

Draft

Environmental Impact Statement

**Termination of the Air Force Mission
Johnston Atoll Airfield**

United States Air Force

January 2004

COVER SHEET
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TERMINATION OF THE AIR FORCE MISSION AT JOHNSTON ATOLL AIRFIELD

- a. **Lead Agency:** United States Air Force
- b. **Proposed Action:** Termination of the Air Force Mission at Johnston Atoll Airfield (Installation), Johnston Atoll
- c. **Written comments and inquires on this document may be directed to:** Ms. Fran Saunders, 15 Civil Engineer Squadron, Environmental Flight, Johnston Atoll Program Element, 75 H Street, Building 1204, Hickam Air Force Base, Hawaii, 96853-5233 or Frances.Saunders@hickam.af.mil
- d. **Designation:** Draft Environmental Impact Statement (EIS)
- e. **Abstract:** This Draft EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code §§ 4321-4374), the Council on Environmental Quality regulations implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508), and; Air Force Instruction 32-7061, *The Environmental Impact Analysis Process* (as promulgated at 32 CFR Part 989). The Proposed Action is the termination of the Air Force mission at Johnston Atoll. This action involves ceasing of host-management responsibilities, removal of all tenants, termination of base operating support contractor services, closure of the airfield, abandoning in-place any improvements to the land, and termination of Air Force environmental restoration activities when complete. At the present time, other than the management of the National Wildlife Refuge by the U.S. Fish and Wildlife Service, the Air Force is aware of no subsequent plans for actions on Johnston Atoll. To attempt to analyze environmental impacts in this EIS associated with any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll would be merely speculative.

One alternative was also examined, the No-Action Alternative in which current management practices would continue and installation conditions would remain *status quo*. This Draft EIS analyzes the environmental impacts of the Proposed Action and the No-Action Alternative, including any reasonably foreseeable cumulative impacts and actions, such as those from the demolition and decommissioning (D&D) action, the Johnston Atoll Chemical Agent Disposal System (JACADS) mission closure, and other environmental sites being addressed under separate regulatory programs (i.e., the Resource Conservation and Recovery Act).

Potential environmental impacts from the Proposed Action are overall positive (e.g., air quality, biological, geology and soils, land use, natural hazards, noise, safety and health, utilities and infrastructure, visual, water, cultural, socioeconomics). Several short-term negative impacts (e.g., safety and health, transportation, utilities, infrastructure, hazardous materials and hazardous waste) are discussed in this document. Potential long-term negative impacts to ongoing environmental efforts (e.g., a lack of transportation, utility, and infrastructure resources) as well as potential land use controls are also discussed in this document.

The Proposed Action would not result in significant cumulative impacts. Cumulative impacts resulting from construction and remediation activities associated with the D&D action, JACADS mission closure, and other environmental sites are being addressed under other regulatory programs. These impacts include land use controls and short-term increases in typical operations (e.g., traffic, noise, air emissions), disturbance to wildlife, removal of infrastructure, and safety and health hazards.

Executive Summary

Johnston Atoll is a military installation and an unincorporated territory of the United States under the administration of the Air Force, Detachment (Det) 1, 15th Airlift Wing (15 AW). Johnston Atoll is situated approximately 717 nautical miles southwest of Honolulu, Hawaii, and consists of four small islands: Johnston, North (Akau), East (Hikina), and Sand enclosed in an egg-shaped reef approximately 21 miles in circumference. The islands have a total area of 691 acres, just over 1 square mile. In addition to hosting military missions, Johnston Atoll also has the distinction of being a National Wildlife Refuge.

The current Air Force mission at Johnston Atoll is to provide host-management support to the Department of the Army, Program Manager for Chemical Stockpile Demilitarization (PMCS). PMCS is now in the final stages of its mission, and the Air Force has not identified any future mission requirements for Johnston Atoll. Thus, the purpose of this Proposed Action is the termination of the Air Force mission at Johnston Atoll. The need for the action arises from the fact that no further Air Force missions have been identified for Johnston Atoll.

This Draft Environmental Impact Statement (EIS) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code Sections 4321–4374); the Council on Environmental Quality regulations implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508); and Air Force Instruction 32-7061, *The Environmental Impact Analysis Process* (as promulgated at 32 CFR Part 989). This Draft EIS sets forth the environmental analysis for the termination of the Air Force mission at Johnston Atoll required by these implementing regulations.

Proposed Action and Alternative

The Proposed Action and alternative are described as follows:

- **The Proposed Action.** The Proposed Action is the termination of the Air Force mission at Johnston Atoll. This action involves ceasing of host-management responsibilities, removal of all tenants, termination of base operating support (BOS) contractor services, closure of the airfield, abandoning in-place any improvements to the land, and termination of Air Force environmental restoration activities when complete. This EIS analyzes only the impacts to the environment associated with the termination of the Air Force mission on Johnston Atoll. Any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll requiring analysis under NEPA will be accomplished at the appropriate time. At the present time, other than the management of the National Wildlife Refuge by the U.S. Fish and Wildlife Service, the Air Force is aware of no subsequent plans for actions on Johnston Atoll. To attempt to analyze environmental impacts in this EIS associated with any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll would be merely speculative.
- **No-Action Alternative (Current Management Practices Continue).** Under the No-Action Alternative, current management practices would continue and installation conditions would remain *status quo*. The Air Force would continue with the same level of funding to administer and manage Johnston Atoll in a manner consistent with full host-management operations. The BOS contractor would remain, and the same level of operations and maintenance would exist at Johnston Atoll, irrespective of the tenancy. The facilities and utilities would remain with the same level of maintenance, and the same services. The Det 1, 15 AW activities would remain at Johnston Atoll with support from the Johnston Atoll Program Office, 15 AW, and Headquarters, Pacific Air Forces.

Scope of Study

Regulations implementing NEPA require early participation by the public and by parties interested in the scoping process. This involves the public and interested parties commenting on the scope and

content of the EIS and the Proposed Action and alternatives, and identifying significant issues related to the Proposed Action. The Air Force initiated the scoping process for the EIS on 25–29 October 2002, with publication of a Notice of Intent (NOI) to prepare an EIS in the Honolulu Star-Bulletin and Honolulu Advertiser. The NOI was published in the Federal Register (Fed. Reg.) on 06 November 2002 (see 67 Fed. Reg. 67606). Concerned parties were encouraged to participate in the public scoping process.

A public scoping meeting was held at Washington Middle School in Honolulu, Hawaii, on 06 November 2002. At this meeting, Air Force representatives (Det 1, 15 AW) presented an overview of the meeting's objectives, agenda, procedures, and described the process and purpose for the development of the Draft EIS. In addition to oral comments, written comments were also received. These comments, as well as information from the local community, experience with other similar decisions made, and NEPA requirements, were used to determine the scope and direction of studies/analyses needed to accomplish the Draft EIS.

Summary of Environmental Impacts

The environmental impacts from the Proposed Action, the No-Action Alternative, and other cumulative sources are summarized below and presented in Table 2-1.

Proposed Action. The Proposed Action involves the ceasing of all Air Force operations, removal of approximately 900 personnel, and closure of the installation. Positive impacts or no changes would occur to most resources (air quality, biological, geology and soils, land use, natural hazards, noise, safety and health, utilities and infrastructure, visual, water, cultural, and hazardous materials and hazardous waste) due to a reduction in use of resources, emissions, effluents, waste generation, and removal of hazardous materials and hazardous wastes.

Some impacts would occur to safety and health and transportation resources (removing the airfield from service and removal of Extended-Twin Engine Operations certification would have a short-term impact on regional users), utilities and infrastructure (regular services would no longer be available, although no significant demand for them would exist), and hazardous materials and hazardous waste (sites may require work after the termination of the Air Force mission, with a lack of utilities, infrastructure, and transportation to support them).

No-Action Alternative (Current Management Practices Continue). The No-Action Alternative involves the Air Force continuing host-management activities at current levels. No change would occur in the use and demands on resources, the emissions or effluents, or the storage, use, and disposal of hazardous materials and hazardous waste. No change would occur to the affected environment because of the No-Action Alternative.

Cumulative Impacts. The Proposed Action and No-Action Alternative would not result in significant cumulative impacts. The termination of the Air Force mission would cause a cumulative impact to other actions occurring at Johnston Atoll by restricting or removing the airfield from service before these actions are completed. Contractors completing these actions would be required to charter flights while the airfield is restricted to their use only, or after the airfield is closed, utilize alternate modes of transportation to Johnston Atoll, such as chartered boats or military sealifts. Cumulative impacts may arise from the demolition and decommissioning (D&D) action, Johnston Atoll Chemical Agent Disposal System (JACADS) mission closure, and actions associated with environmental sites.

Positive cumulative impacts would occur from the D&D action and JACADS mission closure because structures with a limited lifetime would be demolished, and surplus structures would be

demolished, decommissioned, or abandoned in-place. Other positive impacts include the removal of hazardous materials and hazardous waste (e.g., light ballasts) from structures prior to the actions. Positive impacts to visual resource and land use would occur by the end of industrial-military activities and from D&D of facilities. Other positive impacts would also occur to human health and the environment from remediation of environmental sites and/or implementation of land use controls (LUCs).

The D&D action and JACADS closure may result in short-term negative impacts by removing infrastructure (if demand exceeds supply) and increasing traffic, noise, construction-related emissions, and safety and health hazards while personnel are still present on Johnston Atoll. However, D&D activities will include working in phases and implementing best management practices (such as dust suppression), adhering to health and safety plans, and providing temporary utilities and infrastructure (i.e., the D&D contractor would provide temporary housing, electrical generators, and electric toilets) to personnel that remain at Johnston Atoll for the termination of the Air Force mission. Impacts may occur to and from ongoing environmental activities at sites in that they would require access, they would lack supporting transportation, utilities and infrastructure, and possible LUCs would affect use by future users of Johnston Atoll.

