5 would not result in any adverse effects on geology or soils at the Tafuna site and the trench along Highway 1. The Tafuna site is listed as having low landslide risk, so construction of Alternative 3 would not place the proposed facilities in an area generally susceptible to landslides.

4.5 Seismicity

FEMA classifies the island of Tutuila as Seismic Zone 3, meaning it will experience earthquake ground shaking of approximately 0.2*g* peak horizontal acceleration (where *g* is the unit used to express gravitational force) and has a 1 in 500 chance per year of sustaining light to moderate building damage (i.e., a 10 percent probability of experiencing ground shaking of at least 0.2*g* every 50 years). This Seismic Zone 3 designation considers all probable earthquake sources affecting American Samoa, local and distant, and translates their effects into different estimates of ground shaking (Territorial Emergency Management Coordinating Office 2008).

Map 7 of the 2008 Revision and Update of the Territory Hazard Mitigation Plan (ASG 2008) identifies seismic hazards in the Pago Pago Harbor area, including a fault running east-west adjacent to the northern end of the harbor. Based on this map, the Satala site and Leloaloa site are both less than 0.25 mile from this fault, while the Utulei site is approximately 1 mile south of the fault. Map 8 of the same document shows the Tafuna site approximately 0.5 mile south of a different east-west fault that traverses the village of Nu'uuli.

EO 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction, requires construction of new buildings to meet standards for seismic safety set by the National Earthquake Hazard Reduction Program. This EO applies to the construction of new buildings, which are defined as structures used or intended for sheltering persons or property.

4.5.1 Alternative 1: No Action

Under the No Action Alternative, no construction would occur and existing site conditions at the Satala site and all other alternative sites would remain the same as they are under existing conditions. The temporary facility would continue to be subject to existing earthquake-related hazards at the Satala site.

4.5.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail constructing the replacement facility near an existing fault mapped beneath the northern edge of Pago Pago Harbor. The Satala site's proximity to the fault could lead to strong ground shaking at the replacement facility under Alternative 2. The proposed structures would be appropriately designed and constructed to current building standards set by the National Earthquake Hazard Reduction Program (such as the International Building Code published by the International Code Council) for local site conditions (including soil type). The proposed structure would be constructed to adhere to the relevant local building codes with respect to seismic safety to minimize potential effects due to strong ground shaking.

4.5.3 Alternative 3: Leloaloa Site

Alternative 3 would entail constructing the replacement facility near an existing fault mapped beneath the northern edge of Pago Pago Harbor. The Leloaloa site's proximity to the fault could lead to strong ground shaking at the replacement facility under Alternative 3. The proposed structures would be appropriately designed and constructed to current building standards set by the National Earthquake Hazard Reduction Program (such as the International Building Code published by the International Code Council) for local site conditions (including soil type). The proposed structure would be constructed to adhere to the relevant local building codes with respect to seismic safety to minimize potential effects due to strong ground shaking.

4.5.4 Alternative 4: Utulei Site

Alternative 4 would entail constructing the replacement facility approximately 1 mile from a fault mapped beneath the northern edge of Pago Pago Harbor. The Utulei site's proximity to the fault could lead to strong ground shaking at the replacement facility under Alternative 4. The proposed structures would be appropriately designed and constructed to current building standards set by the National Earthquake Hazard Reduction Program (such as the International Building Code published by the International Code Council) for local site conditions (including soil type). The proposed structure would be constructed to adhere to the relevant local building codes with respect to seismic safety to minimize potential effects due to strong ground shaking.

4.5.5 Alternative 5: Tafuna Site

Alternative 5 would entail constructing the replacement facility approximately 0.5 mile from a fault mapped beneath the village of Nu'uuli. The Tafuna site's proximity to the fault could lead to strong ground shaking at the replacement facility under Alternative 5. The proposed structures would be appropriately designed and constructed to current building standards set by the National Earthquake Hazard Reduction Program (such as the International Building Code published by the International Code Council) for local site conditions (including soil type). The proposed structure would be constructed to adhere to the relevant local building codes with respect to seismic safety to minimize potential effects due to strong ground shaking.

4.6 Coastal Resources

American Samoa faces coastal concerns of fishery habitat loss, coastal hazards (such as cyclones, flooding, and erosion), marine debris, and solid waste. To help mitigate the effects of human activity, ASG operates the American Samoa Coastal Management Program (ASCMP) as part of the American Samoa Department of Commerce (ASDOC). The ASCMP has designated the entire island of Tutuila and the sea within 3 miles of the shoreline as a coastal zone. The ASCMP oversees all construction and earth-moving activities on the island to ensure coastal resources are not affected by the proposed project.

The United States Congress enacted the Coastal Zone Management Act (CZMA) in 1972 and the Coastal Zone Act Reauthorization Amendments in 1990 in response to the increasing pressures of overdevelopment on the nation's coastal resources. These laws make federal financial assistance available to any coastal state or territory that is willing to develop and implement a comprehensive coastal management program. These acts apply to all actions within a designated coastal zone and require that any federal agency whose activities directly affect the coastal zone be consistent, to the maximum extent practicable, with approved state or territory coastal zone management programs (FEMA 2008). The federal consistency provisions of the CZMA require that all federally funded, licensed, or permitted projects affecting the coastal zone of American Samoa be conducted in a manner that is consistent with the federally approved ASCMP (FEMA 2008).

4.6.1 Alternative 1: No Action

Under Alternative 1, no construction would occur, and no effects on the coastal zone would occur.

4.6.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail soil disturbance and construction activity that would occur near Pago Pago Harbor, within the coastal zone regulated by the ASCMP. As a result, Alternative 2 would

have the potential to affect coastal waters through pollutant runoff and erosion and sedimentation reaching the nearby bay.

The temporary effect of Alternative 2 on coastal water quality would be minimized by the implementation of an erosion control plan. Prior to construction, ASPA would require the contractor to prepare and implement an erosion control plan. The erosion control plan would include phased construction to minimize the amount of exposed soil at any given time and would require all work to cease during heavy rains. The plan would require that all soil stockpiled on-site for use as fill or that has been excavated from the proposed project area be covered and surrounded by a sediment barrier to prevent sediment loss. Additionally, the plan would include a debris-disposal plan to ensure that all excavated material is transferred to a designated and preapproved debris disposal site as described in ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the ASEPA Guidance Manual for Runoff Control (ASG and ASEPA 2001). ASPA would also implement permanent erosion control measures as described in the American Samoa Erosion & Sediment Control Field Guide, where appropriate, when construction is completed (ASEPA and ASCMP 2011).

In addition to the erosion control plan, ASPA would require the construction contractor to implement standard BMPs throughout construction, to follow ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the Guidance Manual for Runoff Control (ASG and ASEPA 2001), along with the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1. BMPs would include such measures as vegetative stabilization and physical stabilization with straw waddles.

Alternative 2 also would have the potential to result in an adverse effect on coastal water quality on an ongoing basis due to the on-site storage and use of large quantities of diesel fuel. In the event of an unforeseen spill or other accident, project-related chemicals could wash into the adjacent harbor. To minimize this potential effect, ASPA would prepare and implement a spill containment and response plan for the facility's long-term operation.

With implementation of these measures, ASPA would ensure that Alternative 2 would not result in an adverse effect on coastal waters during construction or operation of the replacement plant. ASPA would be responsible for coordinating with and obtaining a federal consistency determination from the ASCMP to comply with the CZMA for Alternative 2.

4.6.3 Alternative 3: Leloaloa Site

As under Alternative 2, Alternative 3 would entail soil disturbance and construction activity near Pago Pago Harbor, within the coastal zone regulated by the ASCMP. As a result, Alternative 3

would have the potential to affect coastal waters through pollutant runoff and erosion and sedimentation reaching the nearby bay. Alternative 3 also would have the same potential as Alternative 2 to result in adverse effects on water quality on an ongoing basis due to storage and use of diesel fuel for the power generation facility. Alternative 3 would require the same measures to minimize these coastal water quality risks as discussed above for Alternative 2, including preparation and implementation of an erosion control plan and BMPs during construction, implementing the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1 and preparation and implementation of a spill containment and response plan during ongoing operation.

With implementation of these measures, ASPA would ensure that Alternative 3 would not result in an adverse effect on coastal waters during construction or operation of the replacement plant. ASPA would be responsible for coordinating with and obtaining a federal consistency determination from the ASCMP to comply with the CZMA for Alternative 3.

4.6.4 Alternative 4: Utulei Site

The Utulei site is approximately 500 feet from the harbor and, therefore, the proposed power generation facility would be farther from the water than Alternative 2 and Alternative 3. However, Alternative 4 would still result in potential for temporary and ongoing effects on coastal water quality. Alternative 4 would require the same measures to minimize coastal water quality risks as discussed above for Alternative 2, including preparation and implementation of an erosion control plan and BMPs during construction, implementing the relevant BMPs identified in the NMFS comment letter, as discussed above in Section 4.2.1, and preparation and implementation of a spill containment and response plan during ongoing operation. With implementation of these measures, ASPA would ensure that Alternative 4 would not result in an adverse effect on coastal waters during construction or operation of the replacement plant. ASPA would be responsible for coordinating with and obtaining a federal consistency determination from the ASCMP to comply with the CZMA for Alternative 4.

4.6.5 Alternative 5: Tafuna Site

The Tafuna site is approximately 1 mile from the coast. Due to this substantial distance, construction and operation of Alternative 5 would have minimal potential to result in adverse effects on coastal water quality. However, the site is in the coastal zone regulated by the ASCMP, and ASPA would still be responsible for coordinating with and obtaining a federal consistency determination from the ASCMP to comply with the CZMA.

4.7 Noise

In addition to temporary noise produced during the construction process, the proposed project entails construction and operation of a power generation facility, which would emit noise received by surrounding uses.

Noise is federally regulated by the Noise Control Act of 1972. Although the Noise Control Act tasks USEPA to prepare guidelines for acceptable ambient noise levels, it only charges those federal agencies that operate noise-producing facilities or equipment to implement noise standards. By the nature of its mission, FEMA does not have standards defining noise. There are no applicable noise regulations established by ASG.

Comments received during the public review period for the Draft EA indicated concern for localized noise perceived by residents of the community north of the existing facility due to operation of the generators.

4.7.1 Alternative 1: No Action

Under Alternative 1, the proposed project would not be implemented and no construction-related noise would occur. With respect to ongoing noise conditions, the existing temporary containerized power plant at the old Satala site would continue to operate and produce noise 24 hours per day. The Satala site is located in the vicinity of several residences, which would continue to receive this noise. Most residences are located upslope from the facility, which reduces the noise levels at these receptors, but the noise produced under Alternative 1 would continue to be an annoyance. The conditions of localized noise perceived by residents of the community north of the existing facility would persist under Alternative 1. The proposed replacement power plant, with its new and state-of-the-art equipment, is anticipated to produce noise levels less than the current temporary power plant at the Satala site. Therefore, the No Action Alternative would result in a continuation of temporary noise levels, assumed to be higher than the proposed replacement plant.

4.7.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would result in construction and operational noise that would be received by residences located northwest, north, and northeast of the Satala site. The Satala site is located amidst a dense industrial waterfront area, which includes nearby tuna canning facilities and port activities, as well as the island's perimeter shoreline roadway, all of which produce noise that also is likely received by these adjacent residences.

Construction activities would produce elevated noise levels on a temporary basis that would be received by nearby residences, though these residences are currently subjected to noise

produced by the existing temporary generators and nearby industrial uses. Construction activity would generally occur between 5:00 p.m. and 7:00 a.m. Monday through Friday, though some work outside those times may be necessary. Any deviation from this schedule would require ASPA to contact the village *matai* and nearby residents at least 24 hours prior to initiation of this work to notify them of the anticipated construction schedule.

To minimize temporary noise effects during construction of the proposed project to the greatest extent feasible, ASPA would require the contractor to implement the following measures to reduce noise levels to the extent practicable:

- All noise-producing construction equipment and vehicles using internal combustion engines (including haul trucks) would be fitted with mufflers; air-inlet silencers, where appropriate; and any other appropriate shrouds, shields, or other noise-reducing features. These devices would be maintained in good operating condition so as to meet or exceed original factory specifications. Mobile or fixed “package” equipment (e.g., arc welders or air compressors) would be equipped with the shrouds and noise control features that are readily available for that type of equipment.

- All mobile or fixed noise-producing equipment that is regulated for noise output by a local, state/territorial, or federal agency would comply with such regulation while used during project activity.

- At least 20 days before the commencement of construction, ASPA would provide written notification to property owners and residents within 500 feet of the proposed project area and to the chief of the local village. A notice would also be posted at the construction site. The notice would provide a construction schedule, the required noise mitigation measures for the proposed project, and the name and telephone number of the project manager who can address questions and problems that may arise during construction.

- The use of noise-producing signals, including horns, whistles, alarms, and bells, would be for safety warning purposes only.

The measures listed above would not eliminate construction noise received by adjacent receptors, but would minimize its effect to the greatest extent feasible.

The permanent generators proposed under Alternative 2 would be perceived by the same residences that currently receive noise from the temporary generators. Comments received during the public review period indicated concern from a neighboring resident that, while Alternative 2 would improve localized noise conditions compared to Alternative 1, the

improvement would not completely eliminate this issue and the facility would continue to generate noise that would be perceived by local residents.

Because the new generators would be equipped with updated technology and, importantly, would be housed within a building with noise insulation, noise under Alternative 2 would be less than that under Alternative 1, and also would be less than that produced by the generators at the plant destroyed in 2009. Therefore, though the proposed generators would continue to produce noise received by residences near the Satala site on a 24-hour basis, Alternative 2 would result in a net benefit with respect to noise effects.

4.7.3 Alternative 3: Leloaloa Site

Implementation of Alternative 3 would result in construction and operational noise levels similar to those of Alternative 2 in an area featuring fewer residences to receive this temporary and permanent noise. Construction of Alternative 3 would involve more earthmoving for site preparation at the Leloaloa site. This alternative also would require noise-producing construction work beyond the plant site as a result of substation construction at the Satala site and in-road trenching for installation of the proposed distribution line to the Satala site. Accordingly, residences near the Satala site and along the roadway would receive some temporary construction noise as a result of these Alternative 3 features. Therefore, though fewer residences would be affected by on-site work at Leloaloa, Alternative 3 would affect residences beyond this site. ASPA would require the contractor to implement the same construction measures discussed above under Alternative 2 for all construction work, which would minimize the effect of construction noise on residential receptors to the greatest extent feasible.