Table of Contents

EXECUTIVE SUMMARY	i
ACRONYMS AND ABBREVIATIONS	xi
1.0 PURPOSE OF AND NEED FOR ACTION	1-1
1.1 Introduction	1-1
1.2 Purpose of and Need for Action	1-1
1.3 The Environmental Impact Analysis Process	1-2
1.4 Scoping Process	1-2
1.5 Public Comment Process	1-5
1.6 Agencies Involved in the EIS Process	1-5
1.7 Scope of the Environmental Review	1-5
1.8 Applicable Regulatory Requirements and Coordination	1-6
1.9 Environmental Permits, Licenses, and Coordination	1-8
1.10 Background	1-8
1.11 Current Tenants/Users/Service Providers	1-9
2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE	2-1
2.1 Proposed Action and Alternative	2-1
2.1.1 The Proposed Action (Mission Closure)	2-1
2.1.2 Description of Alternative	2-5
2.1.3 Other Alternatives	2-5
2.2 Other and Future Actions in the Region	2-5
2.3 Comparison of Environmental Impacts	2-5
3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT	3-1
3.1 Local Community	3-1
3.1.1 Location	3-1
3.1.2 Installation Background	3-1
3.1.3 Community	3-3
3.2 Environmental Setting	3-3
3.2.1 Air Quality	3-3
3.2.2 Biological Resources	3-5
3.2.3 Geology and Soils	3-15
3.2.4 Land Use	3-21
3.2.5 Natural Hazards	3-21
3.2.6 Noise	3-24
3.2.7 Safety and Health	3-25
3.2.8 Transportation	3-27
3.2.9 Utilities and Infrastructure	3-35
3.2.10 Visual Resources	3-38
3.2.11 Water Resources	3-38

3.2.12	Cultural Resources	3-40
3.2.13	Hazardous Materials and Hazardous Waste Management	3-42
3.2.14	Socioeconomics	3-54
4.0	ENVIRONMENTAL CONSEQUENCES	4-1
4.1	Introduction	4-1
4.2	Air Quality	4-1
4.2.1	The Proposed Action	4-1
4.2.2	No-Action Alternative (Current Management Practices Continue)	4-2
4.2.3	Cumulative Impacts	4-2
4.2.4	Mitigation Measures	4-2
4.3	Biological Resources	4-2
4.3.1	The Proposed Action	4-2
4.3.2	No-Action Alternative (Current Management Practices Continue)	4-5
4.3.3	Cumulative Impacts	4-5
4.3.4	Mitigation Measures	4-5
4.4	Geology and Soils	4-5
4.4.1	The Proposed Action	4-5
4.4.2	No-Action Alternative (Current Management Practices Continue)	4-8
4.4.3	Cumulative Impacts	4-9
4.4.4	Mitigation Measures	4-9
4.5	Land Use	4-9
4.5.1	The Proposed Action	4-9
4.5.2	No-Action Alternative (Current Management Practices Continue)	4-9
4.5.3	Cumulative Impacts	4-9
4.5.4	Mitigation Measures	4-9
4.6	Natural Hazards	4-9
4.6.1	The Proposed Action	4-9
4.6.2	No-Action Alternative (Current Management Practices Continue)	4-9
4.6.3	Cumulative Impacts	4-10
4.6.4	Mitigation Measures	4-10
4.7	Noise	4-10
4.7.1	The Proposed Action	4-10
4.7.2	No-Action Alternative (Current Management Practices Continue)	4-10
4.7.3	Cumulative Impacts	4-10
4.7.4	Mitigation Measures	4-11
4.8	Safety and Health	4-11
4.8.1	The Proposed Action	4-11
4.8.2	No-Action Alternative (Current Management Practices Continue)	4-11
4.8.3	Cumulative Impacts	4-12
4.8.4	Mitigation Measures	4-12

4.9	Transportation	4-12
4.9.1	Proposed Action	4-12
4.9.2	No-Action Alternative (Current Management Practices Continue)	4-13
4.9.3	Cumulative Impacts	4-14
4.9.4	Mitigation Measures	4-14
4.10	Utilities and Infrastructure	4-14
4.10.1	The Proposed Action	4-14
4.10.2	No-Action Alternative (Current Management Practices Continue)	4-16
4.10.3	Cumulative Impacts	4-16
4.10.4	Mitigation Measures	4-17
4.11	Visual Resources	4-17
4.11.1	The Proposed Action	4-17
4.11.2	No-Action Alternative (Current Management Practices Continue)	4-17
4.11.3	Cumulative Impacts	4-17
4.11.4	Mitigation Measures	4-17
4.12	Water Resources	4-18
4.12.1	The Proposed Action	4-18
4.12.2	No-Action Alternative (Current Management Practices Continue)	4-18
4.12.3	Cumulative Impacts	4-18
4.12.4	Mitigation Measures	4-18
4.13	Cultural Resources	4-18
4.13.1	The Proposed Action	4-18
4.13.2	No-Action Alternative (Current Management Practices Continue)	4-23
4.13.3	Cumulative Impacts	4-23
4.13.4	Mitigation Measures	4-23
4.14	Hazardous Materials and Hazardous Waste Management	4-23
4.14.1	The Proposed Action	4-23
4.14.2	No-Action Alternative (Current Management Practices Continue)	4-25
4.14.3	Cumulative Impacts	4-26
4.14.4	Mitigation Measures	4-26
4.15	Socioeconomic	4-27
4.15.1	The Proposed Action	4-27
4.15.2	No-Action Alternative (Current Management Practices Continue)	4-28
4.15.3	Cumulative Impacts	4-28
4.15.4	Mitigation Measures	4-28
5.0	CONSULTATION AND COORDINATION	5-1
6.0	LIST OF PREPARERS	6-1
7.0	DISTRIBUTION LIST	7-1

8.0	STATUTES; EXECUTIVE ORDERS; RULES AND REGULATIONS; AND INSTRUCTIONS AND GUIDANCE	8-1
8.1	Statutes	8-1
8.2	Executive Orders	8-2
8.3	Rules and Regulations	8-3
8.4	Instructions and Guidance	8-3
9.0	REFERENCES	9-1
10.0	PUBLIC COMMENTS AND RESPONSES	10-1

APPENDIXES

A	Notice of Intent Published in the Federal Register
B	Johnston Atoll Closure Notification Letter
C	Executive Orders and other Documents of Conveyance Related to Johnston Atoll
D	Plant and Animal Species Recorded on Johnston Atoll
E	Shoreline Protection Assessment
F	SWMUs & AOCs Associated with the RCRA Part B Permits
G	Methods of Analysis

FIGURES

1-1	Project Vicinity and Location Map, Johnston Atoll	1-3
1-2	Current Land Use, Johnston Island, Johnston Atoll	1-11
1-3	Current Land Use, North, East, and Sand Islands, Johnston Atoll	1-13
3-1	Location of Predominant Vegetation and Wildlife	3-7
3-2	Location of Predominant Vegetation and Wildlife, North, East, and Sand Islands	3-9
3-3	Historical Land Expansion of Johnston Island	3-17
3-4	Historical Land Expansion of North, East, and Sand Islands	3-19
3-5	Location of Infrastructure, Utilities, and Transportation, Johnston Island	3-29
3-6	Location of Infrastructure and Transportation on North, East, and Sand Islands	3-31
3-7	Overview of Solid Waste Management Units and Areas of Concern, Johnston Island	3-45
4-1	Location of Potential Construction Rubble Debris Areas, Johnston Island, Johnston Atoll	4-19
4-2	Location of Potential Construction Rubble Debris Areas, North, East, and Sand Islands, Johnston Atoll	4-21

TABLES

1-1	Environmental Coordination	1-8
2-1	Summary of Environmental Impacts for the Proposed Action and No-Active Alternative	2-6
3-1	Breeding and Winter Resident Bird Populations	3-6
3-2	Historical Hurricane and Damage Data	3-23
3-3	Noise Levels Associated with Johnston Atoll-Related Noise Sources	3-25
3-4	Recorded Bird Strikes at Johnston Atoll since 1986	3-26
3-5	Key Airfield Exemptions, Johnston Atoll Airfield	3-33
3-6	Ocean Conditions	3-39
3-7	Environmental Status of SWMUs and AOCs Associated with Air Force RCRA Part B Permit (Permit No. TT9-057-090-002)	3-43
3-8	Emission Standard for Thermal Desorption System	3-47
3-9	Insecticides, Pesticides, Rodenticides, and Fungicides Utilized at Johnston Atoll	3-52
3-10	Assigned Johnston Atoll Population Drawdown	3-55

Acronyms and Abbreviations

°	degree
'	minute
"	second
§	section
15 AW	15th Airlift Wing
AAFES	Army/Air Force Exchange Service
ACM	asbestos-containing material
AEC	Atomic Energy Commission
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFI	Air Force Instruction
AFM	Air Force Manual
AHERA	Asbestos Hazard Emergency Response Act
AOC	area of concern
ARTCC	Air Route Traffic Control Center
AST	aboveground storage tank
ATC	air traffic control
AW	Airlift Wing
BASH	Bird/Wildlife Aircraft Strike Hazard
bgs	below ground surface
BOS	base operating support
BX	Base Exchange
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Civil Engineer Squadron
CERR	Resources Flight, Real Estate Element
CEVJ	Johnston Atoll Program Element
CEVP	Environmental Flight, Conservation Resources Element
CEVR	Environmental Restoration Branch
CEVQ	Environmental Quality Branch
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CJTF-8	Commander of Joint Task Force EIGHT
CMS	Corrective Measures Study
CO	carbon monoxide
CONUS	continental United States
CRDA	construction rubble debris area
CWA	Clean Water Act
D&D	demolition and decommissioning
dB	decibel
dba	decibel, A-weighted
DE	Declaration of Excess
DERP	Defense Environmental Restoration Program
Det 1	Detachment 1
DNA	Defense Nuclear Agency
DOD	Department of Defense
DOC	Department of Commerce
DOI	Department of the Interior
DOT	Department of Transportation
DTRA	Defense Threat Reduction Agency

EA	Environmental Assessment
EBS	Environmental Baseline Survey
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency, United States
ESA	Endangered Species Act
ES&H	Environmental Safety and Health
ETOPS	Extended Twin-Engine Operations
F	Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FEMA	Federal Emergency Management Agency
Fed. Reg.	Federal Register
FIRM	Flood Insurance Rate Map
FS	Feasibility Study
ft ²	square foot
FWCA	Fish and Wildlife Coordination Act
gpd	gallon per day
GSA	General Services Administration
HAPC	habitat area of particular concern
HBIE	Historic Building Inventory and Evaluation
HO	Herbicide Orange
HQ	Headquarters
HUD	Department of Housing and Urban Development
JACADS	Johnston Atoll Chemical Agent Disposal System
JAV	Judge Advocate Office
JCS	Joint Chiefs of Staff
JP-5	jet propulsion fuel, grade 5
JTF-8	Joint Task Force EIGHT
KW	Kilowatt
LBP	lead-based paint
L _{dn}	day-night sound level
LE-1	Launch Emplacement 1
LORAN	Long-Range Aid to Navigation
LTBT	Limited Test Ban Treaty
LTM	long-term monitoring
LUC	land use control
MAJCOM	Major Command
MBTA	Migratory Bird Treaty Act
mg/dscm	milligram per dry standard cubic meter
mg/m ³	milligram per cubic meter
MMPA	Marine Mammal Protection Act
MPRSA	Marine Protection Research and Sanctuaries Act
MOGAS	motor gasoline
MOU	Memorandum of Understanding
MPA	marine protected area
mph	mile per hour
m/s	meter per second
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
msl	mean sea level

NA	not available
National Register	National Register of Historic Places
NAAQS	National Ambient Air Quality Standards
n.d.	No date
NDSA	Naval Defensive Sea Area
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
nm	nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSIA	NWR System Improvement Act
NWR	National Wildlife Refuge
NWRAA	NWR Administration Act
O&M	Operation and Maintenance
OL-A	Operating Location A
OPLAN	Operations Plan
OSHA	Occupational Safety and Health Act
PACAIRCOM	Pacific Air Command
PACAF	Pacific Air Forces
PBD	Program Budget
PCB	polychlorinated biphenyl
pCi/g	picocurie per gram
PMCS D	Program Manager for Chemical Stockpile Demilitarization
POL	petroleum, oil, and lubricant
ppm	part per million
psi	pound per square inch
PTWC	Pacific Tsunami Warning Center
Pub. L.	Public Law
RAMP	Radon Assessment and Mitigation Program
RCA	Radiological Control Area
RCRA	Resource Conservation and Recovery Act
RHSA	Red Hat Storage Area
ROI	Region of Influence
RSO	Range Safety Officer
RTSC	Raytheon Technical Services Company
SARA	Superfund Amendment and Reauthorization Act
SPCC	Spill Prevention Control and Countermeasures
SDVT	SDV Telecommunications
SWMU	solid waste management unit
TDS	thermal desorption system
TSCA	Toxic Substances Control Act
U.S.	United States
USACAP	U.S. Army Chemical Activity, Pacific
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
U.S.C.	United States Code
USCG	U.S. Coast Guard

USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground storage tank
VHF	very high frequency
WDC	Washington Demilitarization Corporation
WPRFMC	Western Pacific Regional Fishery Management Council
WWTP	Waste Water Treatment Plant

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

This Draft Environmental Impact Statement (EIS) evaluates the potential environmental impacts associated with the proposed termination of the Air Force mission at Johnston Atoll Airfield (Installation), Johnston Atoll (Figure 1-1).

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] §§ 4321–4374), the Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508), and Air Force Instruction 32-7061, *The Environmental Impact Analysis Process* (as promulgated at 32 CFR Part 989). This Draft EIS sets forth the environmental analysis for the termination of the Air Force mission at Johnston Atoll required by these implementing regulations.

1.2 Purpose of and Need for Action

The current Air Force mission at Johnston Atoll is to provide host-management support to the Department of the Army, Program Manager for Chemical Stockpile Demilitarization (PMCS D). In 1970, chemical munitions stored in Okinawa, Japan, were moved to Johnston Atoll. Public Law (Pub. L.) No. 99–145 was enacted in 1985 requiring the destruction of chemical munitions. As a result, the Johnston Atoll Chemical Agent Disposal System (JACADS) Facility was constructed (Earth Tech 2002b). This facility was designed to safely disassemble and incinerate military weapons containing chemical nerve agents and mustard gas. PMCS D operated the JACADS Facility along with their subcontractor Washington Demilitarization Corporation (WDC).

Starting in 1990, the Army destroyed 4 million pounds of chemical agents and chemical weapons stored at Johnston Atoll. On 29 November 2000, the Army destroyed the last of the remaining chemical weapons stockpiled at Johnston Atoll. At this time, PMCS D is performing closure of the JACADS Facility, which will include decontamination, dismantling and demolition of the main facility, associated support facilities, and metal-clad structures in the Red Hat Storage Area (RHSA) of the facility (EPA 2002).

PMCS D is in the final stages of their mission, and the Air Force has not identified any future mission requirements for Johnston Atoll. Thus, the purpose of this Proposed Action is the termination of the Air Force mission at Johnston Atoll. The need for the action arises from the fact that no further Air Force missions have been identified for Johnston Atoll.

The Air Force proposed action, therefore, is termination of the Air Force mission at Johnston Atoll. This action involves ceasing of host-management responsibilities, removal of all tenants, termination of base operating support (BOS) contractor services, closure of the airfield, abandoning in-place any improvements to the land, and termination of Air Force environmental restoration activities when complete. This EIS analyzes only the impacts to the environment associated with the termination of the Air Force mission on Johnston Atoll. Any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll requiring analysis under NEPA will be accomplished at the appropriate time. At the present time, other than the management of the National Wildlife Refuge (NWR) by the U.S. Fish and Wildlife Service (USFWS), the Air Force is aware of no subsequent plans for actions on Johnston Atoll. To attempt to analyze environmental impacts in this EIS associated with any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll would be merely speculative.

The purpose of this Draft EIS is to provide information to evaluate the environmental impacts of the termination of the Air Force mission at Johnston Atoll. The Draft EIS provides the Air Force decision-maker and the public with the information required to understand the potential environmental consequences of the termination of the Air Force mission, including the Proposed Action and the No-Action Alternative (Current Management Practices Continue).

1.3 The Environmental Impact Analysis Process

The NEPA established a national policy to protect the environment and ensure that Federal agencies consider the environmental impacts of their of actions in their decision-making. This policy recognizes humankind's impact on the biosphere and the importance of restoring and maintaining the overall quality of our natural environment. The CEQ is authorized to oversee and recommend national policies to improve the quality of the environment. Regulations promulgated at the CEQ implement NEPA. The CEQ regulations encourage Federal agencies to develop and implement procedures that address the NEPA process in order to avoid or minimize adverse impacts on the environment. Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*, addresses implementation of the NEPA as part of the Air Force planning, analysis, and decision-making process. AFI 32-7061 is promulgated at 32 CFR Part 989.

The NEPA, CEQ regulations and 32 CFR Part 989 provides guidance on the types of actions for which an EIS must be prepared. Once it has been determined that an EIS must be prepared, the proponent must publish a Notice of Intent (NOI) to prepare an EIS (Appendix A). This formal announcement signifies the beginning of the scoping period, during which the major environmental issues to be addressed in the Draft EIS are identified. A Draft EIS is then prepared, which includes the following:

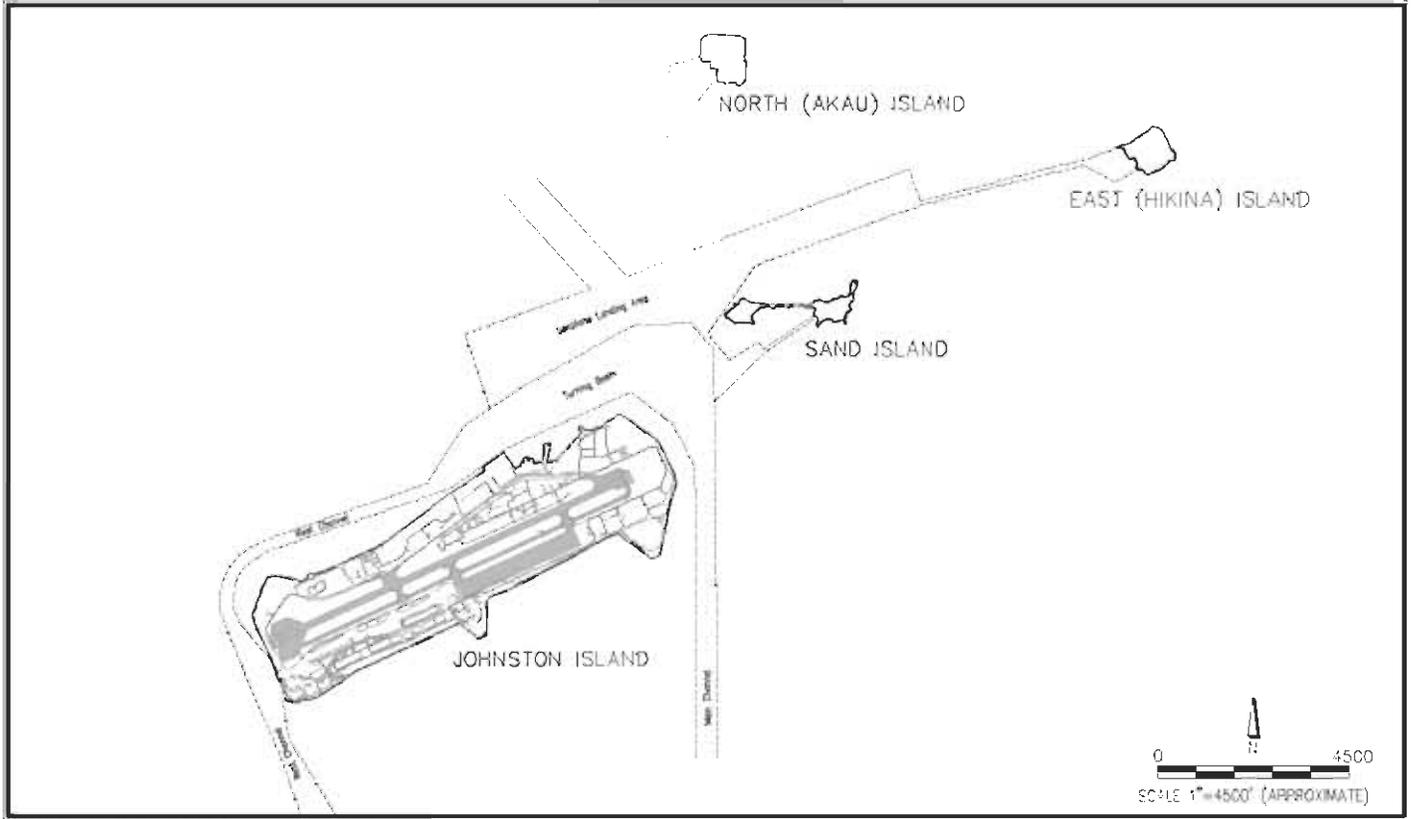
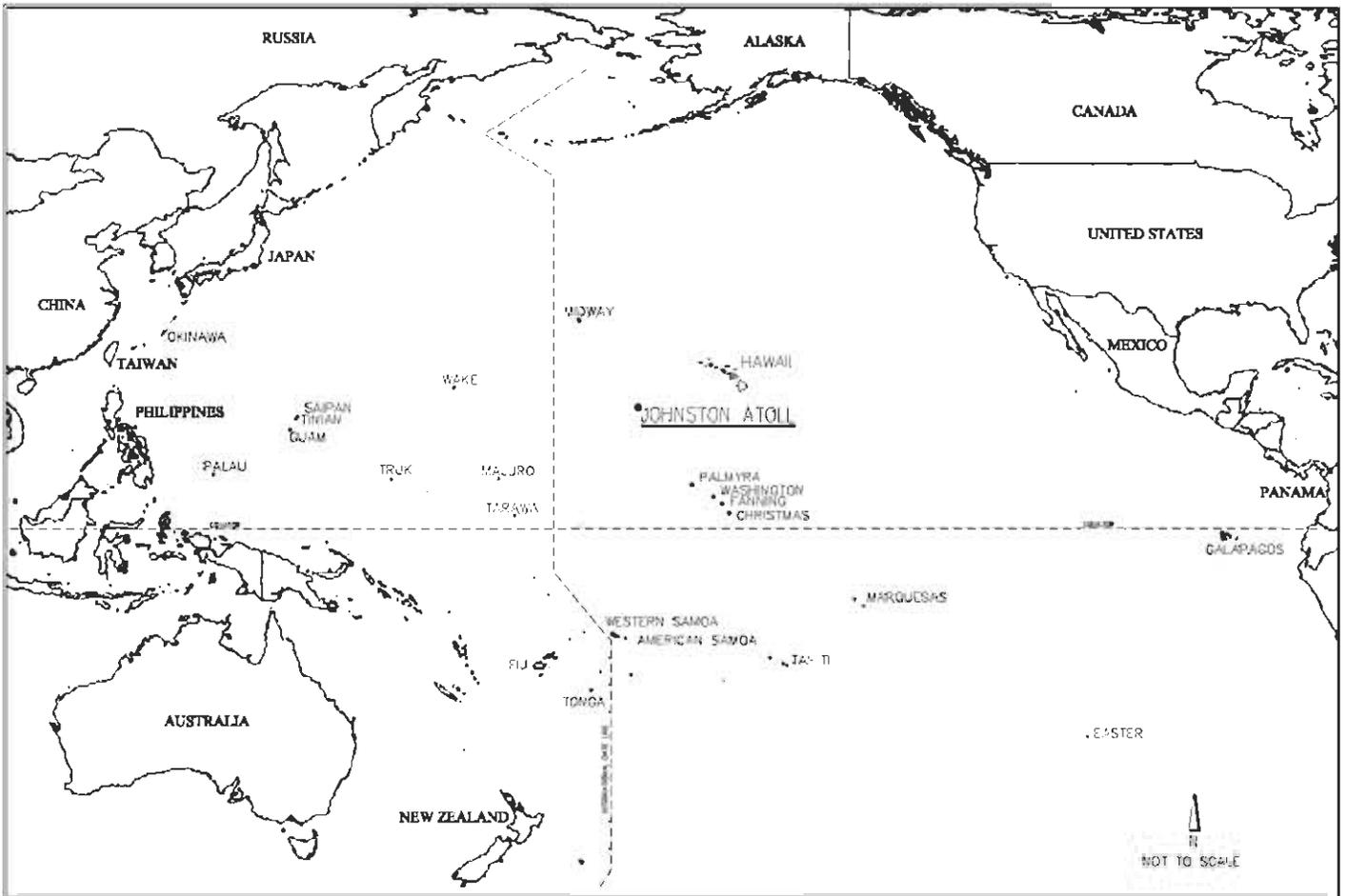
- A statement of the purpose of and need for the action
- A description of the Proposed Action and alternatives, including the No-Action Alternative
- A description of the environment that would be affected by the Proposed Action and alternatives
- A description of the potential environmental consequences of the Proposed Action and alternatives and potential cumulative impacts and mitigation measures