Operational noise production of Alternative 3 would be similar to Alternative 2 due to the same size and capacity of the facilities proposed. Alternative 3 would move the permanent generator-related noise from Satala to Leloaloa. Though the Leloaloa site is located adjacent to existing industrial uses that likely produce noise on a daily basis that is received by surrounding residences, moving the power plant there under Alternative 3 would create a new 24-hour noise source in this location that would be received by the several residences scattered west and east of the site. Compared to the Satala site, fewer residences would receive this noise, meaning Alternative 3 would have an adverse effect on fewer residences than under Alternative 1 and Alternative 2. Nonetheless, localized impacts from noise would affect residents in the immediate vicinity of the Leloaloa site in the same manner as discussed for Alternatives 1 and 2.

4.7.4 Alternative 4: Utulei Site

Implementation of Alternative 4 would result in construction and operational noise levels similar to those of Alternative 3, including construction noise related to site grading and construction of

the substation at the Satala site. Construction noise at the Utulei site would be received by residences located immediately south and southeast of the site; more residences are within the immediate vicinity of the Utulei site than the Satala site. Residences near the Satala site would receive temporary noise from substation construction. Alternative 4 would require a longer tie line to reach the Satala substation, increasing the amount of in-road trenching and, accordingly, the number of potential residences and other receptors that would be affected by this phase of construction noise. ASPA would require the contractor to implement the same construction measures discussed above under Alternative 2 for all construction work, which would minimize the effect of construction noise on residential receptors to the greatest extent feasible.

Operational noise of Alternative 4 would be similar to Alternatives 2 and 3 due to the same size and capacity of the proposed facilities proposed. Though the Utulei site is located adjacent to existing industrial uses that likely produce noise on a daily basis that is received by surrounding residences, moving the power plant there under Alternative 4 would create a new 24-hour noise source in this location that would be received by several residences adjacent to the proposed site, causing effects to residents in the immediate vicinity of the Utulei site in the same manner as discussed for Alternatives 1 and 2. Therefore, Alternative 4 would have a similar adverse effect on nearby residences, but in a different location.

4.7.5 Alternative 5: Tafuna Site

Implementation of Alternative 5 would result in construction and operational noise levels similar to those of the other build alternatives, but would produce this noise in a primarily industrialized area at the existing Tafuna plant. There are a few scattered residences farther to the west of the Tafuna site and commercial facilities surrounding the site, but these residences, workers, and customers receive noise from the existing plant operations on a 24-hour basis, which would minimize the effect of the temporary construction noise. As in Alternatives 3 and 4, Alternative 5 would require substation construction work at the Satala site, meaning residences near the Satala site would receive some temporary construction noise under Alternative 5. Alternative 5 also entails upgrading a long stretch of the existing underground tie line, meaning residences and other receptors along the roadway would be subjected to construction noise during this temporary phase. ASPA would require the contractor to implement the same construction measures discussed above under Alternative 2 for all construction work, which would minimize the effect of construction noise on residential receptors to the greatest extent feasible.

Placing the proposed generators adjacent to the existing power plant at the Tafuna site would add another source of 24-hour noise to this site. Increased noise levels would be received by residences scattered west of the site and workers and customers of the commercial facilities in the area. Based on review of aerial photographs of these residences, Alternative 5 noise would

affect fewer residences than with Alternative 2 or Alternative 4; furthermore, these affected receptors already receive 24-hour noise from the existing plant on the Tafuna site. Nonetheless, localized impacts from noise would affect residents, workers, and customers in the immediate vicinity of the Tafuna site in the same manner as discussed for Alternatives 1 and 2.

4.8 Flood Hazards

EO 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, the short- and long-term adverse impacts associated with the occupancy and modification of floodplains. FEMA's regulations for complying with EO 11988 are found in 44 CFR Part 9, Floodplain Management and Protection of Wetlands (FEMA 2008). FEMA applies an Eight-Step Decision-Making Process to ensure that projects it funds are consistent with EO 11988 and has initiated this decision-making process for the proposed project with commencing their NEPA compliance process. Similar locally applicable regulations are outlined in the American Samoa Floodplain Management Regulations (Governor of American Samoa 2006).

Critical components (e.g., the power generation building) of the pre-disaster facility were located in the VE Zone, indicating a vulnerability to serious flood hazards that was realized in the 2009 tsunami. One of the goals of the proposed project is to reduce the risk of flood hazards by moving the structures and critical components of the replacement facility outside the VE Zone and into an area that would be less susceptible to these hazardous conditions. This section considers the alternatives' floodplain effects with respect to FEMA Flood Zones and their potential to result in flood hazards at the proposed replacement facility.

4.8.1 Alternative 1: No Action

The Satala site is located along the edge of Pago Pago Harbor, and a portion of the site is located in the VE Zone, with the rest in the X Zone (Figure 3-3). Alternative 1 would entail ongoing operation of the temporary generators sited partially within the VE Zone, and adjacent to the edge of Pago Pago Harbor. Their proximity to the water in an area that is susceptible to inundation during a flood could result in adverse effects, including inundation that could cause severe damage and take the generators out of service.

4.8.2 Alternative 2: Satala Site (Preferred Alternative)

The Satala site is located along the edge of Pago Pago Harbor, with a portion of the site located in the VE Zone and a portion in the X Zone. As shown in Figure 3-1, preliminary plans for Alternative 2 propose locating the critical power generation components of the project, including the generator building, cooler/exhaust area, water tanks, and fuel tanks in the northern and eastern portion of the site, which is at a higher elevation and outside of the VE Zone. Final design would ensure all project features requiring protection from flood hazards would be sited

outside of Zone VE, and only project features such as transit stops, parking, driveways, and access lanes would be sited in Zone VE. By constructing the critical components of the facility outside Zone VE, Alternative 2 would result in a beneficial effect and meet the requirements of EO 11988. In accordance with the EO 11988 and 44 CFR Part 9, FEMA published a cumulative Initial Public Notice for FEMA-1859-DR-AS (Appendix C). TOFR and ASPA, with support from FEMA, would be required to publish an individual Final Public Notice before implementation of Alternative 2.

4.8.3 Alternative 3: Leloaloa Site

Similar to the Satala site, the Leloaloa site is located along the edge of Pago Pago Harbor; however, the entire site is within the X Zone, as shown in Figure 3-5. Alternative 3 would construct the replacement facility away from the water and at a higher elevation, outside of the VE Zone. By placing the site outside of the VE Zone, Alternative 3 would limit the potential for serious flood damage at the proposed facility, resulting in a beneficial effect and meeting the requirements of EO 11988.

4.8.4 Alternative 4: Utulei Site

The Utulei site is located approximately 400 feet from the coast at an elevation of approximately 30 feet and is entirely within Zone X. Therefore, Alternative 4 would not be susceptible to major inundation during a flood, and Alternative 4 would not result in adverse effects with respect to flood hazards and would meet the requirements of EO 11988.

4.8.5 Alternative 5: Tafuna Site

The Tafuna site is located approximately 1 mile from the coast at an elevation of approximately 30 feet and is entirely within Zone X. An area delineated as Zone AE associated with a surface drainage is located approximately 500 feet northwest of the proposed site, but this area would not be expected to affect the site. Therefore, Alternative 5 would not be susceptible to major inundation during a flood, and Alternative 5 would not result in adverse effects with respect to flood hazards and would meet the requirements of EO 11988.

4.9 Water Quality

Surface water on Tutuila is primarily in the form of perennial and ephemeral streams that provide habitat for freshwater fish, plants, and invertebrates. Streams are also a source of drinking water in some remote parts of the island. All surface waters on the island discharge directly into marine water bodies. Groundwater is the principal source of the domestic and industrial water supply as it is more abundant and has a higher quality than surface water (FEMA 2010). Tutuila experiences a tropical maritime climate with abundant rain and warm, humid days and nights. Rainfall across Tutuila is highly variable due to the effects of the steep

mountainous terrain, averaging between 120 and 200 inches annually. The driest period is during winter (June–September) and the wettest is during the summer (December–March) (Clark and Herdrich 1993).

The Satala site, Leloaloa site, and Utulei site are in the Pago Pago watershed, which encompasses approximately 4 square miles of low-elevation coastal land surrounding Pago Pago Harbor. This watershed drains into the harbor via several scattered streams that originate in the steep mountains and ridges rising from the coastal lands. The villages in the vicinity of the alternative sites feature several unnamed streams that carry water to Pago Pago Harbor, including nine streams between Satala and Leloaloa (ASEPA and ASCMP 2000). One unnamed stream flows south into the eastern portion of the Satala site, north of the former location of the demolished warehouse where it is diverted into a man-made concrete-lined channel around the foundation. Another unnamed stream flows south through ASPA property approximately 100 feet west of the Satala site, as shown in Figure 3-4. One unnamed stream bisects the Leloaloa site, and another is located approximately 200 feet east of the site, as shown in Figure 3-5. In Utulei, surface runoff is carried by Vailoa Stream, which empties into the harbor approximately 600 feet north of the Utulei site, as shown in Figure 3-6. Water quality issues in the Pago Pago watershed include historically elevated nutrient levels due to discharge from tuna canneries and sedimentation and solid waste from surface runoff due to upstream development.

The Tafuna site is within the Nu'uuli Pala watershed, which encompasses approximately 6.7 square miles along the southern coast of Tutuila. The nearest stream to the Tafuna site is an unnamed feature that runs east-west approximately 0.5 mile north of the Tafuna site and discharges into Pala Lagoon, which is located north of Pago Pago International Airport. Water quality issues in this watershed include increased turbidity and sedimentation in Pala Lagoon due to storm water runoff (ASEPA and ASCMP 2000).

Sections 401 and 404 of the Clean Water Act (CWA) (33 U.S.C. §1251 et seq.) regulate discharge into jurisdictional wetlands and waters of the U.S. to ensure water quality in these surface water features is properly maintained. Section 401 requires discharge activities to acquire water quality certifications from the applicable regulatory agency, which in American Samoa is ASEPA. Section 404 of the CWA requires discharge activities to obtain a permit from the U.S. Army Corps of Engineers.

Section 402 of the Clean Water Act establishes the National Pollutant Discharge Elimination System (NPDES). The purpose of the NPDES program is to reduce point- and nonpoint-source pollutant discharge into water resources. Construction activities that result in 1 acre or more of

ground disturbance are regulated under the NPDES program and require an NPDES General Permit, which outlines conditions to reduce nonpoint-source pollutant discharge. The NPDES program in America Samoa is administered by USEPA.

4.9.1 Alternative 1: No Action

The No Action Alternative would not result in any ground disturbance on any of the alternative sites; therefore, existing water quality in the nearby water features would remain unchanged.

4.9.2 Alternative 2: Satala Site (Preferred Alternative)

Implementation of Alternative 2 would have the potential for soil erosion and pollutants to indirectly affect off-site surface water that flows directly into Pago Pago Harbor, which is just south of Highway 1 from the Satala site. Erosion and pollutant runoff would be a particular concern during construction, as Alternative 2 would entail clearing and grading of the site to expand foundations for the replacement facility.

As the proposed site would be larger than 1 acre in area, ASPA would be required to apply for and acquire an NPDES General Permit from USEPA prior to commencing any construction activities. The temporary effect of Alternative 2 on water quality would be mitigated by ASPA's fulfillment of permit conditions. This effect would also be mitigated by conditions placed on Alternative 2 by ASG, including the effective implementation, enforcement, and monitoring of an erosion control plan that would be prepared as part of the Project Notification Review System (PNRS) NPDES Land Use Permit (LUP) process. ASG would issue conditions in the LUP requiring ASPA to ensure that sediment generated within project limits by storm water flows is contained on-site. ASPA would be required to consult with ASEPA on specific BMPs, which must be implemented as directed and approved by ASEPA. ASPA would be required to ensure that silt fences, curtains, and other water quality structures are properly installed and maintained to avoid transport of fill or exposed soils from the construction site. The permit would give the ASCMP authority to stop work, require corrective measures, and seek legal enforcement in the unforeseen event that the BMPs for Alternative 2 are not effectively controlling water quality on the site. If ASPA cannot for any reason meet the conditions described in their LUP, and if any discharge occurs to waters of the U.S. such that a 401 or 404 permit might be necessary, ASPA would be required to halt work immediately and notify TOFR, FEMA, and ASEPA or USACE (as appropriate), to determine the proper steps to initiating the relevant CWA permit process.

To meet the NPDES permit conditions and the conditions that would be placed on the Alternative 2 LUP prior to construction, ASPA would prepare and implement an erosion control plan. The erosion control plan would include phased construction to minimize the amount of exposed soil at any given time and would require all work to cease during heavy rains. The plan

would require that all soil stockpiled on-site for use as fill or that has been excavated from the project area be covered and surrounded by a sediment barrier to prevent sediment loss.

Additionally, the plan would include debris-disposal to ensure that all excavated material is transferred to a designated and preapproved debris disposal site as described in ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the ASEPA Guidance Manual for Runoff Control (ASG and ASEPA 2001). ASPA would also implement permanent erosion control measures as described in the American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011), where appropriate, when construction is completed.

Due to the increase in impervious surfaces proposed on the site due to the construction of concrete foundations and buildings, ASG storm water guidelines may require or recommend diversion of storm water into an infiltration basin or other storm water detention facility to regulate the flow of storm water and improve water quality.

In addition to the erosion control plan, ASPA would ensure the effective implementation, enforcement, and monitoring of the standard BMPs required of the construction contractor throughout construction to limit the potential for construction-related pollutants to affect storm water runoff. These BMPs would follow ASEPA's American Samoa Erosion & Sediment Control Field Guide (ASEPA and ASCMP 2011) and the ASEPA Guidance Manual for Runoff Control (ASG and ASEPA 2001). BMPs would include such measures as vegetative stabilization and physical stabilization. ASPA would also require incorporation of the relevant BMPs listed in the NMFS comment letter, as discussed in Section 4.2.1.

With the effective implementation, enforcement, and monitoring of the erosion control plan and the BMPs stated above, ASPA would ensure that construction activities would not result in soil, debris, or other fill materials being placed into surface water bodies. These measures would ensure that no discharge and runoff of sediment to the marine environment would occur and that no adverse effects would occur as a result of Alternative 2.

4.9.3 Alternative 3: Leloaloa Site

Implementation of Alternative 3 would have the potential for soil erosion and pollutants to indirectly affect off-site surface water that flows directly into Pago Pago Harbor, which is just south of Highway 1 from the Leloaloa site. Erosion and pollutant runoff would be a particular concern during construction, as Alternative 3 would entail clearing and grading of the sloped site to create foundations for the replacement facility. Bisecting the site, a stream originates between the 800- and 1,200-foot contour and discharges surface runoff along a steep drainage course

directly into Pago Pago harbor. This stream is subject to ASEPA stream buffer setback regulations and BMPs. No commercial structures are permitted to be built within the buffer extending 50 feet to each side of the stream (Figure 3-5).

Alternative 3 would require the same NPDES, PNRS, and LUP processes described above for Alternative 2, which would identify project-specific measures that would be required and employed to avoid adverse effects with respect to water quality, including sedimentation. As under Alternative 2, ASPA would require the Alternative 3 contractor to prepare an erosion control plan to minimize the potential for sedimentation that could affect Pago Pago Harbor along with the relevant BMPs listed in the NMFS comment letter, as discussed above in Section 4.2.1.

With the effective implementation, enforcement, and monitoring of the erosion control plan and the BMPs stated above, ASPA would ensure that construction activities would not result in soil, debris, or other fill materials being placed into surface water bodies. These measures would ensure that no discharge and runoff of sediment to the marine environment would occur and that no adverse effects would occur as a result of Alternative 3.

4.9.4 Alternative 4: Utulei Site

Implementation of Alternative 4 would have the potential for soil erosion and pollutants to indirectly affect off-site surface water that flows directly into Pago Pago Harbor, which is approximately 400 feet north of the Utulei site. Because the Utulei site is farther from the harbor than the Satala and Leloaloa sites, the potential effect of Alternative 4 on water quality is slightly lesser than that of Alternative 2 and Alternative 3; however, erosion and pollutant runoff would still be a concern during construction, as Alternative 4 would entail site grading and possible soil remediation.

Alternative 4 would require the same NPDES, PNRS, and LUP processes described above for Alternative 2, which would identify project-specific measures that would be required and employed to avoid adverse effects with respect to water quality, including sedimentation. As under Alternative 2, ASPA would require the Alternative 4 contractor to prepare an erosion control plan to minimize the potential for sedimentation that could affect Pago Pago Harbor, along with the relevant BMPs listed in the NMFS comment letter, as discussed above in Section 4.2.1.

With the effective implementation, enforcement, and monitoring of the erosion control plan and the BMPs stated above, ASPA would ensure that construction activities would not result in soil, debris, or other fill materials being placed into surface water bodies. These measures would

ensure that no discharge and runoff of sediment to the marine environment would occur and that no adverse effects would occur as a result of Alternative 4.

4.9.5 Alternative 5: Tafuna Site

Implementation of Alternative 5 would have the potential for soil erosion and pollutants to indirectly affect off-site surface water that flows into Pala Lagoon, which is approximately 0.5 mile northeast of the Tafuna site. The Tafuna site is the farthest from the water of all the alternative sites; however, erosion and pollutant runoff would still be a concern during construction, as Alternative 4 would entail site grading to establish a suitable foundation for the replacement facility.

Alternative 5 would require the same NPDES, PNRS, and LUP processes described above for Alternative 2, which would identify project-specific measures that would be required and employed to avoid adverse effects with respect to water quality, including sedimentation. As under Alternative 2, ASPA would require the Alternative 5 contractor to prepare an erosion control plan to minimize the potential for sedimentation that could affect Pala Lagoon.

With the effective implementation, enforcement, and monitoring of the erosion control plan and the BMPs stated above, ASPA would ensure that construction activities would not result in soil, debris, or other fill materials being placed into surface water bodies. These measures would ensure that no discharge and runoff of sediment to the marine environment would occur and that no adverse effects would occur as a result of Alternative 5.

4.10 Land Use and Planning

American Samoa's 2003 Territorial General Plan presents a policy agenda for development, but it does not provide geographically specific land uses or prescribe geographically specific land use zones in the manner of a city or county comprehensive or master plan. The Territorial General Plan incorporates specific master and comprehensive plans where they exist, such as the 2003 Pago Pago Bay Shoreline Development Plan or the 1999 Port Master Plan (ASG 2008). A major reason for the lack of territory-wide, comprehensive land use planning and zoning is that over 96 percent of the land in American Samoa is owned in a traditional communal manner, where the village chief [*matai*] regulates the occupancy and use of land within his/her village (FEMA 2008).

Land use in American Samoa is regulated by the ASCMP, which evaluates and restricts incompatible development in areas subject to natural hazards, including flooding, storm surge, tsunami, landslide, coastal erosion, and salt water intrusion (ASG 2008). To determine compliance with the ASCMP, all projects involving ground disturbance require a Land Use

Permit (LUP) application to be submitted for review under the PNRS. In addition to evaluating land use for natural hazards, the PNRS reviews permit applications for compliance with building codes, environmental regulations, infrastructure/utility requirements, historic preservation and public health regulations, and recreational/shoreline accessibility (FEMA 2010).

4.10.1 Alternative 1: No Action

Alternative 1 would entail ongoing operation of the temporary generators in place on the Satala site. The Satala site is owned by ASPA and was the former home of the permanent electrical power generation facility destroyed in 2009, which was in operation since the 1960s. The site is located in an industrial area abutted by residential development to the northwest, north, and northeast. Alternative 1 would not represent a change in land use. Therefore, Alternative 1 would not result in an adverse effect with respect to land use.

4.10.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail replacing the destroyed electrical power generation facility on the same site as the facility destroyed in 2009, which was in operation since the 1960s. The Satala site is located in an industrial area abutted by residential development to the northwest, north, and northeast. Alternative 2 would not represent a change in land use. Because of the existing and pre-disaster industrial use of the site, Alternative 2 would not represent a land use conflict. ASPA would be responsible for applying for and obtaining PNRS approval for construction and operation of the proposed facility on the Satala site, and would consult with the village chief prior to approval of the proposed project.

4.10.3 Alternative 3: Leloaloa Site

Alternative 3 would entail constructing and operating the replacement electrical power generation facility on a vacant site that was the former home of a school. The Leloaloa site is located near existing industrial development to the west, with scattered residences northwest and northeast of the proposed site. Alternative 3 would introduce a new industrial use to a currently vacant site in the vicinity of residences, which would present a moderate land use conflict. Fewer residences would be affected by construction on the Leloaloa site than in the other build alternatives. The Leloaloa site is not currently owned by ASG, and Alternative 3 would entail acquisition of the property or permission to use the site for the proposed project. ASPA would be responsible for applying for and obtaining PNRS approval for construction and operation of the proposed facility on the Leloaloa site, and would consult with the village chief prior to approval of the proposed project.

4.10.4 Alternative 4: Utulei Site

Alternative 4 would entail constructing and operating the replacement electrical power generation facility on a disturbed site owned by ASG that currently features two large abandoned World War II-era fuel storage tanks. The Utulei site is in an industrial area with adjacent residences north, south, and southeast of the site. Alternative 4 would increase the intensity of the existing industrial uses in the vicinity of residences, which would present a moderate land use conflict. ASPA would be responsible for applying for and obtaining PNRS approval for construction and operation of the proposed facility on the Utulei site, and would consult with the village chief prior to approval of the proposed project.

4.10.5 Alternative 5: Tafuna Site

Alternative 5 would entail constructing and operating the replacement electrical power generation facility on a disturbed site owned by ASPA that is adjacent to an existing electrical generation facility and currently used for storage. Because of the existing industrial uses of the site, Alternative 5 would not represent a land use conflict, though several scattered residences and commercial facilities are located in the vicinity of the industrial development. ASPA would be responsible for applying for and obtaining PNRS approval for construction and operation of the proposed facility on the Tafuna site, and would consult with the village chief prior to approval of the proposed project.

4.11 Traffic

The proposed project would result in temporary traffic disruption during construction and a minor number of permanent trips related to operation of the proposed facility that would be similar to traffic levels associated with the existing temporary generators. Because of the minimal number of operational trips and the accessibility of all sites to existing major roadways and public transportation, long-term effects would be minimal. This section focuses on temporary effects of the alternatives during construction.

4.11.1 Alternative 1: No Action

Alternative 1 would entail no construction; therefore, no effect on traffic would occur.

4.11.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail construction at the Satala site, which would result in minor, localized disruption of traffic in the vicinity of the Satala site due to material and equipment delivery to the site. To minimize potential adverse impacts to traffic and circulation during construction, ASPA would require the contractor to implement the following mitigation measures:

- Stage construction equipment, materials, and vehicles to minimize hindrances to traffic flow.
- Provide advance written notice of the construction schedule to all residents who would have limited access to their homes or driveways during construction. The written notification would identify a local contact person with ASPA.
- Review traffic patterns to determine if and when traffic restrictions would be required during construction.

Implementation of these measures would ensure Alternative 2 would not result in adverse effects with respect to traffic.

4.11.3 Alternative 3: Leloaloa Site

Alternative 3 would entail construction at the Leloaloa site, which would result in minor, localized disruption of traffic in the vicinity of the Leloaloa site due to material and equipment delivery to the site. Temporary activity at the Satala site related to substation construction would result in a temporary traffic disturbance at that site, as well. Alternative 3 also would require trenching along a 0.7-mile portion of Route 1 for installation of a distribution line between the Leloaloa site and the proposed substation, which would likely entail temporary lane closure that could cause mild traffic delays. To minimize potential adverse impacts to traffic and circulation during construction, ASPA would require the contractor to implement the same measures listed above for Alternative 2. Due to the in-road construction under Alternative 3, ASPA would require the contractor to prepare and implement a traffic control plan to ensure maintenance of safe driving conditions. With implementation of these measures, Alternative 3 would not result in adverse effects on traffic.

4.11.4 Alternative 4: Utulei Site

Alternative 4 would result in temporary traffic effects similar to those of Alternative 3, but slightly greater due to the increased distance of the proposed distribution line (approximately 2.9 miles) and the resultant increase in the amount and duration of in-road construction. Alternative 4 would require the same measures discussed in Alternative 2, as well as the traffic control plan discussed in Alternative 3. With implementation of these measures, Alternative 4 would not result in adverse effects on traffic.

In addition to the temporary effects discussed above, Alternative 4 would result in a permanent effect with respect to traffic because it requires improvement of an existing road to provide adequate access to the site. To prevent conflicts with existing traffic and conflicts related to access to areas adjacent to the proposed project site, the road must be properly graded and

paved, coordinated with American Samoa Department of Public Works (ASDPW), and designed with adequate site distance. With proper design of this road improvement, Alternative 4 would not result in any adverse effects with respect to traffic.

4.11.5 Alternative 5: Tafuna Site

Alternative 5 would result in temporary traffic effects similar to those of Alternative 3 and Alternative 4, but slightly greater due to the approximately 9 miles of in-road construction related to upgrading the existing distribution line. Alternative 5 would require the same measures discussed in Alternative 2, as well as the traffic control plan discussed in Alternative 3. With implementation of these measures, Alternative 5 would not result in adverse effects on traffic.

4.12 Public Health and Safety

Potential public safety hazards include hazardous, explosive, reactive, or other dangerous materials that pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed. The federal Resource Conservation and Recovery Act (RCRA) provides USEPA the authority to control hazardous wastes, including the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of nonhazardous waste.

Within American Samoa, the Hazardous Materials Branch of ASEPA regulates the importation, storage, and disposal of hazardous materials and waste. In addition, ASEPA may prohibit such generation, transportation, storage, or disposal if it is determined that these activities will endanger public health and safety or the environment, or where such activities are not performed in accordance with the regulations set forth in Title 24 of the American Samoa Code Annotated (ASEPA 2011).

4.12.1 Alternative 1: No Action

Alternative 1 would entail no ground disturbance or construction; therefore, no construction-related hazard would occur. The Satala site is located near existing residences, and ongoing operation of the temporary generators under Alternative 1 would result in some degree of hazards risk due to continued storage and use of large quantities of diesel fuel in the vicinity of residences. This ongoing operation would be subject to existing ASPA safety and maintenance protocols approved by ASG to minimize the risk of fuel leaks, fires, and other hazards.

4.12.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail construction activities at the Satala site that would involve the limited transportation, storage, usage, and disposal of hazardous, explosive, reactive, or other

dangerous materials on a temporary basis. Small quantities of these materials, such as gasoline and diesel fuel, would be used to power equipment during construction and maintenance activities. All construction activities involving the transportation, usage, and disposal of regulated materials would be subject to federal and local health and safety requirements. ASPA would require the construction contractor to prepare a Minor Spill Response Plan that presents the procedures and protocols utilized in the event of a spill that might result from the activities associated with the construction and installation of the proposed power plant facilities. The plan would be reviewed and approved by both FEMA and the Hazardous Materials Branch of ASEPA prior to notice to proceed for construction of the proposed project. Adherence to this plan would ensure that Alternative 2 would not result in an adverse public safety effect due to hazardous or other regulated dangerous materials during construction.

An oil seep in the vicinity of the Satala site was first documented by USEPA in 2008, and subsurface waste oil has been removed from an interceptor trench (USEPA 2013). The site may continue to experience contamination conditions. Accordingly, implementation of Alternative 2 would require an environmental site assessment to identify any contamination of the site. If the site assessment indicates that the site has been contaminated, Alternative 2 would require soil remediation to ensure workers are not exposed to health risks during construction. With implementation of these measures, Alternative 2 would not result in adverse construction-related public health effects.

The Satala site is located near residences, and operation of the replacement facility at the site under Alternative 2 would result in the same degree of hazards risk due to continued storage and use of diesel fuel in the vicinity of residences as under Alternative 1. Operation of the replacement facility would be subject to existing safety and maintenance protocols to minimize the risk of fuel leaks, fires, and other hazards.

4.12.3 Alternative 3: Leloaloa Site

Alternative 3 would entail similar construction-related hazards effects as those discussed above under Alternative 2, though the potential effects would be slightly greater due to the inclusion of earthwork and the requirement of off-site construction. As in Alternative 2, Alternative 3 would require the preparation of a Minor Spill Response Plan, which would minimize the risk of construction-related hazards.