The Draft EIS is filed with the U.S. Environmental Protection Agency (EPA) and is circulated to the interested public parties and government agencies for a period of at least 45 days for review and comment. During this period, a public hearing is held so that the public can make comments on the Draft EIS. At the end of the review period, all substantive comments that have been received must be addressed. A final EIS is produced that contains responses to comments on the Draft EIS, as well as changes to the document, if necessary.

The final EIS is then filed with the EPA and distributed in the same manner as the Draft EIS. Once the final EIS has been available for at least 30 days, the Record of Decision for the action may be signed.

1.4 Scoping Process

NEPA regulations require early participation by the public and interested parties in the scoping process. This involves the public and interested parties commenting on the scope and content of the EIS, the Proposed Action and alternatives, and identifying significant issues related to the Proposed Action. The Air Force initiated the scoping process for the EIS on 25–29 October 2002, with publication of a NOI to prepare an EIS, in the Honolulu Star-Bulletin and Honolulu Advertiser. The NOI was published in the Federal Register (Fed. Reg.) on 06 November 2002 (60 Fed. Reg. 67606; Appendix A). Concerned parties were encouraged to participate in the public scoping meeting.



Filename: NPS\LE1\24P2-3\ASL2 DATE: 4/23/2003

**Figure 1-1
Project Vicinity and Location Map
Johnston Atoll**

A public scoping meeting was held at Washington Middle School in Honolulu, Hawaii, on 06 November 2002. At this meeting, Air Force representatives (Detachment [Det] 1, 15th Airlift Wing [AW]) presented an overview of the meeting's objectives, agenda, and procedures and described the process and purpose for the development of the Draft EIS. In addition to oral comments, written comments were also received. These comments, as well as information from the local community, experience with other similar decisions made, and NEPA requirements, were used to determine the scope and direction of studies/analyses needed to accomplish the Draft EIS. A public hearing on the Draft EIS will also be conducted in Honolulu, Hawaii, on a date to be determined (see Section 1.5).

1.5 Public Comment Process

The Draft EIS will be made available for public review and comment on dates to be determined. Copies of the document will be made available for review in libraries in Honolulu, Hawaii, and to those requesting copies. A public hearing will be held on a date to be determined. The Air Force (Det 1, 15 AW) will present the findings of the draft EIS and invite public comment.

1.6 Agencies Involved in the EIS Process

Several other Federal agencies are also involved in this EIS process as reviewing agencies. The agencies include the following:

- *EPA*. The EPA is provided the Draft EIS and final EIS for review and comment. The final EIS is also filed with EPA for public record.
- *FAA*. Notification to the Federal Aviation Administration (FAA) to close the airfield and remove it from Extended Twin-Engine Operations (ETOPS) use is required. In consideration of this, the Air Force contacted the FAA in September of 2002 in order to notify them of the proposed Air Force action at Johnston Atoll. At that time, the FAA indicated that it would be a reviewing agency for this EIS.
- *USFWS*. The USFWS manages the Johnston Atoll NWR, which encompasses the four islands and surrounding reef of Johnston Atoll. The USFWS, having specialized expertise in the biological resources at Johnston Atoll, was also approached for cooperating agency status for this EIS. However, based on a review of their available resources, the USFWS indicated that it would be a reviewing agency for this EIS.

1.7 Scope of the Environmental Review

The scope of an EIS is defined by the range of environmental impacts that could potentially result from implementation of the Proposed Action or its alternatives. Resources to be analyzed include air quality, biological resources, geology and soils, land use, natural hazards, noise, safety and health, transportation, utilities and infrastructure, visual resources, water resources, cultural resources, and hazardous materials and hazardous wastes along with the affected areas. Although not specifically required by NEPA or CEQ regulations, the Air Force has completed a qualitative socioeconomic analysis to provide a better understanding of the socioeconomic implications of the Proposed Action and No-Action Alternative.

In addition, Title V of Pub. L. No. 100-77, the Stewart B. McKinney Homeless Assistance Act (1987), was evaluated. Title V requires that Federal facilities be assessed by the Department of Housing and Urban Development (HUD) for use by homeless persons prior to being disposed of or sold. In preparation of the demolition process, a list of all facilities was submitted to HUD, and HUD determined them all as "unsuitable" for housing for the homeless (Fed. Reg. dated 27 September 2002).

This EIS does not evaluate the impact of the Proposed Action and No-Action Alternative on the following resources:

Minority and Low-Income Populations. Executive Order (EO) 12898, *Environmental Justice*, was issued by President William J. Clinton on 11 February 1994. Objectives of the EO, include identification of low-income and minority populations where proposed Federal actions may have disproportionately high and adverse human health and environmental effects. Because of its original small size, remote location, and lack of fresh water, Johnston Atoll was uninhabited and never supported an indigenous or permanent human population. Since 1934, Johnston Atoll has been used exclusively as a military installation, with the nearest civilian population situated more than 700 miles away in Oahu, Hawaii. Based on the remote location of Johnston Atoll and the absence of a natural endemic or indigenous human population, this EIS does not evaluate the impact of the Proposed Action and No-Action Alternative on minority and low-income populations in Hawaii or other Pacific Islands.

Non-Marine Surface Water Bodies. Because natural non-marine surface water bodies (i.e., fresh water bodies such as lakes or rivers) do not and have not naturally existed on Johnston Atoll, the impact on this resource will not be evaluated.

1.8 Applicable Regulatory Requirements and Coordination

Air Resources. The Federal law that addresses air quality is the Clean Air Act (CAA) (42 U.S.C. §§ 7401–7671). This Act requires EPA to establish health-based National Ambient Air Quality Standards (NAAQS) to protect against certain common pollutants. The act requires state governments to devise State Implementation Plans to meet the NAAQS. In establishing NAAQS, EPA designates areas of the country for air quality planning purposes (40 CFR Part 81). However, the definition of a “state” in the regulations implementing the relevant portions of the CAA does not include unincorporated, unorganized territories of the United States, such as Johnston Atoll [40 CFR Part 81.1(e)]. Thus, there are no NAAQS applicable to Johnston Atoll. Air resources pertaining to the breathing space of workers are regulated under the Occupational Safety and Health Act (OSHA). The OSHA specifically states that it applies to Johnston Atoll (29 U.S.C. § 653). The OSHA and its implementing regulations (29 CFR Parts 1910 and 1926) also govern workplace safety and health.

Biological Resources. Biological resources on Johnston Atoll are protected by the following authorities, among others:

- Endangered Species Act (ESA) (16 U.S.C. §§ 1531–1544)
- Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. §§ 661–667e)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703–712)
- Marine Mammal Protection Act (MMPA) (16 U.S.C. §§ 1361–1407)
- Marine Protection Research and Sanctuaries Act (MPRSA) (33 U.S.C. 1401–1445 and 16 U.S.C. 1431–1445)
- EO 13089, *Coral Reef Protection*; the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (16 U.S.C. §§ 1801 et seq.)
- NWR Administration Act (NWRAA) (16 U.S.C. §§ 668dd–668ee)
- NWR System Improvement Act (NSIA) of 1997 (Pub. L. No. 105–57).

Activities possibly affecting the biological resources on and around Johnston Atoll will be coordinated with the Johnston Atoll USFWS Wildlife Refuge Manager prior to closure and with USFWS Honolulu, Hawaii, office personnel after closure.

Hazardous Materials. Hazardous materials are addressed under several laws and regulations, including the following:

- OSHA and its implementing regulations (29 CFR Parts 1910 and 1926), which provide requirements for work place health and safety, including issues pertaining to hazardous materials
- U.S. Department of Transportation (DOT) regulations covering all transport of hazardous materials (49 CFR Parts 171–180)

For the Proposed Action, all contractors working on Johnston Atoll will be required to submit a Hazardous Materials Contingency Plan and a Health and Safety Plan, and to transport and dispose of any hazardous material off-island in accordance with DOT regulations within Title 49 CFR.

Hazardous Waste. The Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. §§ 6901–6992) and its implementing regulations (40 CFR Parts 260–270) establish a cradle-to-grave program for the management, treatment, storage, and disposal of solid and hazardous wastes. RCRA also establishes a specific permit program for the treatment, storage, and disposal of hazardous wastes. The Air Force maintains one RCRA B Permit (Permit No. TT9-570-090-002) for the operation of a hazardous waste treatment and storage facility and the Army maintains one RCRA Part B Permit (Permit No. TT0-570-090-001) for the treatment, storage, and disposal of chemical munitions at Johnston Atoll. The actions associated with both of these permits are discussed in more detail in Section 3.2.13.

Historic and Cultural Resources. U.S. possessions and unincorporated territories such as Johnston Atoll, which are not part of any U.S. state or territory or any freely associated state, are not “states” for the purposes of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. Parts 470 et seq.). Section 106 of the NHPA and the Advisory Council on Historic Preservation’s (Council’s) statutes in general do not apply to Federal agency actions in such a possession. However, NHPA Section 110 (16 U.S.C. § 470h–2), which requires that historic properties be identified, managed, protected from inadvertent harm, and documented if they must be altered or destroyed, is applicable to Johnston Atoll. As a result, cultural resource surveys and a Historic Building Inventory and Evaluation (HBIE) were conducted for the purpose of documenting potential historic property at Johnston Atoll; these are discussed in Chapter 3.0.

Property Management. Air Force Real Property management is guided by the following: Air Force Handbook 32-9007, *Managing Air Force Real Property*; AFI 32-9004, *Disposal of Real Property*; Pub. L. No. 537, 80th Congress (16 U.S.C. §§ 667b–667d); and Federal Property and Administration Services Act of 1949 (40 U.S.C. §§ 471 et seq.).

Safety and Health. OSHA regulations (29 CFR Parts 1910 and 1926) set forth safety and health requirements that extend to all U.S. employers and employees. Activities that expose workers to health-threatening situations, such as handling asbestos, exposure to noise or lead dust, and operating heavy equipment, must comply with the requirements of the Act and applicable regulations that implement the Act.

Water Activities. The Clean Water Act (CWA) and related regulations govern actions involving the discharge of material into U.S. waters, as well as specific water work activities. Section 404 of the

CWA (33 U.S.C. §§ 1251 et seq.) establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) for construction work and other activities that result in discharge into U.S. waters. These activities are overseen by USACE through a permitting process.

1.9 Environmental Permits, Licenses, and Coordination

The installation's host-management organization, Det 1, 15 AW, maintains, will apply for, or seek to modify various permits or licenses and perform necessary coordination in accordance with regulatory requirements. Table 1-1 provides a summary of the required permits and licenses.

Table 1-1: Environmental Coordination

Attribute	Permit, License, or Entitlement	Activity, Facility, or Category of Persons Required to Obtain the Permit, License, or Entitlement	Applicable Laws	Regulatory Agency
Hazardous Materials/ Hazardous Waste	Hazardous material storage authorization and notification	Coordination with installation environmental departments for authorization and notification of hazardous material storage	RCRA (Pub. L. No. 94-580, codified as amended 42 U.S.C. §§ 6901–6992)	EPA
Biological Resources	Coordination with wildlife agencies	Required to protect migratory birds and other protected species	ESA (16 U.S.C. §§ 1531–1544) MBTA (16 U.S.C. §§ 703–712) MMPA (16 U.S.C. §§ 1361–1407) FWCA (16 U.S.C. §§ 1251–1387) MPRSA (33 U.S.C. 1401–1445 and 16 U.S.C. 1431–1445)	USFWS, NMFS
Cultural Resources	Historic building preservation	Required to protect historic buildings (if present)	NHPA (16 U.S.C. § 470h–2)	DOI/ National Park Service
Airspace	Coordination with FAA	Required for change in runway and airspace use	FAA (Pub. L. No. 85–726)	FAA

DOI Department of the Interior
NMFS National Marine Fisheries Service

1.10 Background

The Air Force's primary mission at Johnston Atoll is to provide host-management support for the Department of Army's PMCS and its support service contractors who operate the JACADS Facility. The Army's mission to destroy the chemical munitions stockpile in the Pacific has been completed, and currently PMCS is working toward closure of the facility, which is anticipated to be completed in December 2003. With the Army's mission ending, the Air Force's host-management support mission will also end. It should be noted that the Air Force plans to maintain a presence on Johnston Atoll until June 2004.

Management of Johnston Atoll is accomplished by Det 1, 15 AW at Johnston Atoll and are further supported by Operating Location A (OL-A), Det 1, 15 AW (the Johnston Atoll Program Office at Hickam Air Force Base [AFB]), which falls under the 15 AW Major Command (MAJCOM) of the Headquarters, Pacific Air Forces (HQ PACAF). Det 1, 15 AW maintains the island infrastructure

(e.g., runway, power plant) and has real property responsibility for Johnston Atoll buildings and facilities. The 15th Civil Engineer Squadron, Resources Flight, Real Estate Element (15 CES/CERR) maintains real estate accountability. The 15th AW Environmental Restoration Branch (15 AW/CEVR) is the environmental restoration program point of contact.

Support services are furnished through a contract administered by Det 1, 15 AW, and the 15 AW Contracting Squadron. BOS contractor services include providing facility maintenance, communications, law enforcement, and other personnel support services such as operating the dining hall, physical fitness facility, health clinic, and chapel. With reduced military mission activity, BOS contractor services have been and will continue to be reduced until completion of the military mission. No additional BOS contracts have been issued beyond December 2003.

The missions, roles, schedules, and responsibilities of the tenants/users with respect to the termination of the Air Force mission at Johnston Atoll are presented in the following sections.

1.11 Current Tenants/Users/Service Providers

The current tenants, users, and service providers of Johnston Atoll include DOD agencies, their support service contractors, various government users, and several commercial users/service suppliers. Notification of the pending closure of the Air Force mission was conducted between September and November 2002 (Appendix B). General land uses of Johnston Atoll are shown in Figure 1-2 and Figure 1-3. Agencies with continued use of Johnston Atoll after the termination of the Air Force mission are indicated in the subsections below. Tenants remaining on Johnston Atoll after December 2003 will have to be self sustaining, providing for their own base operating support; i.e., transportation, water, food, utilities, medical services and any other form of support. Air Force real estate permits are being initiated for these agencies remaining on Johnston Atoll. At this time, the only agencies requesting a real estate permit are the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS), which are discussed in Section 1.11.1.10 and Section 1.11.1.11, respectively. The Air Force will permit the use of facilities in an as-is condition and will provide no maintenance or support for their use. The Permittee will be responsible for the disposition of any used facilities and any equipment utilized by the Permittee prior to them leaving Johnston Atoll.

1.11.1.1 Department of the Army's Program Manager for Chemical Demilitarization

The primary tenant at Johnston Atoll is the Department of the Army's PMCSA, including its contractor who operates the JACADS Facility. The Army's mission to destroy the chemical munitions stockpile in the Pacific has been completed. The Army will not require permitted use of any Air Force property or remain on Johnston Atoll after the termination of the Air Force mission. The Army will continue to address issues associated with its RCRA Part B Permit through permit closure. The Army will retain all responsibilities associated with their ongoing RCRA Part B Permit environmental restoration activities.

1.11.1.2 Defense Threat Reduction Agency

The Defense Threat Reduction Agency (DTRA) was the host-management agency for Johnston Atoll prior to the Air Force. DTRA and its predecessors conducted atmospheric nuclear testing at Johnston Atoll, and maintained Johnston Atoll in caretaker status as part of the Limited Test Ban Treaty (LTBT), Safeguard C until November 1993 (when the ban was removed). DTRA will not require permitted use of any Air Force property or remain on Johnston Atoll after the termination of the Air Force mission. DTRA will address any issues regarding past activities, as needed, and retain all responsibilities associated with their environmental sites.

1.11.1.3 U.S. Fish and Wildlife Service

The USFWS administers the Pacific/Remote Islands at Johnston Atoll NWR. The mission of the Johnston Atoll NWR is to administer the land and water for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans (16 U.S.C. § 668dd). The USFWS manages the coral reef community, marine species, seabirds, and shorebirds. The USFWS is also responsible for any birds that inadvertently find themselves at the NWR due to inclement weather or mistakes in navigation. These are classified as “accidental” residents.

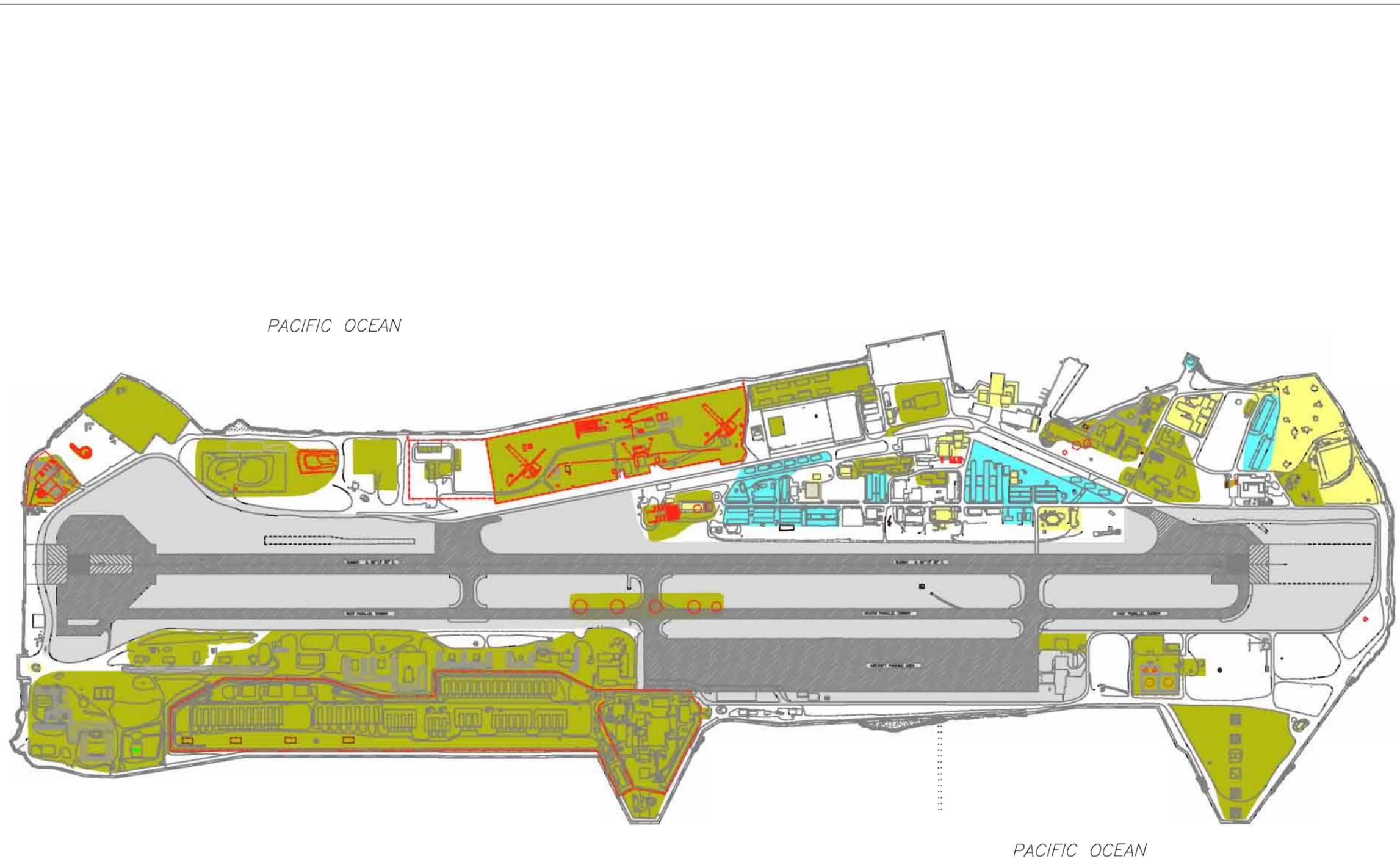
1.11.1.4 National Marine Fisheries Service