Alternative 3 would entail operation of the replacement facility, including storage and use of large quantities of diesel fuel, near residences, resulting in a potential hazard to nearby residents. Operation of the replacement facility would be subject to ASPA's safety and maintenance protocols to minimize the risk of fuel leaks, fires, and other hazards.

4.12.4 Alternative 4: Utulei Site

Alternative 4 would have a potential for construction-related hazards effects similar to that of Alternative 3, though slightly greater due to the increased amount of in-road work. As in the other build alternatives, Alternative 4 would require preparation of a Minor Spill Response Plan to minimize the risk of construction-related hazards. The Utulei site currently contains two abandoned fuel tanks and, based on this former use, the site has the potential to have been contaminated by leaks or spills. Accordingly, implementation of Alternative 4 would require an environmental site assessment to identify any contamination of the site. If the site assessment indicates that the site has been contaminated, Alternative 4 would require soil remediation to ensure workers are not exposed to health risks during construction. With implementation of these measures, Alternative 4 would not result in adverse construction-related public health effects.

Alternative 4 would entail operation of the replacement facility, including storage and use of large quantities of diesel fuel near residences, resulting in a potential hazard to nearby residents. Operation of the replacement facility would be subject to ASPA's safety and maintenance protocols to minimize the risk of fuel leaks, fires, and other hazards.

4.12.5 Alternative 5: Tafuna Site

Alternative 5 would have a potential for construction-related hazards effects similar to those of the other build alternatives, though slightly greater due to the increased amount of in-road work. As in the other build alternatives, Alternative 5 would require preparation of a Minor Spill Response Plan to minimize the risk of construction-related hazards. The Tafuna site is currently used for industrial storage, a use that may have resulted in soil contamination. Accordingly, implementation of Alternative 5 would require an environmental site assessment to identify any contamination of the site. If the site assessment indicates that the site has been contaminated, Alternative 5 would require soil remediation to ensure workers are not exposed to health risks during construction. With implementation of these measures, Alternative 5 would not result in adverse construction-related public health effects.

Alternative 5 would entail operation of the replacement facility in an industrial area owned by ASPA, adjacent to a similar electrical power generation facility with scattered residences and commercial facilities located in the surrounding industrial area. The increased intensity of industrial usage of the site would increase the potential for public health incidents on the property. Operation of the replacement facility would be subject to ASPA's safety and maintenance protocols to minimize the risk of fuel leaks, fires, and other hazards.

4.13 Visual Resources

The proposed project would construct an industrial facility consisting of a building housing the large power generators, fuel and water tanks, and an electrical substation, all of which would be visible to some degree from surrounding areas. Most of the proposed sites are located in industrial areas.

4.13.1 Alternative 1: No Action

Alternative 1 would entail the continued presence of temporary generators and temporary support facilities on the Satala site. The site is in an industrial area, and no sensitive views are affected by the presence of these facilities. Therefore, Alternative 1 would not entail any adverse visual effects.

4.13.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would replace the temporary facilities on the Satala site with permanent facilities. As discussed above under Alternative 1, the Satala site is in an industrial area, and this change in the visual environment would not cause adverse effects.

4.13.3 Alternative 3: Leloaloa Site

Alternative 3 would entail an introduction of an industrial facility on land that is currently vacant and characterized by a combination of nonnative turf and dense vegetation. The Leloaloa site is near industrial uses to the west, and Alternative 3 would represent an extension of this visual environment into an undeveloped area, resulting in a considerable aesthetic change. Direct views of the site are relatively limited, including scattered residences near the site and people travelling along Route 1 near the site. As a result, Alternative 3 would have moderate adverse effects on visual resources. If Alternative 3 is selected, the facility design should consider the site's visibility and incorporate architectural features to limit adverse effects.

4.13.4 Alternative 4: Utulei Site

Alternative 4 would construct the replacement facility in an industrial area on a site that currently features two abandoned fuel storage tanks. Though this would not constitute a considerable change in the overall visual environment, the Utulei site is adjacent to several residences that would have direct views of the facility. As a result, Alternative 4 would have minor effects on visual resources. If Alternative 4 is selected, the facility design should consider the site's visibility and incorporate architectural features to limit adverse effects.

4.13.5 Alternative 5: Tafuna Site

Alternative 5 would construct the replacement facility in an industrial area that is currently used for storage. There are limited views of the site, and Alternative 5 would not result in a

considerable change in the visual environment. Therefore, Alternative 5 would not result in adverse effects on visual resources.

4.14 Utilities

Connections to water, sewer (or soil-based treatment system), electricity, and telecommunications would be needed for the operation of the proposed replacement power plant facility. The utility mains for water, sewer, electricity, and telecommunications run along the right-of-way for Highway 1 around Pago Pago Harbor and along Highway 14 in the Tafuna area. For each alternative, service lines would connect the proposed replacement facility to the main lines.

4.14.1 Alternative 1: No Action

Under the No Action Alternative, no construction would occur; therefore, no effects would occur to existing public services and utilities.

4.14.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail the connection of water, sewer, electricity, and telecommunications to existing service main lines along Highway 1 directly adjacent to the site. The sewer main connects to the Utulei Sewage Treatment Plant. Alternative 2 would not result in a substantial increase in demand for services due to the small number of employees at the proposed replacement power plant facility. Therefore, no impact on utilities would occur.

4.14.3 Alternative 3: Leloaloa Site

Alternative 3 would entail the connection of water, sewer, electricity, and telecommunications to existing service main lines along Highway 1 directly adjacent to the site. The sewer main connects to the Utulei Sewage Treatment Plant. Alternative 3 would not result in a substantial increase in demand for services due to the small number of employees at the proposed replacement power plant facility. Therefore, no impact on utilities would occur.

4.14.4 Alternative 4: Utulei Site

Alternative 4 would entail the construction of service lines to connect water, sewer, electricity, and telecommunications to existing service main lines along Highway 1 north of the site. The sewer main connects to the Utulei Sewage Treatment Plant. Alternative 4 would not result in a substantial increase in demand for services due to the small number of employees at the proposed replacement power plant facility. Therefore, no impact on utilities would occur.

4.14.5 Alternative 5: Tafuna Site

Alternative 5 would entail the construction of services lines through ASPA property to connect water, sewer, electricity, and telecommunications to the existing ASPA point of connection to

existing service main lines along Highway 14 directly adjacent to the site. The sewer main connects to the Tafuna Sewage Treatment Plant. Alternative 5 would not result in a substantial increase in demand for services due to the small number of employees at the proposed replacement power plant facility. Therefore, no impact on utilities would occur.

4.15 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to make achieving environmental justice part of their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations (FEMA 2008). The population of American Samoa is generally highly homogeneous regarding ethnicity and income levels.

The proposed project would construct an industrial facility that would produce air pollutant emissions and noise and create a public health concern, as discussed above in Sections 4.1, 4.7, and 12, respectively. Some of the alternative sites for the proposed project are located near residences. There is no specific information available on the ethnicity or income of these nearby residences, so this section provides a general assessment of the proposed project potential to adversely affect these residential populations.

4.15.1 Alternative 1: No Action

Alternative 1 would entail ongoing operation of the temporary generators in place on the Satala site. The site is located in an industrial area abutted by residential development to the northwest, north, and northeast that would continue to be exposed to the facility's noise, air pollutants, and potential public safety concerns. These hazards would affect all people equally and would not affect one ethnic or income group disproportionately. Therefore, Alternative 1 would not result in an environmental justice concern.

4.15.2 Alternative 2: Satala Site (Preferred Alternative)

Alternative 2 would entail replacing the destroyed electrical power generation facility on the same site as the facility destroyed in 2009, which was in operation since the 1960s. The Satala site is located in an industrial area abutted by residential development to the northwest, north, and northeast that would potentially be affected by the facility's noise, air pollutants, and public safety concerns. As noted in Sections 4.1 and 4.7, the permanent facility would result in and fewer pollutant emissions and less noise than the temporary facility, meaning that Alternative 2 would have less of an effect on surrounding residences than Alternative 1. The conditions at the Alternative 2 site would not affect one ethnic or income group disproportionately. Therefore, Alternative 2 would not result in an environmental justice concern.

4.15.3 Alternative 3: Leloaloa Site

The Leloaloa site is located near existing industrial development to the west, with scattered residences northwest and northeast of the proposed site. Under Alternative 3, these residences would potentially be affected by the facility's noise, air pollutants, and public safety concerns. Therefore, Alternative 3 would have the potential to result in moderate adverse effects with respect to environmental justice. Based on a review of aerial photographs, the Leloaloa site appears to have fewer adjacent residences than the Satala site and the Utulei site. Conditions at the Leloaloa site would not affect one ethnic or income group disproportionately. Therefore, Alternative 3 would not result in an environmental justice concern.

4.15.4 Alternative 4: Utulei Site

The Utulei site is in an industrial area with adjacent residences north, south, and southeast of the site. Under Alternative 4, these residences would potentially be affected by the facility's noise, air pollutants, and public safety concerns. Conditions at the Utulei site would not affect one ethnic or income group disproportionately. Therefore, Alternative 4 would not result in an environmental justice concern.

4.15.5 Alternative 5: Tafuna Site

The Tafuna site is in an industrial area with scattered residences west of the site. Under Alternative 5, these residences would potentially be affected by the facility's noise, air pollutants, and public safety concerns. Conditions at the Tafuna site would not affect one ethnic or income group disproportionately. Therefore, Alternative 5 would not result in an environmental justice concern.

4.16 Cumulative Impacts

CEQ defines a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions…" (40 CFR Part 1508.7). The pace of growth and development in American Samoa has historically been very slow. No projects are known to be occurring or proposed in the immediate vicinity of Alternatives 2, 3, or 4. One known project has been proposed in the vicinity of the Tafuna site—a new ASPA Operations Building located approximately 150 feet to the east of the Tafuna site within the existing ASPA ownership parcel. There are no adverse effects from that project that would contribute to any cumulative impacts with respect to Alternative 5. Thus, there are no cumulative impacts to consider that would affect implementation of any of the alternatives (1, 2, 3, 4, or 5) that are analyzed in this EA.

5.0 Public Participation and Agency Coordination

FEMA is the federal agency conducting the NEPA compliance review process for the proposed project. It is the federal agency's responsibility to expedite the preparation and review of NEPA documents in a way that is responsive to the needs of the villages in the vicinity of the alternative locations, and the American Samoa residents, while meeting the spirit and intent of NEPA and complying with all NEPA provisions.

FEMA, with the assistance of ASPA and TOFR, conducted an informal scoping meeting at the beginning of the NEPA review process. On December 1, 2011, ASPA and FEMA met with representatives of the following agencies and organizations to gather their input on this project: ASPA, ASDOC, ASDPW, ASEPA, ASHPO, ASDMWR, American Samoa Port Authority, and TOFR. FEMA, with ASPA circulated and published (in both English and Samoan) a Public Scoping Notice in the *Samoa News* newspaper (with a circulation area covering all of American Samoa) on April 23, 2012. FEMA did not receive any comments in response to the scoping notice. A copy of the scoping notice is provided in Appendix C of this EA.

TOFR, with support from FEMA, published (in both English and Samoan) a Notice of Availability (NOA) of the Draft EA in the *Samoa News* on December 20, 2013. The NOA indicated a public comment period ending January 10, 2014. As detailed in the NOA, the Draft EA document was made available for public review and comment at three physical locations in American Samoa (TOFR's office on Ili'ili Road and ASPA's Tafuna and Fagatogo Outlets). An electronic version of the Draft EA was made available on FEMA's website at http://www.fema.gov/media-library/assets/documents/86369. A copy of the published NOA is provided in Appendix D. The NOA was also distributed to involved or interested representatives of the Federal Government, ASG, and the private sector. A copy of the distribution list for the NOA is included in Appendix D.

During the public comment period, FEMA accepted written comments on the Draft EA addressed to:

> FEMA EHP, Satala Power Plant Replacement, 1111 Broadway, Suite 1200, Oakland, California 94607; or email to: fema-rix-ehp-documents@fema.dhs.gov.

FEMA received three comment letters during the public review and comment period for the Draft EA, including letters from one agency and two citizens. All three letters are provided in Appendix D.

The lone agency letter received during the public review period was submitted by the NMFS Pacific Islands Regional Office's Protected Resources Division. The Final EA incorporates revisions into Section 4.2.1 to incorporate a suggested edit regarding LOST and discussion of certain BMPs recommended by NMFS for near-water work. The letter also requested clarification as to whether the project proposes to construct a cooling water intake system in nearby waters. Section 3.0 has been revised to clarify that the project does not propose a cooling water intake system.

The two additional comment letters received during the public review period were submitted by Satala residents that live adjacent to the existing temporary generators. These letters expressed concerns regarding the temporary generators' localized air quality and noise impacts, as perceived by nearby residents, and regarding potential reconstruction of the replacement facility on a site that may be susceptible to future damage from tsunamis and landslides. The Final EA incorporates revisions to Sections 4.1 and 4.7 to identify the concerns for the project's localized air quality and noise effects, respectively. The Final EA also incorporates revisions to Section 4.4 to discuss local concern for the project's tsunami and landslide risks.

As part of the decision-making process for the Proposed Action, FEMA has reviewed all comments and prepared this Final EA specifically to address the comments received during the public review process. This Final EA will be made available to all parties notified of the Draft EA (as listed in Appendix D) and parties that provided comments on the Draft EA; its availability will also be advertised in the *Samoa News.*

6.0 References

All photographs in this document are courtesy of AECOM 2011, 2012 and 2013 except where otherwise noted.

AECOM 2011. Personal interview with ASPA staff: Ted Leiato and Siva Kumar, December 2, 2011.

American Samoa Environmental Protection Agency (ASEPA). 2011. List of Major Environmental Regulations. Available at ASEPA website: http://asepa.gov/list-of-regulations.asp. Last accessed January 19, 2013.

American Samoa Environmental Protection Agency (ASEPA) and American Samoa Coastal Zone Management Program (ASCMP). 2000. *American Samoa Watershed Protection Plan. Volume 2: Watersheds 24-35*. Prepared by Pedersen Planning Consultants. January.

American Samoa Environmental Protection Agency (ASEPA) and American Samoa Coastal Zone Management Program (ASCMP). 2011. *American Samoa Erosion & Sediment Control Field Guide, Version 1.0 for Contractors and Site Inspectors*. Prepared by Horsley Witten Group, Inc. May.

American Samoa GIS Working Group. (ASGWG). 2012. Geographic Information Systems (GIS) Data for American Samoa Wetlands and Coral Reefs. Available at GIS Working Group website: http://gis.asascience.com/samoa24/. Last accessed February 20, 2012.

American Samoa Government (ASG). 2008. *American Samoa Revision and Update of the Territory Hazard Mitigation Plan*. April 28.

American Samoa Government (ASG) and American Samoa Environmental Protection Agency (ASEPA). 2001. *Guidance Manual for Runoff Control: Preventing Erosion, Sedimentation, and Pollution of Receiving Waters in American Samoa*. Prepared by R.M. Towill Corporation. October.

American Samoa Power Plant Authority (ASPA). 2013. American Samoa Power Plant Authority website, Available at ASPA website: http://www.aspower.com/aspa-about.html. Last accessed January 29, 2013.

Blyth-Skyrme, V. J., J. J. Rooney, F. A. Parrish, and R. C. Boland. 2013. Mesophotic Coral Ecosystems – Potential Candidates as Essential Fish Habitat and Habitat Areas of Particular Concern. Pacific Islands Fish. Sci. Cent., Natl. Mar. Fish. Sci. Cent. Admin. Rep. H-13-02, 53 p.

Brainard, R. 2008. *Coral Reef Ecosystem Monitoring Report for American Samoa: 2002 – 2006*. National Oceanic and Atmospheric Administration, Pacific Islands Fisheries Science Center, Coral Reef Ecosystem Division, Special Report.

Clark, Jeffrey, and David Herdrich. 1993. Prehistoric Settlement System in Eastern Tutuila, American Samoa. *Journal of Polynesian Society* 102(2):147–185.

Coles, S. L., P. R. Reath, P. A. Skelton, V. Bonito, R. C. DeFelice, and L. Basch. 2003. *Introduced Marine Species in Pago Pago Harbor, Fagatele Bay and the National Park Coast, American Samoa*. Pacific Biological Survey, Bishop Museum Technical Report No. 26. December.

Council on Environmental Quality (CEQ). 2010. *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gases*. February.

Craig, P. (ed.). 2005. *Natural History Guide to American Samoa*. 2nd Edition. National Park of American Samoa and Department of Marine and Wildlife Resources.

Federal Emergency Management Agency (FEMA). 2006. Flood Insurance Rate Map. Map Numbers 6000010077C, 6000010079C, 6000010081C, 6000010083C, 6000010086C. Maps revised July 17, 2006.

Federal Emergency Management Agency (FEMA). 2008. *Fagatogo Stormwater Modification Final Environmental Assessment (FEMA-1506-DR-AS, HMGP #1506-4)*. Prepared by URS Corporation, Oakland, CA.

Federal Emergency Management Agency (FEMA). 2010. *Permanent Housing Construction Draft Environmental Assessment (FEMA-1859-DR-AS)*. Prepared by URS Corporation, Oakland, CA.

Federal Emergency Management Agency (FEMA). 2013. *Cultural Resources Inventory Report, Satala Power Plant Replacement Project, Territorial Office of Fiscal Reform and American Samoa Department of Education FEMA-1859-DR-AS*. Prepared by AECOM. March.

Governor of American Samoa. 2006. Executive Order No. 004-2006, Territory of American Samoa Floodplain Management Regulations. July.

Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007 – Synthesis Report*. IPCC Fourth Assessment Report.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998a. *Recovery Plan for U.S. Pacific Populations of the Hawksbill Turtle (Eretmochelys imbricata)*. National Marine Fisheries Service, Silver Spring, MD.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998b. *Recovery Plan for U.S. Pacific Populations of the Green Turtle (Chelonia mydas)*. National Marine Fisheries Service, Silver Spring, MD.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998c. *Recovery Plan for U.S. Pacific Populations of the Leatherback Turtle (Dermochelys coriacea)*. National Marine Fisheries Service, Silver Spring, MD.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998d. *Recovery Plan for U.S. Pacific Populations of the Loggerhead Turtle (Caretta caretta)*. National Marine Fisheries Service, Silver Spring, MD.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2013. *Hawksbill Sea Turtle (Eretmochelys imbricata), 5-Year Review: Summary and Evaluation*. National Marine Fisheries Service, Office of Protected Resources, Silver Spring, MD; U.S. Fish and Wildlife Service, Southeast Region, Jacksonville Ecological Services Office, Jacksonville, FL.

Scott, D. A. (ed.). 1993. *A Directory of Wetlands in Oceana*. IWRB, Slimbridge, U.K. and AWB, Kuala Lumpur, Malaysia.

Territorial Emergency Management Coordinating Office. 2008. *American Samoa Revision and Update of the Territory Hazard Mitigation Plan. Pago Pago, AS*. Prepared by American Samoa Disaster Recovery Office, and Jamie Caplan Consulting LLC, Northampton, MA.

Tuato'o-Bartley, N., T. E. Morrell, and P. Craig. 1993. Status of Sea Turtles in American Samoa in 1991. *Pac. Sci*. 47:215–221.

U.S. Environmental Protection Agency (USEPA). 2007. *Climate Change and Interacting Stressors: Implications for Coral Reef Management in American Samoa*. Global Change Research Program, National Center for Environmental Assessment, Washington, DC; EPA/600/R-07/069. Available from the National Technical Information Service, Springfield, VA, and online at http://www.epa.gov/ncea.

U.S. Environmental Protection Agency (USEPA). 2012. The Green Book Nonattainment Areas for Criteria Pollutants. Available at USEPA Green Book website: http://www.epa.gov/air/oaqps/greenbk/index.html. Last accessed November 13, 2012.

U.S. Environmental Protection Agency (USEPA). 2013. EPA Regional IX On-Scene Coordinator website, Satala Oil Seep page. Available at USEPA website: http://www.epaosc.org/sites/6673/files/SatalaOilSeep_polrep_3.htm. Accessed January 28, 2013.

U.S. Fish and Wildlife Service (USFWS). 2011a. Pacific Islands – Endangered Species. Threatened and Endangered Animal and Plant Species Listing for Guam, Northern Mariana Islands and American Samoa. Available at USFWS website: http://library.fws.gov/refuges/pacificislands_eslist.pdf. Last accessed November 28, 2011.

U.S. Fish and Wildlife Service (USFWS). 2011b. Pacific Region: Pacific Islands Fish and Wildlife Office. Endangered Species in the Pacific Islands: Threatened and Endangered Species. Available at http://www.fws.gov/pacificislands/teslist.html. Last accessed November 28, 2011.

7.0 List of Preparers

7.1 Federal Emergency Management Agency

Alessandro Amaglio, Regional Environmental Officer

G. Morgan Griffin, Deputy Regional Environmental Officer

Teresa Zuiderhoek, Recovery Division Director

Carl M. Nagata, P.E., Program Specialist

John Paul Henderson, Regional Counsel

7.2 AECOM

Douglas Bailey, Project Manager

Alex Hardy, Lead Environmental Planner

Trina Abbott, Environmental Planner

Lyndon Quon, Lead Biologist

Patrick McGinnis, Lead Archeologist

Jeff Goodson, Environmental Engineer

Alan Avery, Graphics Coordinator

Dao Lee, GIS Specialist

This page intentionally left blank.

Appendices

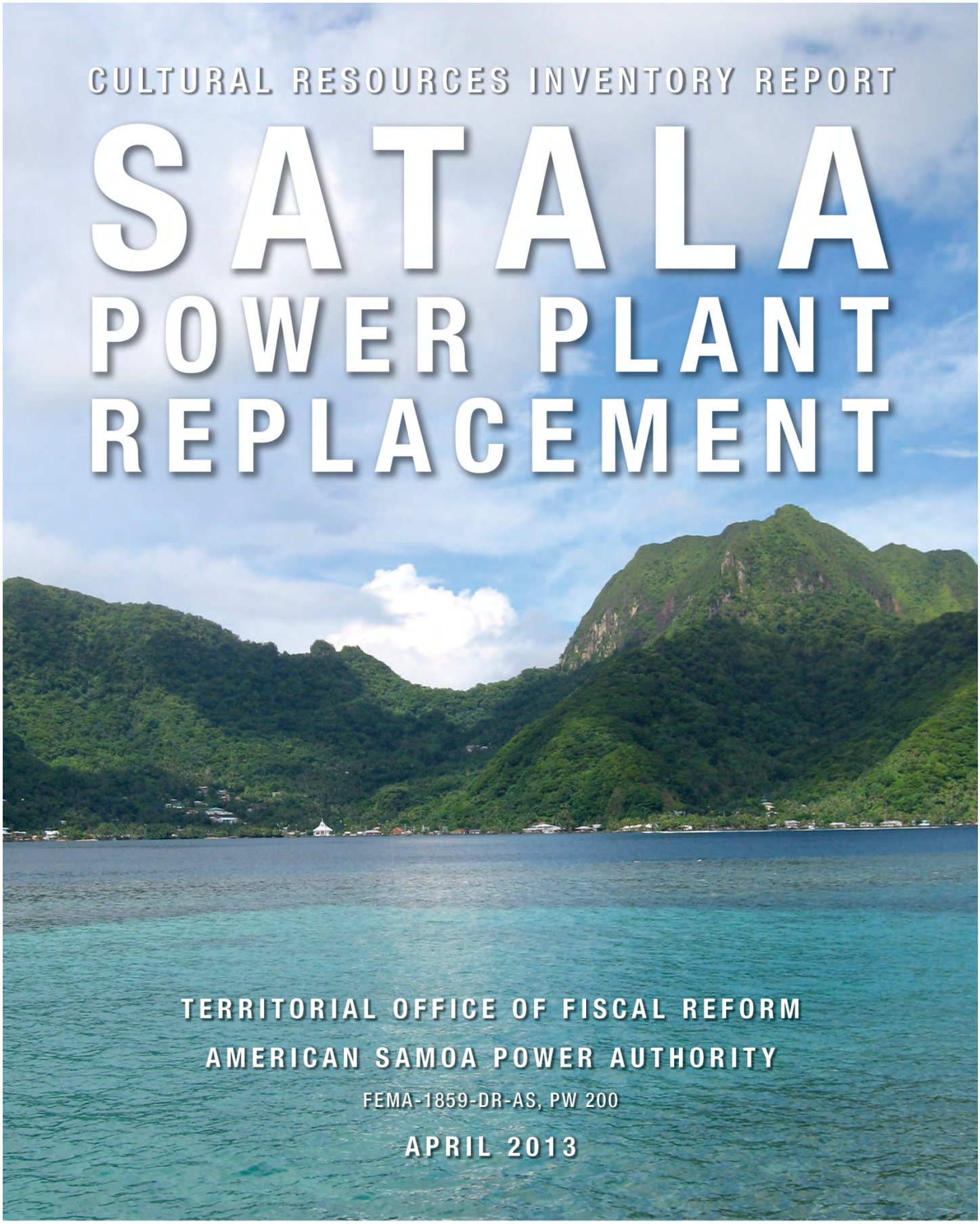
Appendix A: Cultural Resources Inventory Report

Cultural Resources Inventory Report Bound Separately (Confidential Information)

This page intentionally left blank.

CULTURAL RESOURCES INVENTORY REPORT

SATALA POWER PLANT REPLACEMENT



TERRITORIAL OFFICE OF FISCAL REFORM

AMERICAN SAMOA POWER AUTHORITY

FEMA-1859-DR-AS, PW 200

APRIL 2013

FEDERAL EMERGENCY MANAGEMENT AGENCY, REGION IX
DEPARTMENT OF HOMELAND SECURITY
1111 BROADWAY, SUITE 1200
OAKLAND, CA 94607

FEMA

THIS DOCUMENT WAS PREPARED FOR

FEDERAL EMERGENCY MANAGEMENT AGENCY, REGION IX
DEPARTMENT OF HOMELAND SECURITY
1111 BROADWAY, SUITE 1200
OAKLAND, CA 94607

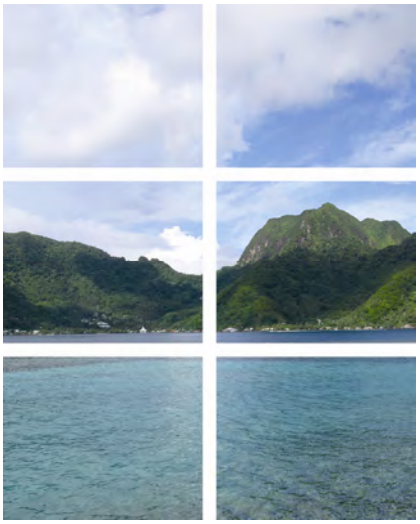
THIS DOCUMENT WAS PREPARED BY

1420 KETTNER BOULEVARD, SUITE 500
SAN DIEGO, CA 92101FEMA-1859-DR-AS, PW 200

CONTRACT NO. HSFEHQ-12-D-0879
TASK ORDER HSFE80-12-J-0009
AECOM # 60270080.0000

KEYWORDS: TUTUILA EAST USGS 7.5' QUADRANGLE, TUTUILA WEST USGS 7.5' QUADRANGLE, 16.2 ACRES, INTENSIVE PEDESTRIAN ARCHAEOLOGICAL SURVEY, SATALA, LELOALOA, UTULEI, TAFUNA, MALALOA, FAGA'ALU, SATALA POWER PLANT, MARIST BROTHERS SCHOOL, FUEL STORAGE TANKS, U.S. NAVY HOSPITAL, HISTORIC RESOURCES

COVER PHOTO: SEVERAL ALTERNATIVE SITES ALONGSIDE PAGO PAGO HARBOR WERE CONSIDERED FOR THE POWER PLANT REPLACEMENT LOCATION



Appendix B: Agency Consultation

This page intentionally left blank.

U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

August 4, 2011

Mr. David J. Herdrich
Historic Preservation Officer
American Samoa Historic Preservation Office
Executive Offices of the Governor
American Samoa Government
Pago Pago, AS 96799

Re: Satala Power Plant Demolition
FEMA-1849-DR-AS, PW #200
Subgrantee: American Somoa Government

Dear Mr. Herdrich:

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to fund the demolition of the Power Plant at Satala, Tutuila, American Samoa (Undertaking). The Power Plant (plant) experienced flooding during the Presidentially declared American Samoa Earthquake, Tsunami and Flooding Disaster of 2009 (FEMA-1859-DR-AS). The plant is owned by the American Samoa Government and is administered by the American Samoa Power Authority. The plant was constructed in 1962 and is not listed in the National Register of Historic Places (National Register).