MSFCMA is responsible for creating eight regional fishery management councils that are responsible for managing marine fish stocks. These councils work in conjunction with the Department of Commerce (DOC), specifically the National Marine Fisheries Service (NMFS). The management councils are responsible for the development of specific fishery management plans and NMFS is responsible for their approval and implementation.

The Western Pacific Regional Fishery Management Council (WPRFMC) and the NMFS assume fishery management authority within the U.S. Exclusive Economic Zone (EEZ) in U.S. waters, including Johnston Atoll, per the MSFCMA (WPRFMC 2001). For Johnston Atoll, the EEZ extends from the shoreline out to 200 nautical miles (nm). While the WPRFMC and NMFS have fishery management authority in the EEZ, the USFWS also asserts fishery management authority within the Johnston Atoll NWR, creating a fishery management overlap.

The USFWS has resource management authority under the NWRAA of 1966 (16 U.S.C. §§ 668dd–668ee), as amended by the NSIA of 1997 (Pub. L. No. 105-57). However, the USFWS asserts that, “based on interpretation of EO 8682, *Establishing Naval Defensive Sea Areas Around and Naval Airspace Reservations Over the Islands of Palmyra, Johnston, Midway, Wake, and Kingman Reef, Pacific Ocean*—it [sic] refuge boundaries extend to the extent of the Naval Defensive Seas Area” (WPRFMC 2001). The NDSA, as defined in EO 8682, is a 3-mile marine boundary around the islands (See Appendix C).

Currently, a recreational fishing program is managed by the USFWS. This recreational fishing program is confined to the asserted management area of the NWR at Johnston Atoll (0–3 nm). The WPRFMC has recommended in the *Final Fishery Management Plan For Coral Reef Ecosystems of The Western Pacific Region* (WPRFMC 2001) (final ruling expected in December 2003) identification of an area from 0 to 50 fathoms around Johnston Atoll for designation as a low-use marine protected area (MPA) (Makaiu 2003). This low-use MPA designation would also require a special permit to be issued by NMFS for all fishing activities within the designated area.



LEGEND

- Permanent Structure
- Earth Berm
- Fuel Tank
- Former Facilities

Land Use

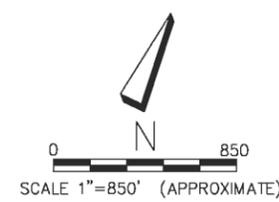
- Airfield
- Recreational (MWR)
- Residential / Housing
- Industrial
- Mixed Use

NOTES

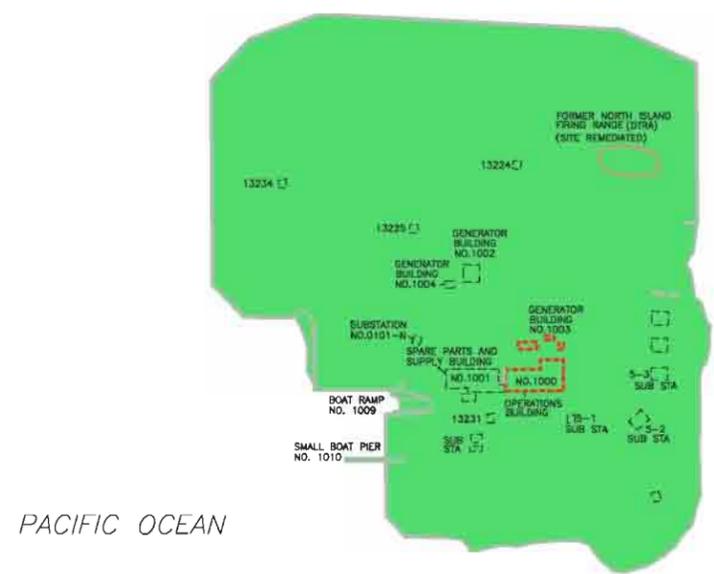
1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane, Feet, Clarke 1866
Elevation Datum: MLLW-0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

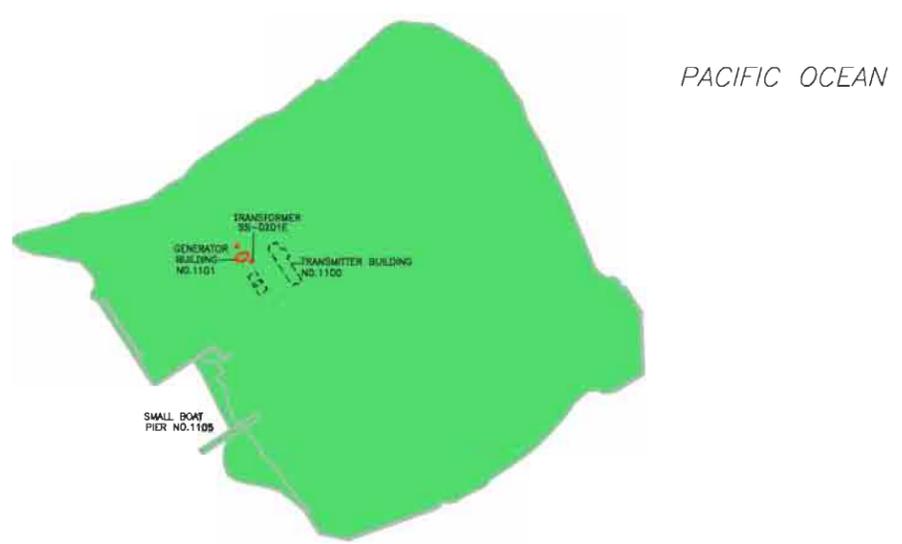
- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000



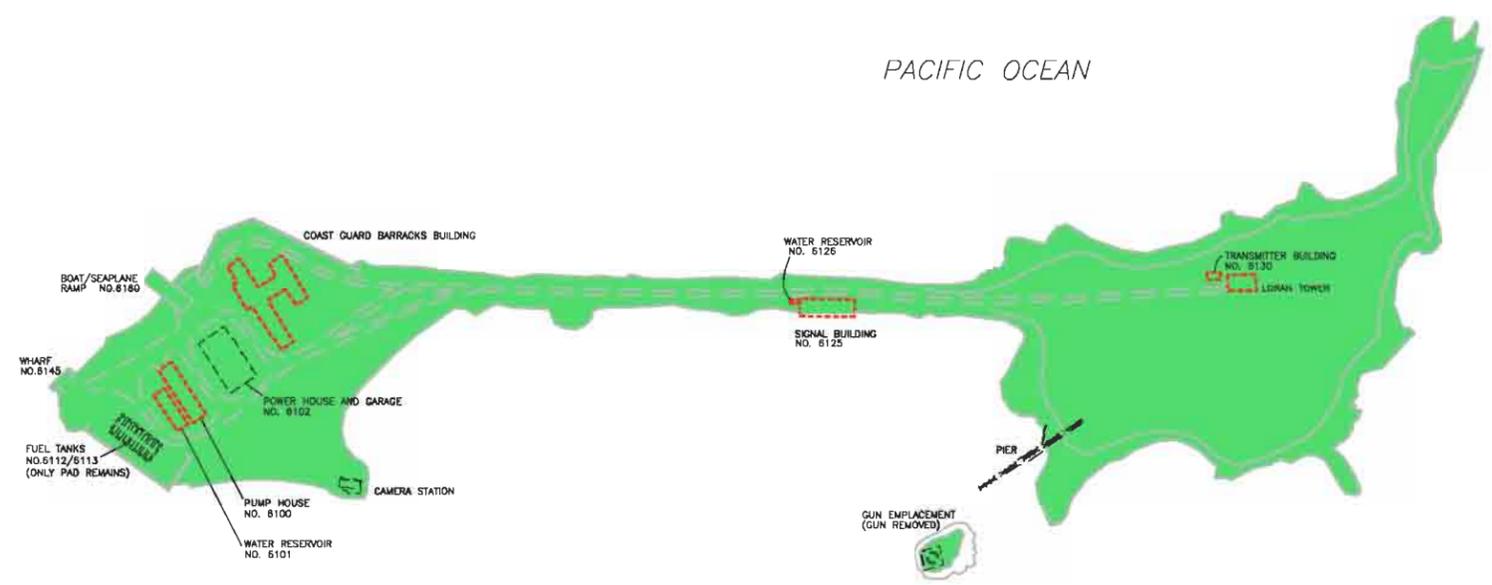
**Figure 1-2
Current Land Use
Johnston Island
Johnston Atoll**



NORTH (AKAU) ISLAND



EAST (HIKINA) ISLAND



SAND ISLAND

LEGEND

- 1009 Permanent Structure
- Former Facilities with Foundation Removed or Covered
- Former Facilities with Foundation Intact

Land Use

- Open Space

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane Coordinate System
Units in feet, Elevation Datum: MLLW=0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000

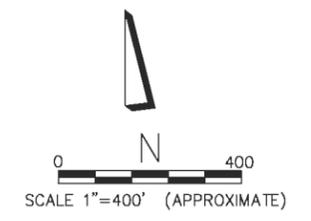


Figure 1-3
Current Land Use
North, East, and Sand Islands
Johnston Atoll

1.11.1.5 Washington Demilitarization Corporation

WDC is the support contractor for PMCSO. WDC provides operational support services for JACADS Facility operations. They utilize Air Force buildings and facilities. WDC has been contracted by PMCSO to provide JACADS operational support services at Johnston Atoll through their expected mission completion in November 2003. WDC will vacate Johnston Atoll with PMCSO upon the completion of the JACADS mission.