Disaster Damage and Proposed Undertaking
On September 29, 2009, an earthquake occurred 120 miles southwest of American Samoa. The resulting tsunami inundated the plant and caused significant damage to the building and power equipment.

The Undertaking involves demolishing the plant above the foundation.

Area of Potential Effects (APE)
FEMA has determined that the physical APE comprises the entire plant building.

Identification and Evaluation
The plant is a steel frame structure with concrete masonry unit infill walls. Constructed in 1962, the plant was retrofitted with new walls and roof in 1997. From 1900 until 1951, the U.S. Navy maintained a naval base on Tutuila Island. The plant is situated at the location of the power station for the Tutuila Naval Base, which is a National Register Historic District.

Determination of Effect

The demolished plant, which is less than 50 years old, post-dates the period of significance for the NRHP listed Tutuila Naval Base (1900 – 1951). The removal of this building does not directly or indirectly diminish or alter the integrity of the historic Tutuila Naval Base's location, design, setting, materials, workmanship, feeling or association. The removal of the plant building involved no ground disturbance. FEMA has determined the Undertaking resulted in no historic properties affected pursuant to 36 CFR Part 800.4(d)(1).

FEMA requests your concurrence in these Section 106 determinations. In accordance with 36 CFR 800.5(c)(1), unless ASHPO objects to the determinations within 30 days of receipt, FEMA may fund the Undertaking. In the interest of time, however, we request a response at your earliest opportunity.

Should you have any questions or comments, please do not hesitate to contact me at (510) 627-7773 or steven.phillips1@dhs.gov.

Sincerely,

Steven J. Phillips
Environmental & Historic Preservation Advisor

Hon. Togiola T. A. Tulafono
Governor

Faoa A. Sunia
Lieutenant Governor

Executive Offices of the Governor
American Samoa Historic Preservation Office
American Samoa Government
Pago Pago, American Samoa 96799

David J. Herdrich
Historic Preservation Officer

Phone: (684) 699-2316
Fax: (684) 699-2276

December 5, 2011

037-12HP

Mr. Steven J. Phillips
Environmental and
Historic Preservation Advisor
U.S. Department of Homeland Security
111 Broadway, Suite 1200
Oakland, CA 94607-4052

Re: Satala Power Plant Demolition FEMA – 1849 – DR –AS, PW#200
Subgrantee: American Samoa

Dear Mr. Phillips:

Thank you for your letter of August 4, 2011 concerning the FEMA funded Satala Power Plant Demolition undertaking (FEMA DR-1859-AS) at Satala, Tutuila, American Samoa. I have reviewed your letter and the determinations therein. I offer the following comments.

I concur with FEMA's determination of the Area of Potential Effect for the proposed undertaking.

I also concur with your determination of no historic properties affected because the Satala Power Plant is less than 50 years old and because the demolition of the Satala Power Plant will not directly or indirectly affect the integrity of the Tutuila Naval Station Historic District across the harbor from the power plant.

Thank you for your time and attention. This correspondence was provided upon the request of Federal Emergency Management Agency in order to assist FEMA with its Section 106 responsibilities under the National Historic Preservation Act of 1966, as amended.

If you have any questions concerning this correspondence please do not hesitate to contact me at (684) 699-2316.

Sincerely,

David J. Herdrich
Historic Preservation Officer

cc: Paula Falk Creech, American Samoa and Micronesian Program Manager, NPS

U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

April 18, 2013

Mr. David Herdrich
Historic Preservation Officer
American Samoa Historic Preservation Office
Executive Office of the Governor
American Samoa Government
Pago Pago, American Samoa 96799

Re: Satala Power Plant Replacement
FEMA-1859-DR-AS, PW 200
Subgrantee: American Samoa Power Authority

Dear ~~Mr. Herdrich~~: David

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to provide financial assistance to the American Samoa Power Authority (ASPA), through the Territorial Office of Fiscal Reform (TOFR), to restore the function of the Satala power plant on one of six alternative sites on the island of Tutuila, American Samoa (Undertaking). The Satala power plant was severely damaged during the earthquake, tsunami, and flooding designated a Presidentially declared disaster (FEMA-1859-DR-AS) and was subsequently demolished. This letter, supported by the enclosed Cultural Resources Inventory Report, serves as FEMA's request for consultation with your office in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations (36 CFR Part 800).

The Undertaking involves constructing a permanent facility capable of reliably generating up to 23 MW of electrical power; connecting the facility to ASPA's existing distribution grid; connecting the facility to existing utilities such as water and sewer; and accommodating on-site staging areas for the construction of the facility. A detailed description of the Undertaking is provided in the enclosed Cultural Resources Inventory Report.

FEMA determined that the area of potential effects (APE) is defined as the total area encompassing 16.2 acres potentially subject to ground disturbance. The 16.2-acre APE comprises six alternative sites (Satala, Leloaloa, Utulei, Tafuna, Malaloa, and Faga'alu) considered for the location for the proposed Undertaking. ASPA anticipates that only one of the

six alternative sites will be selected. The six site-specific APEs are delineated in Figures 3 through 9 of the enclosed Cultural Resources Inventory Report.

FEMA's archaeological consultant, AECOM, conducted background and archival research and archaeological surveys in an effort to identify and evaluate historic properties. Methods and results are documented in the enclosed Cultural Resources Inventory Report. No historic properties were identified in the 16.2-acre APE. However, the 2.06-acre APE associated with the Malaloa site is near the Sadie Thompson Building, a historic property.

Based on the results of its identification and evaluation effort, FEMA has determined that implementation of the Undertaking at any of the following alternative sites would result in "no historic properties affected": Satala, Leloaloa, Utulei, Tafuna, and Faga'alu. At this time FEMA makes no determination regarding the Undertaking's effect at the Malaloa site. Should the decision be made to take any action at the Malaloa site, FEMA would consult with your office regarding the Undertaking's effect at that site prior to implementation.

Although the potential is low, unexpected subsurface historic properties could be discovered during ground-disturbing activities. ASPA (including its contractors and agents) would be responsible for halting work in the event of an unanticipated discovery during construction and notifying TOFR and FEMA as soon as practicable. If FEMA determines that the discovery has the potential to be a significant historical property, FEMA would require ASPA to stop all construction in the vicinity of the discovery and to take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with your office, pursuant to 36 CFR Part 800.13(b).

FEMA requests your review and concurrence regarding these findings for the Satala, Leloaloa, Utulei, Tafuna, and Faga'alu sites. Unless your office objects to FEMA's determinations within 30 days of receipt of this request, FEMA may consider its responsibilities under Section 106 of the NHPA complete. If you have any questions regarding this request or require additional information, please do not hesitate to contact me at (510) 627-7033, morgan.griffin@fema.dhs.gov, or the letterhead address.

Sincerely,

G. Morgan Griffin
Deputy Regional Environmental Officer

Enclosure

cc: Lima Fiatoa, TOFR

Hon. Lolo Matalasi Moliga
Governor

Lemanu Peleti Mauga
Lieutenant Governor

Executive Offices of the Governor
American Samoa Historic Preservation Office
American Samoa Government
Pago Pago, American Samoa 96799

David J. Herdrich
Historic Preservation Officer

Phone: (684) 699-2316
Fax: (684) 699-2276

July 29, 2013

119-13HP

Mr. G. Morgan Griffin
Deputy Regional Environmental Officer
U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Re: Satala Power Plant Replacement
FEMA-1859-DR-AS, PW 200
Subgrantee: American Samoa Power Authority

Dear Mr. Griffin:

Thank you for your letter dated April 18, 2013 concerning the Federal Emergency Management Agency's (FEMA) proposal to provide financial assistance to the American Samoa Power Authority (ASPA) through the Territorial Office of Fiscal Reform (TOFR) to restore the function of the Satala power plant on one of six alternative sites on the island of Tutuila, American Samoa (Undertaking). I have reviewed your letter, the AECOM Cultural Resources Inventory Report, and offer the following comments.

I concur with your determination of the area of potential effects (APE), as per the documentation included with your letter.

I also concur with your determination of "no historic properties affected" because the Cultural Resources Inventory Report found no evidence of historic properties within the APE.

In addition I concur with FEMA recommendation that if during ground disturbing activities ASPA and its contractors discover an unanticipated historic property, ASPA and their contractors will be responsible for halting work and notifying TOFR and FEMA as soon as possible. If FEMA determines that the discovery has the potential to be a significant historic property, FEMA shall require ASPA to stop all construction in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with the ASHPO pursuant to 36 CFR § 800.13(b)

Thank you for your time and attention. This information has been provided upon the request of the Federal Emergency Management Agency in order to assist FEMA with its Section 106

responsibilities under the National Historic Preservation Act of 1966, as amended and specified in the 36 CFR § 800 regulations.

If you have any questions concerning this correspondence please do not hesitate to contact me at (684) 699-2316.

Sincerely,

David J. Herdrich
Historic Preservation Officer

cc: Paula Falk Creech, American Samoa and Micronesia Program Manager, NPS
Lima Fiatoa, TOFR

Appendix C: Public Scoping Notices and Agency Distribution List

This page intentionally left blank.

American Samoa
Power Authority

P.O Box PPB
Pago Pago, American Samoa 96799
Phone: (684) 699-5282
Facsimile: (684) 699-7067

PUBLIC SCOPING NOTICE

ENVIRONMENTAL ASSESSMENT
Satala Power Plant Replacement
FEMA-1859-DR-AS, PW 200

The American Samoa Power Authority's Satala power plant was destroyed by the earthquake, tsunami, and flooding that occurred on September 29, 2009, and was declared Presidential disaster FEMA-1859-DR-AS. The destruction of the Satala power plant resulted in a loss of 23 megawatts of diesel-generated power, which represents approximately 60 percent of the total capacity on Tutuila. The American Samoa Power Authority (ASPA) has been operating with temporary generators since the Satala power plant was destroyed. To restore the function of the Satala power plant, ASPA has requested financial assistance from the Department of Homeland Security's Federal Emergency management Agency (FEMA). If approved, FEMA would provide financial assistance to ASPA, through the Territorial Office of Fiscal Reform (TOFR), under the Public Assistance Program. ASPA is considering several alternatives to meet the need to restore a permanent power source, including (1) constructing a new power plant on the same parcel as the destroyed Satala power plant but siting the new power plant outside of the 100-year floodplain, (2) installing new generators and modifying the existing power plant facilities at ASPA's Tafuna compound, and (3) constructing a new power plant at other locations on Tutuila.

Before making any irreversible decisions regarding the project, FEMA must follow the appropriate environmental and historic preservation (EHP) review processes. These EHP reviews include ensuring that the project complies with the requirements of the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), Executive Order 11988 on Floodplain Management, and other laws, regulations and executive orders. To meet its NEPA compliance responsibilities, FEMA has initiated preparation of an Environmental Assessment (EA), which will evaluate potential effects to the environment resulting from the project and share this information with interested parties. Obtaining public input through the EA process is a critical element of FEMA's commitment to meeting its EHP compliance responsibilities. Thus, FEMA is providing other governmental agencies, nongovernmental organizations, businesses, and the public the opportunity to participate in the information gathering (scoping) process regarding this project. Specifically, FEMA is seeking input to determine the scope of the EA (including alternatives) and substantial issues to be analyzed in the EA.

Relevant issues identified during the scoping process will be addressed in a Draft EA. When complete, the Draft EA will be submitted for public review and comment. ASPA, TOFR, and FEMA will review all comments on the Draft EA before making any irreversible decisions regarding the project.

Comments on this Public Scoping Notice will be accepted until 5:00 p.m. local time on the 30th day following publication of this notice. Comments may be delivered in the following ways:

U.S. Mail and Express Delivery:	U.S. Department of Homeland Security Federal Emergency Management Agency, Region IX Office of Environmental and Historic Preservation Attn: ASPA Power Plant EA 1111 Broadway, Suite 1200 Oakland, CA 94607-4052
Email:	fema-rix-ehp-documents@fema.dhs.gov
Facsimile:	(510) 627-7138
Telephone:	(510) 627-7027 (messages only)

FA'ASILASILAGA FA'ALAUAITELE

FUAFUAGA FA'ATATAU I LE SIOSIOMAGA
TOE FAUSIA O FALE O AFI ELETISE SATALA
FEMA-1859-DR-AS, PW 200

O fale o afi eletise a le ASPA i Satala na matua fa'aleagaina e le mafui'e ma le galulolo ma lologa ia Setema 29, 2009, ma na aofia i le poloaiga fa'alauaitele mo fa'alavelave matuia a le Peresetene i le FEMA -1859-DR-AS. O le fa'aleagaina o afi eletise i Satala, na le toe maua ai le malosiaga o le uila e 23 mekauati lea sa masani ona maua mai i afi suauu, po'o le fa'atusa lea i le 60 pasene o le uila o loo ola ai le motu o Tutuila. Talu mai lea taimi, sa fa'aogaina ai e le ASPA ni afi le-tumau (i totonu o containers) e momoli atu ai le uila i le atunu'u o alala i Tutuila. Ina ia fa'atumauina lea tautua masani a le ASPA , ua fa'atalosagaina ai e le ASPA se fesoasoani mai le Matagaluega a le Homeland Security i le vaega o le FEMA a le Malo Feterale. Afai e talia lea talosaga, ona tuuina mai lea e le FEMA o lea fesoasoani tupe i le ASPA i le Matagaluega o le TOFR, i lalo o Polokalama o Tupe Fesoasoani Fa'alauitele mai le Malo Tele. O lo'o filifili nei le ASPA i ni auala lelei e mafai ai ona toe fa'aleleia se nofoaga tumau mo afi e pei o le: (1) toe fausia lea i le fasi fanua sa i ai muamua ae fausia se fale fou i fafo atu o le nofoaga tonu lea na i ai i le 100 tausaga e lolovaia gofie, (2) o le fausia lea o nisi afi fou ma toe fa'afou aloa fale o afi o lo'o i le lotoa a le ASPA i Tafuna, ma le (3) o le sailia o se isi nofoaga i Tutuila e fausia ai se fale afi fou.

A'o lei faia la se fa'ainga e faigata ona toe suia, e tatau lava i le FEMA ona uia auala masani ma saililiga e aofia ai le siosiomaga ma mata'aga po'o nofoaga o loo puipuia la latou tala fa'asolopito, ua ta'ua o le Enviromental and Historic Preservation po'o le EHP. O nei sailiiliga uma ina ia mautinoa ai le talafeagai ma aiaiga mana'omia a le NEPA, le NHPA, o le Poloa'iga 11988 o Pulega o Lologa ma isi tulafono ua tuuina mai. Ina ia ausia le mulimuli i le faatinoina o ana galuega tumau i lalo o le NEPA, o lea ua amatalia ai e le FEMA lana tapenaga o le Suesuega o le Siosiomaga lea o le a mafai ai ona iloa a'afiaga o le siosiomaga mai le galuega fa'atulagaina, ma fa'asoa atu lenei sailiiga ma i latou uma o lo'o fia malamalama i taualumaga o lenei fa'amoemoe. O le mafuaaga lea o le tuuina atu e le FEMA i matagaluega uma o le malo, o pisinisi tua fa'atasi ai ma soo se fa'alapotopotoga ma le atunu'u lautele le avanoa e fa'asoa mai ai ni fa'amatalaga fusifusia. O le mea moni, o loo sailia e le FEMA fa'amatalaga eseese ina ia fausia ai fa'amatalaga o galuega mo le Sa'iliiliga o le Si'osiomaga (EA) ma nisi mataupu tetele ma le taua e ono alia'e mai.

O mataupu taua uma o le a maua mai I lenei sa'iliga o le a fa'amauina lea i se tusitusiga le tumau o le Sailiiliga o le Si'osiomaga. Afai e ma'ea lea tusitusiga o le a tuuina lea i le atunuu lautele mo le latou silasila ma ni faamatalaga. O le a iloilo toto'a e le ASPA, TOFR ma le FEMA ia fautuaga ma mataupu uma, a'o lei faia se fa'aiuga e faigata ona toe suia.

O fa'amatalaga uma mo lenei fa'asilasilaga fa'alaua'itele o le a taliaina e oo atu i le 5:00pm i le aso e 30 ai aso o lenei fa'asalalauga. E mafai ona tuuina mai fa'amatalaga i auala ia ua ta'ua i lalo:

Meli a le U.S.:	U.S. Department of Homeland Security Federal Emergency Management Agency, Region IX Office of Environmental and Historic Preservation Attn: ASPA Power Plant EA 1111 Broadway, Suite 1200 Oakland, CA 94607-4052
Email:	fema-rix-ehp-documents@fema.dhs.gov
Facsimile:	(510) 627-7138
Telefoni:	(510) 627-7027 (na'o fa'amatalaga fa'aleo)

Federal Agencies

Michael Tosatto, Regional Adminstator
Pacific IslandsRegional Office
National Marine Fisheries Service
1601 Kapiolani Boulevard, Suite 1110
Honolulu, HI 96814

michael.tosatto@noaa.gov

Geraldo Rios, Title V Program Evaluations
Air Permit Program
United States Environmental Protection Agency Region 9
Air-3, 75 Hawthorne Street
San Francisco, CA 94105

rios.gerardo@epa.gov

Chris Weden, Federal On-Scene Coordinator
Emergency Response Section
United States Environmental Protection Agency Region 9
SFD 9-2, 75 Hawthorne Street
San Francisco, CA 94105

weden.christopher@epa.gov

George Young, P.E., Chief
Regulatory Branch
United States Army Corps of Engineers, Honolulu District
Building 230
Fort Shafter, HI 96858-5440

george.p.young@poh01.usace.army.mil

Loyal Mehrhoff, Field Supervisor
Ecological Services Field Office
United States Fish and Wildlife Service
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000

Loyal_Mehrhoff@fws.gov

James M. Munson, Environmental Protection Specialist
Environmental Review Office
United States Environmental Protection Agency Region 9
CED-2, 75 Hawthorne Street
San Francisco, CA 94105

munson.james@epa.gov

American Samoa Government Offices

Fanuatele Dr. To'afa Vaiaga'e, Director
American Samoa Environmental Protection Agency
P.O. Box PPA
Pago Pago, AS 96799

toafa.vaiagae@asepa.gov

Taeotui Punaofo Tilei, Director
American Samoa Department of Public Works
American Samoa Government, Tafuna
Pago Pago, AS 96799

ptilei@yahoo.com

Andra Samoa, Chief Executive Officer
American Samoa Power Authority
P.O. Box PPB
Pago Pago, AS 96799

andra@aspower.com

Ufagafa Ray Tulafono, Director
American Samoa Department of Marine & Wildlife Resources
P.O. Box 3730
Pago Pago, AS 96799

ray.tulafono@yahoo.com

Lelei Peau, Acting Director
American Samoa Department of Commerce
A.P. Lutali Executive Office Building
Pago Pago, AS 96799

lelei.peau@noaa.gov

Paramount Chief Lefiti A. Pese, Secretary of Samoan Affairs
American Samoa Office of Samoan Affairs
Department of Local Governments, Utulei
Pago Pago, AS 96799

lefitipese@yahoo.com

Matagi Ray McMoore, Director
American Samoa Port Administration
P.O.Box 639
Pago Pago, AS 96799

pa@as.gov

Falema'o M. "Phil" Pili, Director
Territorial Office of Fiscal Reform
P.O. Box 997653
Pago Pago, AS 96799

falemao.pili@tofr.as.gov

Samana Semo Ve'ave'a Jr., Director
American Samoa Department of Parks & Recreation
American Samoa Government, Tafuna
Pago Pago, AS 96799

semo_veavea@yahoo.com

HTC Tuaolo M. E. Fruean, Commissioner
American Samoa Department of Public Safety
P.O. Box 1086
Pago Pago, AS 96799

tuaolomanaia@yahoo.com

David J. Herdrich, Historic Preservation Officer
American Samoa Historic Preservation Office
Executive Offices of the Governor, ASG
Pago Pago, AS 96799

tavita22@yahoo.com

Pati Faiai, Chief of Staff
American Samoa Office of the Governor
A. P. Lutali Executive Office Building
Pago Pago, AS 96799

chiefofstaff@americansamoa.gov

Aleki Sene, Sr., Executive Director
Amercian Samoa Telecommunications Authority
P.O. Box M
Pago Pago, AS 96799

Marketing@astca.net

Private Sector/Individuals

La Poasa, Reporter
93KHJ News
P.O. Box 6758
Pago Pago, AS 96799

la@southseasbroadcasting.com

Appendix D: Notice of Availability of Draft Environmental Assessment, Agency Distribution List, and Comment Letters Received during the Review Period

This page intentionally left blank.

TERRITORIAL OFFICE OF FISCAL REFORM
OFFICE OF THE GOVERNOR
AMERICAN SAMOA GOVERNMENT

NOTICE OF AVAILABILITY

Draft Environmental Assessment
Satala Power Plant Replacement
FEMA-1859-DR-AS, PW 200

The American Samoa Power Authority's Satala power plant at Satala, Tutuila, American Samoa, was destroyed by the earthquake, tsunami, and flooding that occurred on September 29, 2009, and was declared a Presidential disaster (FEMA-1859-DR-AS). To restore the function of the destroyed power plant, the American Samoa Power Authority (ASPA) has requested financial assistance from the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA). If approved, FEMA would provide financial assistance to ASPA, through the Territorial Office of Fiscal Reform (TOFR), under FEMA's Public Assistance Program.

ASPA proposes to restore the power plant to pre-disaster capacity and functional performance by constructing a permanent replacement facility capable of reliably generating up to 23.5 MW of electricity. The proposed facility would be located on one of four sites (the preferred site or one of three alternative sites) on the island of Tutuila. Required components of the replacement facility, as identified by ASPA, include a connection to the existing power distribution grid, bulk storage tanks, a truck off-loading and refueling rack system, a machine shop, parking areas, and power plant buildings housing diesel fuel-powered generators, switchgear, and auxiliary equipment. A site capable of providing a minimum of 2 acres of generally level ground would be required to accommodate the replacement facility.

FEMA has prepared a Draft Environmental Assessment (EA) in compliance with the National Environmental Policy Act, as amended, and applicable implementing regulations. The Draft EA evaluates the environmental impacts of ASPA's proposed project and alternatives. FEMA has made the Draft EA available for public review and comment at http://www.fema.gov/media-library/assets/documents/86369 and the following locations: TOFR's office on Ili'ili Road (call 699-1330 for location information) and ASPA's Tafuna and Fagatogo Outlets (call 699-1234 for location information).

FEMA, TOFR, and ASPA will consider all comments on the Draft EA before making decisions regarding ASPA's proposed project. Comments relevant to the Draft EA should be provided in writing to FEMA Region IX EHP, Satala Power Plant Replacement Draft EA, 1111 Broadway, Suite 1200, Oakland, CA 94607-4052 or electronically to fema-rix-ehp-documents@fema.dhs.gov. Questions regarding the Draft EA or its availability may also be asked by telephone at (510) 627-7027 (messages only). To be considered in the decision-making process, comments on the Draft EA must be received by January 10, 2014.

FA'ALIGA FA'ALAUA'ITELE UA MAUA LE RIPOTI

Fa'ata'ita'i mo le Suesueina o le Si'os'iomaga
Toe Fau le Fale o Afi-Uila a le ASPA sa i Satala
FEMA-1859-DR-AS, PW 200

Sa fa'aleaga le Fale o Afi-Uila a le ASPA i Satala i le Galulolo ma le mafui'e ia Setema 29, 2009 ma sa fa'alauiloa e le Peresitene o le Unaite Setete o se tulaga mata'utia. Ua talosaga e le ASPA se alaga tupe mai le Ofisa o Saogalemu o Gataifale - mai le Vaega a le FEMA. Afai e talia le talosaga, o le a auala mai nei alaga tupe i le Ofisa o le TOFR, i lalo o le vaega a le FEMA - le vaega mo Fesoasoani Lautele.

Ua fautuaina e le ASPA e toe fauina le Fale mo Afi-Uila pei ona sa iai muamua, e avea ma Fale mo Afi-Uila tumau e tu'uina ai afi e gaosia ai le uila aga'i i le 23.5 MW le malosi. O le a fausia le Fale mo Afi-Uila i luga o fanua mai fanua filifilia e fa ua fautuaina (le fanua filifilia, po'o se tasi of fanua e tolu na filifilia) i totonu o Tutuila. O fausaga e ao ona iai mo lenei fale tumau, pei ona fa'afoa e le ASPA, e iai le so'otaga i le laina feavea'i mo le uila, tane e teu ai le kesi e fa'aogaina, se fanua mo le felua'i o ta'avale e utu ai tane kesi, se ofisa mo galuega mo masini, se fanua e paka ai ta'avale, ma le Fale mo Afi-Uila e tu'u ai afi tetele, ma masini e fa'afoe ai afi na galuega tau le fa'aaogaina o afi. E tatau ona maua le lua eka o le fanua e taugatasi mo le fauina o lenei fale mo Afi-Uila.

Ua saunia e le FEMA le Ripoti Fa'ata'ita'i mo le Iloiloina o le Siosiomaga (DEA Draft Environmental Assessment) e tusa ai ma tulafono a le National Environmental Policy Act, po'o le Tulafono mo le Si'osi'omaga, i lona suiga, na le fa'aogaina tatau o tulafono. Ua su'esu'eina e lenei ripoti tulaga aafia o le si'osi'omaga pe a fa'ataunu'u le fa'amoemoe a le ASPA, o le fauina lea ole fale mo Afi-Uila. Ua avatu e le FEMA le ripoti i luga o le initeneti http://www.fema.gov/library/assets/documents/86369 mo le mamalu ole atunu'u latou te vaaia ma fa'ao'o atu latou manatu i le: Ofisa a le TOFR (valaau i le 699-1330 pe a mana'omia se fesoasoani) po'o le Ofisa a le ASPA i Tafuna (valaau i le 699-1234) po'o Pago Pago.

O le a vaaia toto'a uma manatu aga'i i le ripoti e le Ofisa a le FEMA, TOFR ma le ASPA e tusa ai ma le galuega fa'amoemoeina. E ao ona fa'aturatusi atu manatu a le mamalu o le atunu'u i le FEMA Region IX EHP, Satala Power Plant DEA, 1111 Broadway Suite 1200, Oakland, CA 94607-4052 po'o le fema-rix-ehp-documents@fema.dhs.gov . E mafai fo'i ona avatu fesili e tusa ai ma le ripoti i le telefoni (510) 627-7027 (na'o manatu e tu'u atu). Ina ia fa'aaogaina manatu e tusa ai ma le galuega fa'amoemoeina, e ao ona avatu manatu aga'i le ripoti ae le'i o'o i le 12:00 i le po i le aso o Ianuari 10, 2014.