1.11.1.6 Raytheon Technical Services Company

Raytheon Technical Services Company (RTSC) is the BOS contractor supporting the Air Force host-management mission at Johnston Atoll. RTSC provides all installation support services including police and fire protection, medical services, barber/beauty shop, dining hall, library, movie theater, fueling, utilities (i.e., electrical, water, and wastewater treatment), and facility maintenance. They utilize Air Force buildings, facilities, and equipment. RTSC has been contracted to provide BOS services at Johnston Atoll through December 2003. With no further contracts issued for BOS services, RTSC will leave Johnston Atoll at that time.

1.11.1.7 SDV Telecommunications, Inc.

SDV Telecommunications, Inc. (SDVT) is a subcontractor to RTSC. They provide cable, telephone, Internet, television, and satellite access to Johnston Atoll. They utilize Air Force-supplied buildings and equipment. SDVT will provide services, as required, through the end of the RTSC BOS contract in December 2003. With no further contracts issued for BOS services, SDVT will leave Johnston Atoll at that time.

1.11.1.8 Matson Navigation

Matson ships transport bulky and dry goods to Johnston Atoll monthly. Matson maintains no permanent presence on Johnston Atoll and does not use Air Force-supplied buildings or equipment. All loading and unloading of the barges is performed by RTSC. The monthly service will end in December 2003.

1.11.1.9 Army/Air Force Exchange Service

The Army/Air Force Exchange Service (AAFES) is an independent organization providing Base Exchange (BX) services on Johnston Atoll. The mission of AAFES is to provide quality, uniformly low-priced merchandise and services to the military, regardless of where they are stationed. AAFES operates solely on its earnings, with a goal to provide modern shopping places and support quality of life and morale programs for the military. AAFES utilizes Air Force-supplied buildings, but maintains their own equipment. The Johnston Atoll BX is located in Facility 406 and provides small-level groceries, sundries, and dry goods to all personnel (military and civilian) on Johnston Atoll. They have use of a portion of Facility 401 for warehousing purposes. AAFES supplies the fixtures within the BX and is responsible for their removal. AAFES provided BX services to Johnston Atoll through October 2003. From October through December 2003, AAFES plans to bring additional personnel to Johnston Atoll to assist with facility breakdown and shipment of items to Hawaii. AAFES will not maintain a presence on Johnston Atoll after December 2003.

1.11.1.10 National Oceanic and Atmospheric Administration

The NOAA's National Weather Service – Pacific Tsunami Warning Center (PTWC) utilizes a 6-foot by 6-foot by 8-foot-high concrete block building to house tidal, tsunami, and weather data collection instruments that transmit a variety of data via the NOAA Geostationary Operational Environmental Satellite dish. Facility 108 (Tide Gauge House) is in use by NOAA agencies. PTWC has submitted

an Air Force real estate permit requesting (per AFI 32-9003, *Granting Temporary Use of Air Force Real Property*) continued use of this facility and their equipment after termination of the Air Force mission is complete (Permit KNMD 2003-204). Upon termination of the Air Force mission, PTWC plans to power their equipment with solar or windmill power, with data transmitted via their satellite dish. They also plan to manage their instrumentation remotely with periodic maintenance visits. The permit will be valid until 25 December 2008.

1.11.1.11 U.S. Geological Survey

The USGS currently maintains earthquake detection equipment located in the original portion (center) of Johnston Island. The USGS has equipment in two areas: detection equipment within subsurface borings, and recording and transmitting equipment in adjacent Facility 241. The USGS has submitted an Air Force real estate permit requesting (per AFI 32-9003, *Granting Temporary Use of Air Force Real Property*) continued use of this facility and their equipment after termination of the Air Force mission is complete (Permit KNMD 2003-203). Upon termination of the Air Force mission, the USGS plans to move its equipment to a Conex-type shed (provided by the USGS) and will power their equipment with a solar panel array, with data transmitted via satellite dishes. The USGS plans to install seismic equipment and a satellite dish as part of the Global Seismograph Network to monitor earthquakes and underground nuclear testing conducted in the Pacific region. They also plan to manage their instrumentation remotely with periodic maintenance visits. The permit will be valid until 25 December 2008.

1.11.1.12 Federal Aviation Administration

Johnston Atoll Airfield is a restricted-use military airfield. EO 8682, *Establishing Naval Defensive Sea Areas Around and Naval Airspace Reservations over the Islands of Palmyra, Johnston, Midway, Wake, and Kingman Reef, Pacific Ocean*, also restricts the airspace of Johnston Atoll to public (or government) aircraft. However, due to its remote location in the Central Pacific Ocean, Johnston Atoll is also an ETOPS site. Johnston Atoll is a FAA-certified (139-certification) airfield that can be utilized for ETOPS emergency landings. Although the FAA does not maintain a physical presence on Johnston Atoll and is not directly involved with the Johnston Atoll airfield, they do issue advisories and notifications specifying which airports/airfields maintain the certification for ETOPS use. The FAA was notified of the termination of the Air Force mission on 13 September 2002. The FAA will be notifying Johnston Atoll ETOPS users of the removal of the airfield from the ETOPS system. (The ETOPS system and airspace are discussed in detail in Section 3.2.8.2.)

1.11.1.13 Aloha Airlines

Aloha Airlines provides weekly commercial airliner service to Johnston Atoll as part of Aloha's Central Pacific route, which stops at Johnston Atoll, Kwajalein, and Majuro in the Marshall Islands. The airline has an agreement with the Air Force allowing it to land, refuel, load, and unload passengers/baggage at Johnston Atoll. Aloha Airlines does not use any buildings on Johnston Atoll and maintains no equipment there. All fuel and airport support for Aloha Airline flights are supplied by RTSC. Aloha Airlines is scheduled to discontinue stops to Johnston Atoll in December 2003.

1.11.1.14 U.S. Coast Guard Air Station Barbers Point

The U.S. Coast Guard (USCG) Air Station Barbers Point has a primary mission of search and rescue within the Pacific maritime region. This region includes the Central Pacific and island chains, including the Hawaiian, Marianas, Carolina, and Marshall Islands. Currently, the USCG uses no buildings or equipment, and maintains no physical presence on Johnston Atoll. However, in the past the USCG has utilized Johnston Atoll for refueling or for staging of aircraft in support of their

mission. The USCG has been notified that support services (like refueling) will not be available after the termination of the Air Force mission.

1.11.1.15 Reserve Support Wings

Several reserve support wings provide Johnston Atoll with cargo air service on a weekly basis. These reserve support wings include the 154th Hawaii Air National Guard Unit, the 624th Regional Support Group (Pacific Division), and the 735th Air Mobility Squadron. They utilize no buildings or equipment on Johnston Atoll, but may utilize services such as refueling. These reserve wings fly C-130s, C-141s, and DC-8 cargo planes to Johnston Atoll carrying a variety of goods, including fresh, refrigerated food. These reserve wings are situated in Hawaii and on the west coast of the U.S. mainland. They have been notified that regular service to Johnston Atoll will end in December 2003 and that support services such as refueling will not be available after that time.

1.11.1.16 Demolition, Decommissioning, Debris Disposal, and Restoration Contractor

CH2MHill is the contractor responsible for the demolition, decommissioning, and wildlife hazard mitigation work at Johnston Atoll. This work includes work on Johnston Island as well as on the three outer islands (Sand, North, and East Islands). The objective of this work is to abate all hazardous material followed by the demolition or decommissioning of as many of the Johnston Atoll structures (e.g., buildings, bollards, pump houses, sheds) as possible with the available funding. For facilities not demolished or decommissioned, the objective is to mitigate potential facility hazards that could cause an entanglement or flight obstruction. These activities might include the removal of windows, doors, potential bird entrapment hazards (i.e., air conditioning ducts), etc. Mitigation at some of these structures may begin in late 2003 depending on the ramp-down schedule for Johnston Island. The balance of the work will be performed from January through June 2004. It should be noted that the Air Force plans to maintain a presence on Johnston Atoll until June 2004.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

2.1 Proposed Action and Alternative

The Proposed Action and alternative include the termination of the Air Force mission and the No-Action Alternative (Current Management Practices Continue), respectively. It should be noted that land use as a NWR, however, would continue.

2.1.1 The Proposed Action (Termination of the Air Force Mission)

The Proposed Action is the termination of the Air Force mission at Johnston Atoll. This action involves ceasing of host-management responsibilities, removal of all tenants, termination of BOS contractor services, closure of the airfield, abandoning in-place any improvements to the land, and termination of Air Force environmental restoration activities when complete. This EIS analyzes only the impacts to the environment associated with the termination of the Air Force mission on Johnston Atoll. Any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll requiring analysis under NEPA will be accomplished at the appropriate time. At the present time, other than the management of the NWR by the USFWS, the Air Force is aware of no subsequent plans for actions on Johnston Atoll. To attempt to analyze environmental impacts in this EIS associated with any subsequent transfer of Air Force control and jurisdiction over Johnston Atoll would be merely speculative.

The schedule for the termination of the Air Force mission is dependent on the D&D activities, JACADS mission closure, and ongoing environmental restoration activities, which are separate actions from the Proposed Action and No-Action Alternative. To allow for adequate living conditions for personnel on Johnston Atoll, the closure would occur in a phased basis, coinciding with JACADS mission closure. It should be noted that the Air Force plans to maintain a presence on Johnston Atoll until June 2004. The following sections contain the major actions associated with the termination of the Air Force mission.

2.1.1.1 *Demolition and Decommissioning of Facilities and Wildlife Hazard Mitigation*

Impacts of D&D were evaluated in the *Environmental Assessment, Building Demolition, Decommissioning, and Debris Disposal, Johnston Atoll* (Earth Tech 2002b). Based on this environmental assessment, which was conducted in accordance with NEPA, CEQ, and Air Force Instruction, it was concluded that demolition, decommissioning, and debris disposal actions at Johnston Atoll would not result in significant impacts to the environment. In order to be effective and economically efficient, the majority of D&D activities will occur after JACADS mission closure activities are complete. Asbestos and lead-based paint (LBP) will be managed or mitigated in accordance with applicable regulations. All friable asbestos-containing material (ACM) and LBP above designated Housing and Urban Development (HUD) criteria will be removed and disposed at an approved continental United States (CONUS) facility. Non-friable ACM and building demolition debris with LBP concentrations below HUD and the EPA Region 9 Toxicity Characteristic Leaching Procedure criteria will be placed in a designated on-island construction rubble debris area (CRDA) (CH2MHill 2003b). Wildlife hazard mitigations would also occur on Johnston Island. These activities include avoiding D&D activities during high-risk months (i.e., high nesting months), minimizing relocation of heavy equipment, preventing nest establishment, and preventing access to work areas. The phasing and priority of work will be conducted to maximize the benefits of the D&D funding. As BOS contractor services are ended, the D&D contractor will be required to be self-sufficient. Limited utilities such as septic, supplied water, stored fuel, and temporary housing will be used. The D&D contractor will be responsible for closing and/or removing these support components upon their departure.