Distribution List

Notice of Availability — Draft Environmental Assessment
Satala Power Plant Replacement
FEMA-1859-DR-AS, PW 200

Federal Government

Michael Tosatto, Regional Administrator
Pacific Islands Regional Office
National Marine Fisheries Service
1601 Kapiolani Boulevard, Suite 1110
Honolulu, HI 96814
michael.tosatto@noaa.gov

Danielle Jayewardene, Coral Reef Ecologist
Pacific Islands Regional Office, Habitat Branch
National Marine Fisheries Service
1601 Kapiolani Boulevard, Suite 1110
Honolulu, HI 96814
danielle.jayewardene@noaa.gov

Fatima Sauafea-Le-au,
Fisheries and Coral Reef Ecologist
American Samoa Field Office, Habitat Branch
National Marine Fisheries Service
1601 Kapiolani Boulevard, Suite 1110
Honolulu, HI 96814
fatima.sauafea-leau@noaa.gov

George Young, P.E., Chief
Regulatory Branch
United States Army Corps of Engineers,
Honolulu District
Building 230
Fort Shafter, HI 96858-5440
george.p.young@poh01.usace.army.mil

James M. Munson,
Environmental Protection Specialist
Environmental Review Office
United States Environmental Protection Agency
Region 9
CED-2, 75 Hawthorne Street
San Francisco, CA 94105
munson.james@epa.gov

Geraldo Rios, Title V Program Evaluations
Air Permit Program
United States Environmental Protection Agency
Region 9
Air-3, 75 Hawthorne Street
San Francisco, CA 94105
rios.gerardo@epa.gov

Chris Weden, Federal On-Scene Coordinator
Emergency Response Section
United States Environmental Protection Agency
Region 9
SFD 9-2, 75 Hawthorne Street
San Francisco, CA 94105
weden.christopher@epa.gov

Loyal Mehrhoff, Field Supervisor
Ecological Services Field Office
United States Fish and Wildlife Service
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
loyal_mehrhoff@fws.gov

Joy Browning, Wildlife Biologist
Pacific Islands Fish and Wildlife Office
United States Fish and Wildlife Service
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
joy_browning@fws.gov

Tony Montgomery, Wildlife Biologist
Pacific Islands Fish and Wildlife Office
United States Fish and Wildlife Service
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
tony_montgomery@fws.gov

American Samoa Government

Keniseli Lafaele, Director
American Samoa Department of Commerce
A.P. Lutali Executive Building
Pago Pago, AS 96799
keniseli.lafaele@doc.as

Dr. Salu Hunkin-Finau, Director
American Samoa Department of Education
American Samoa Government, Utulei
Pago Pago, AS 96799
hunkfins252@gmail.com

Ruth Matagi-Tofiga, Ph.D., Director
American Samoa Department of Marine &
Wildlife Resources
P.O. Box 3730
Pago Pago, AS 96799
matagi_tofiga_ruth@yahoo.com

Maeata'anoa Pili Gaoteote, Director
American Samoa Department of Parks & Recreation
American Samoa Government, Tafuna
Pago Pago, AS 96799
piligaoteote@yahoo.com

William Haleck, Commissioner
American Samoa Department of Public Safety
P.O. Box 1086
Pago Pago, AS 96799

Faleosina F. Voight, Director
American Samoa Department of Public Works
American Samoa Government, Tafuna
Pago Pago, AS 96799
faleosina@asgdpw.org

Ameto Pato, Director
American Samoa Environmental Protection Agency
P.O. Box PPA
Pago Pago, AS 96799
ametop@yahoo.com

David J. Herdrich, Historic Preservation Officer
American Samoa Historic Preservation Office
Executive Offices of the Governor, ASG
Pago Pago, AS 96799
tavita22@yahoo.com

Satele Galu T. Satele, Secretary of Samoan Affairs
American Samoa Office of Samoan Affairs
Department of Local Governments, Utulei
Pago Pago, AS 96799

Fiu J. Saelua, Chief of Staff
American Samoa Office of the Governor
Department of Local Governments, Utulei
Pago Pago, AS 96799
chiefofstaff@americansamoa.gov

Taimalelagi Dr. Claire T Poumele, Director
American Samoa Port Administration
P.O.Box 639
Pago Pago, AS 96799
ctpoumele@gmail.com

Utu Abe Malae, Chief Executive Officer
American Samoa Power Authority
P.O. Box PPB
Pago Pago, AS 96799
utum@aspower.com

Moefa'auo Bill Emmesley, Executive Director
American Samoa Telecommunications Authority
P.O. Box M
Pago Pago, AS 96799
b.emmsley@gmail.com

Alfonso P. Galea'I, Director
Territorial Office of Fiscal Reform
P.O. Box 997653
Pago Pago, AS 96799
alfonso.galeai@tofr.as.gov

Private Sector/Individuals

La Poasa, Reporter
93 KHJ News
P.O. Box 6758
Pago Pago, AS 96799
la@southseasbroadcasting.com

Griffin, Morgan

From: Jayne LeFors - NOAA Federal <jayne.lefors@noaa.gov>
Sent: Friday, January 10, 2014 6:24 PM
To: FEMA-RIX-EHP-Documents
Subject: Comments on Satala Power Plant Replacement DEA
Attachments: Satala Power Plant comment letter.pdf; 2013-April General BMPs for In-Water Work NMFS-PRD-2.doc

Hello,

Attached please find NMFS Pacific Islands Region's comments on the DEA for the Satala Power Plant Replacement project in American Samoa, as well as a list of recommended BMPs for any in-water work.

--
Jayne LeFors
NEPA Project Manager
Pacific Islands Region
NOAA Fisheries
jayne.lefors@noaa.gov
858-546-5653
www.nmfs.noaa.gov

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, Hawaii 96814-4700
(808) 944-2200 • Fax (808) 973-2941

FEMA Region IX EHP
Satala Power Plant
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

JAN 9 2014

To whom it concern:

The National Marine Fisheries Service (NMFS) Pacific Islands Region's Protected Resources Division provides the following comments on the Draft Environmental Assessment for the proposed Satala Power Plant Replacement project.

NMFS is responsible for the conservation and management of marine species protected under the Endangered Species Act (ESA) that may be found in the vicinity of the project area: the threatened green sea turtle (*Chelonia mydas*) and loggerhead sea turtle (*Dermochelys coriacea*); and the endangered hawksbill sea turtle (*Eretmochelys imbriacata*) and leatherback sea turtle (*Caretta caretta*).

On July 18, 2013, NMFS proposed the designation of critical habitat for the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles. We therefore recommend that you amend the sentence in Section 4.2.1 on page 41, paragraph 5, to read as follows: "Neither NMFS nor USFWS has designated or proposed critical habitat for the LOST *in or adjacent to the project area*."

Our staff has reviewed the DEA and did not find any reference to the use of a cooling water intake system for the proposed power plant. If such a system will be part of the power plant, we recommend you include an analysis of any impacts from its construction and operation.

We also recommend using the attached Best Management Practices to further reduce potential impacts to protected marine species and habitats from the construction of the proposed power plant. Should you have any questions about this comment letter, please contact Jayne LeFors of my staff at (858) 546-5653 or at jayne.lefors@noaa.gov.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
for Protected Resources

Best Management Practices (BMPs) for General In- and Near-Water Work Including Boat and Diver Operations

April 2013

NMFS Protected Resources Division recommends implementation of the following BMPs to reduce potential adverse affects on protected marine species. These BMPs are in no way intended to supersede or replace measures required by any other agency including, but not limited to the ACOE, USFWS, USEPA, or NMFS Habitat Conservation Division, and compliance with these BMPs shall always be considered secondary to safety concerns.

All workers associated with this project, irrespective of their employment arrangement or affiliation (e.g. employee, contractor, etc.) shall be fully briefed on these BMPs and the requirement to adhere to them for the duration of their involvement in this project.

A. Constant vigilance shall be kept for the presence of ESA-listed marine species during all aspects of the proposed action, particularly in-water activities such as boat operations, diving, and deployment of anchors and mooring lines.

1. The project manager shall designate an appropriate number of competent observers to survey the areas adjacent to the proposed action for ESA-listed marine species.
2. Surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour. Periodic additional surveys throughout the work day are strongly recommended.
3. All work shall be postponed or halted when ESA-listed marine species are within 50 yards of the proposed work, and shall only begin/resume after the animals have voluntarily departed the area. If ESA-listed marine species are noticed within 50 yards after work has already begun, that work may continue only if, in the best judgment of the project supervisor, that there is no way for the activity to adversely affect the animal(s). For example; divers performing surveys or underwater work would likely be permissible, whereas operation of heavy equipment is likely not.
4. Special attention will be given to verify that no ESA-listed marine animals are in the area where equipment or material is expected to contact the substrate before that equipment/material may enter the water.
5. All objects will be lowered to the bottom (or installed) in a controlled manner. This can include the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.
6. In-water tethers, as well as mooring lines for vessels and marker buoys shall be kept to the minimum lengths necessary, and shall remain deployed only as long as needed to properly accomplish the required task.

7. When piloting vessels, vessel operators shall alter course to remain at least 100 yards from whales, and at least 50 yards from other marine mammals and sea turtles.
8. Reduce vessel speed to 10 knots or less when piloting vessels at or within the ranges described above from marine mammals and sea turtles. Operators shall be particularly vigilant to watch for turtles at or near the surface in areas of known or suspected turtle activity, and if practicable, reduce vessel speed to 5 knots or less.
9. If despite efforts to maintain the distances and speeds described above, a marine mammal or turtle approaches the vessel, put the engine in neutral until the animal is at least 50 feet away, and then slowly move away to the prescribed distance.
10. Marine mammals and sea turtles shall not be encircled or trapped between multiple vessels or between vessels and the shore.
11. Do not attempt to feed, touch, ride, or otherwise intentionally interact with any ESA-listed marine species.

B. No contamination of the marine environment shall result from project-related activities.

12. A contingency plan to control toxic materials is required.
13. Appropriate materials to contain and clean potential spills shall be stored at the work site, and be readily available.
14. All project-related materials and equipment placed in the water shall be free of pollutants.
15. The project manager and heavy equipment operators shall perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations shall be postponed or halted should a leak be detected, and shall not proceed until the leak is repaired and equipment cleaned.
16. Fueling of land-based vehicles and equipment shall take place at least 50 feet away from the water, preferably over an impervious surface. Fueling of vessels shall be done at approved fueling facilities.
17. Turbidity and siltation from project-related work shall be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.
18. A plan shall be developed to prevent debris and other wastes from entering or remaining in the marine environment during the project.

Griffin, Morgan

From: Cyrus TheMan <tamaolesoaa@yahoo.com>
Sent: Friday, January 10, 2014 11:08 PM
To: FEMA-RIX-EHP-Documents
Subject: Satala Power Plant Replacement Draft EA

As a resident of Satala my family are hopeful that everyone sees the relocation of our generators to Tafuna as beneficial to our community and island as a whole. Having to close our windows all day everyday does not help in keeping the fumes that are produced by the generators now at all. Our family try our best in covering our faces or breathing through sheets to get a good nite sleep or any. Lately, my kids would come across coughs that are hard to get rid off and I know is a result of fumes from the plant. The area rite behind the plant his continuously warm because of the direct effect of fumes blowing rite into our homes, so regardless of cold, rainy, and windy weather, it would still be warm up there where my home is located. The immediate two generators in front of my house are several feet away from my doorstep. After the Tsunami, these temporary generators emit really strong fumes that keep us away from our homes for most of the day until its time to go sleep. The industrialized area where the current ASPA main plant is at is far more suited to accommodate the rest of the generators in Satala. Evidence of current location sustaining similar damages and waste in case of another Tsunami were discovered by officials when inspecting damages in 2009. What's to keep other new generators from being damaged if another Tsunami hit, crippling all of our power supply again. In all, Alternative #5 would be beneficial for our families, our community, our environment, and our Government. Thank you.

Cyrus Paopao

Griffin, Morgan

From: Angelina Stevens <as.cancer.registry@gmail.com>
Sent: Friday, January 10, 2014 11:48 PM
To: FEMA-RIX-EHP-Documents
Subject: Satala Power Plant Replacement Draft EA

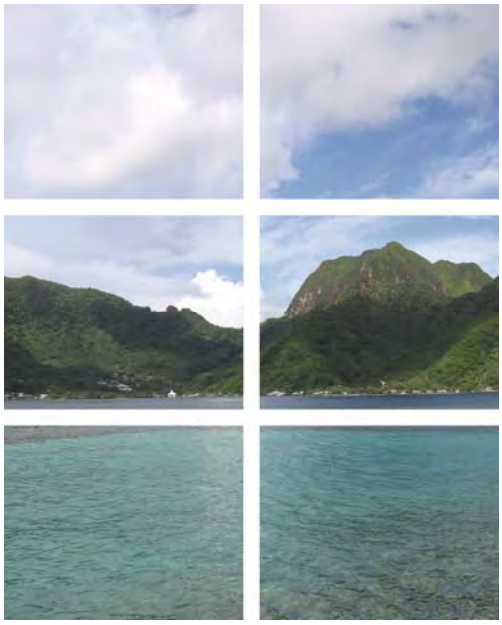
To whom It May Concern,

I am writing this letter in regards to the proposed power plant replacement in Satala, American Samoa. I am one of the Satala residents that live directly behind the temporary generators at the current power plant site. I live there with my parents who are both 62 years of age, my husband who is 33 years old and our three children ages 6, 8 and 11. The only thing that separates us from the temporary generators is a few feet of uphill terrain and our access road. Our house is located amongst a cluster of 6 homes, all of which are currently occupied by about 40 residents ranging in age from 1 to 72 years of age. This land that we occupy is communal land that was occupied by our ancestors before the first power plant was even built in Satala.

We are not only within the vicinity of the plant; we are practically neighbors. Each and everyday, we are subjected to the deafening noise from the plant, the hazardous emissions and heat emitted from these temporary generators. The smoke stacks on the generators are at eye-level from our residence, literally blowing smoke in our faces. The heat from the exhaust is unbearable at times when coupled with Samoa's already sweltering climate. When Northerly winds blow our way, the smell of gasoline is strong and at times nauseating. During times like these, we are forced to leave our own home and seek solace at a local park or a relative's house. These are conditions that no person should have to live under.

Leaving the power plant as is (Alternative 1), would mean subjecting us to the same hazardous emissions, harmful odors, deafening noise and unbearable heat from the temporary generators for years to come. The adverse health effects imposed by these conditions have not been determined, nor do we have regulations in place to control carbon monoxide emissions or noise pollution, but these conditions are a nuisance and may have drastic effects on our health and our lives in general. We also have vegetation growing around our homes and up the mountain behind us that may be affected by these hazardous conditions. Alternative 2, the preferred alternative, would only lesson the noise and provide a bit more filtering of the exhaust emissions, but would still subject us to pretty much the same harmful conditions we have to deal with now. Alternative 2 is also in a coastal area. The only thing separating the current Satala site from the coast is a few feet of main road (Highway 1). Should another Tsunami strike the Samoan Islands, what guarantee is there that the new plant won't also be destroyed as the first was.

Alternative #5 (Tafuna site) seems like the most sensible site to rebuild the new power plant. The land in Tafuna is owned by the ASPA/ASG and is readily available for construction to begin. Section 4.15.5 notes that "The Tafuna site is in an industrial area with no adjacent residences." Tafuna is also quite a distance from the coast which puts it out of the inundation area, flood zones and away from any wildlife populations or vegetation areas. Rebuilding the plant in Tafuna would also put us and all the other residents of Satala and the bay area out of harm's way. It would also eliminate the possibility of any debris being washed into the coastal waters during unpredictable weather conditions and also keep any leaks from washing directly into the ocean should an unexpected leak occur. It may be a bit more costly to route the lines from the Satala plant 9 miles down the highway to connect to a new plant in Tafuna, but it may also save us billions in the long run in terms of environmental health effects and unpredictable damage from natural disasters such as a tsunami or a landslide. And most importantly, it would put fewer humans at risk of being exposed to these life-threatening conditions each and everyday.

Respectfully,

Angelina Stevens
(684) 258-9936