Demolition of facilities at Johnston Atoll involves the use of traditional wrecking techniques. Demolition through wrecking will be completed using specialized equipment, which includes, but is not limited to, wrecking balls, bulldozers, and hydraulic excavators with attachments (such as grapplers, shears,

hammers, and concrete crushers) (CH2MHill 2003b). The techniques utilized at Johnston Atoll are performed in accordance with all applicable laws and guidelines. The decommissioning process includes, but is not limited to, removal and disposal of glass windows and doors, air conditioning units, and lighting; and tying-off/capping-off of all utilities. In some cases, decommissioning includes sealing of doors and windows.

Facilities designated for demolition and decommissioning require initial preparation. Preparations include access restriction, clearing the area of wildlife, and protecting the soil near the structure so as not to generate excess dust or remove extra soil. Additionally, appropriate measures (e.g., scheduling, dust control) are taken. Each facility would then have any friable ACM as well as any hazardous materials removed and properly staged, stored, or disposed of prior to commencement of demolition activities.

Disposal techniques include the use of an air curtain burner; using on-island disposal areas including the RHSA Bunkers or Small Arms Firing Range [if available] and constructed on-island CRDAs; CONUS disposal; and demolish and leave-in-place.

2.1.1.2 Outer Island Demolition and Wildlife Hazard Mitigation

The environmental impacts of the demolition activities conducted on the outer islands were evaluated in the *Environmental Assessment, Building Demolition, Decommissioning, and Debris Disposal, Johnston Atoll* (Earth Tech 2002b). There is no active military use of North, East, and Sand Islands. As a result, these islands are available for bird habitat use. Demolition and hazard mitigation activities for all three outer islands were completed in December 2002. All work was closely coordinated with Johnston Atoll USFWS staff to minimize potential impacts to bird and other wildlife populations.

2.1.1.3 JACADS Closure

The JACADS Facility is operated by the Army and its contractors. The JACADS closure is being conducted in accordance with their RCRA Part B Permit. It is mentioned in this EIS as it pertains to the interdependent mission termination schedule and activities. As stated previously, the PMCSD mission of chemical munitions demilitarization has been completed, and the mission is now focusing on closure of the facilities and areas used by PMCSD. The closure by PMCSD includes demolition of the main JACADS Munitions Demilitarization Building and associated support facilities as well as other metal clad structures in the RHSA. The closure of the JACADS-associated facilities is anticipated to be complete in late 2003.

2.1.1.4 Environmental Restoration

The Air Force and the Army have ongoing environmental efforts that will be addressed during and after closure, as necessary. Section 3.2.13, Table 3-7, and Appendix F present a description of these ongoing environmental efforts at Johnston Atoll. These environmental actions are being conducted in accordance with other laws and regulations (e.g., RCRA requirements). The Air Force maintains one RCRA B Permit (Permit No. TT9-570-090-002) for the operation of a hazardous waste treatment and storage facility. The Army maintains one RCRA Part B Permit (Permit No. TT0-570-090-001) for the treatment, storage, and disposal of chemical munitions at Johnston Atoll. The actions associated with both of these permits are discussed in more detail in Section 3.2.13. These ongoing efforts are mentioned in this EIS as they pertain to the interdependent Air Force mission termination schedule and activities. The ongoing Air Force environmental efforts would include long-term monitoring of some of the sites under their RCRA Part B Permit in addition to any possible ongoing restoration activities. It should be noted that the Army RCRA Part B Permit is predominantly associated with the JACADS mission closure and any necessary ongoing environmental restoration activities will be the sole responsibility of the Army.

2.1.1.5 *End of Base BOS Services*

Termination of the BOS contractor services would entail the following:

- *End of BOS Medical Services.* BOS medical services would be terminated by the BOS contractor in December 2003, and would be replaced with a medical contingent to support D&D activities.
- *Active Fuels System Decommissioning.* Decommissioning of the fuels systems would be performed in phases, based on the needs associated with facility closures and reduction in labor. Several fuel-related requirements exist at Johnston Atoll. These include providing fuel to JACADS until their operations cease, to the D&D contractor, and to the Air Force thermal desorption system (TDS) used for solid waste management unit (SWMU) remediation. In most instances, lines and equipment associated with the active system would be de-energized, emptied, cleaned, vapor-freed, locked/tagged out, and left in-place.
- *Closure of Island Exchange (AAFES).* Closure of the Island Exchange (AAFES) and departure of AAFES personnel from Johnston Atoll would be completed in December 2003.
- *End of BOS Fire Fighting Services.* Fire-fighting support provided by the BOS contractor would be terminated in December 2003. Fire suppression responsibilities would become the responsibility of the D&D contractor until D&D activities are complete.
- *Airfield Restriction and Decommissioning of Aircraft Refueling Capabilities.* In late December of 2003, the airfield would become restricted. The aircraft refueling capabilities would be taken out-of-service and decommissioned. The airfield would then be closed to routine operations, and no aircraft, unless previously authorized via prior permission required and approved by the 15 AW Commander, would be able to use Johnston Atoll in any form, other than for an in-flight emergency. The agreement to allow Aloha Airlines to land at Johnston Atoll (as part of their regular Central Pacific route) would be terminated. Aloha Airlines has been provided closure notification and is authorized to continue commercial services until 26 December 2003 (Appendix B). They are approved for civil aircraft landing permit approval via HQ U.S. Air Force, Associate Director for Civil Aviation validation. A Notice to Airmen will be issued to inform users that the airfield will be closed to all aircraft except direct D&D support from 27 December 2003 to 30 June 2004. The USFWS have also been notified of the airfield restriction and upcoming closure.
- The termination of routine operations at the airfield would end regular (weekly) flights to Johnston Atoll. With the end of routine flight operations, D&D contractors and other island personnel would need to rely on pre-approved, chartered flights into the restricted Johnston Atoll Airfield for transportation, supplies, and mail.
- *Water Plant, Waste Water Treatment Plant, Air Curtain Burner, and Power Plant Turned Over to D&D Contractor.* The Water Plant (Facility 45), Waste Water Treatment Plant (WWTP) (Facility 740), and Power Plant (Facility 48) would be turned over to the D&D contractor. The D&D contractor would phase these utilities out-of-service and rely on stored and supplied water, septic or other related systems, and generators at the end of the D&D action. The utilities would be emptied/de-energized, capped, and left in-place. Storm drains would remain open to allow drainage on Johnston Atoll to continue. The air curtain burner units would be utilized as long as possible, and may be removed for re-use within the Air Force or DOD. The D&D contractor would be responsible for handling water, wastewater, and power as needed during the D&D action. The D&D contractor would use the existing water plant systems until they can transition to water storage and bottle water usage to provide water for drinking and cooking, as well as utilize electric toilets, and a leach field for gray water.

- *Departure of Last Cargo Barge from Johnston Atoll (Also Cessation of Fuel and Durable Goods Shipments).* The last BOS cargo barge would depart Johnston Atoll in concert with termination of the BOS contract. Shipment of durable goods and transport of other (including bulky) materials to and from Johnston Atoll would continue through June 2004 to support D&D contractor efforts. During the period of December 2003 and June 2004, the D&D contractor would be responsible for all shipments to and from Johnston Atoll. Barge fuel delivery may be required after November 2003 to support closure actions. After final D&D contractor use, the wharf utility and fuel systems would be available for decommissioning. All fuel and barge activity supporting D&D activities would cease after 30 June 2004.
- *Dining Hall Closure.* The Dining Hall (Facility 519), as operated by the BOS contractor, would be closed in December 2003. All food services to support the D&D action would be supplied by the D&D contractor.
- *End of Air Force–Provided Communications.* Air Force–provided communications (e.g., normal telephone and computer Internet service to and from Johnston Atoll) would cease on or about 20 December 2003. All supporting equipment (i.e., cables, lines) would be de-energized, locked and tagged out, and left in-place.

2.1.1.6 *Disposal and Reuse of Government Equipment, Vehicles, and Furniture*

Government-furnished equipment and real property-installed equipment would be reclaimed, recycled, or reutilized to the maximum extent practicable. The U.S. Army Kwajalein Atoll, Defense Reutilization and Marketing Organization, and Hickam AFB, would be the recipients of redistributed assets. Over 72 percent of Johnston Atoll equipment, along with 50 percent of the billeting and office furniture and 45 percent of its miscellaneous materials, would be redistributed. Any government-furnished equipment and materials that prove to be economically infeasible for redistribution would be disposed of in a manner in compliance with Federal laws and regulations.

2.1.1.7 *Completion of Air Force Manpower Drawdown*

As the various actions are completed, staff no longer required on Johnston Atoll would be removed in a labor drawdown. An island population of 600–800 is expected to remain on Johnston Atoll through the shutdown and closure of JACADS. As the JACADS mission is completed and the D&D action continues, a staff of approximately 200–300 persons would be present. This number would be reduced as various actions are completed and personnel are no longer required. The Air Force plans to maintain a presence on Johnston Atoll until June 2004. After completion of the D&D action and final inspections in June 2004, all D&D contractor personnel and remaining Air Force personnel would depart Johnston Atoll. The labor drawdown at that time would be to zero. The 15 AW would not have a permanent presence on Johnston Atoll after the termination of the Air Force mission.

2.1.1.8 *Closure of the Airfield*

Upon closure of the installation and all flight operations, the ETOPS certification and FAA airport certification would be removed (resulting in an FAA Advisory Circular), and the agreement to control inbound/outbound air traffic with the Oakland Air Route Traffic Control Center (ARTCC) would be terminated. The navigational aid (non-directional beacon) would be removed, as well as the lighting and communications equipment (for reuse or disposal as appropriate). The closed airfield (pavement) would also be marked to reflect its non-operational status. The marking of the airfield would conform to AFI 32-1042, *Standards for Marking Airfields*; Engineering Technical Letter 94-1, *Standard Airfield Pavement Marking Schemes*, and; other FAA guidance including FAA Advisory Circular 70/7460-1, *Obstruction Marking and Lighting*. In general, the airfield would be marked as closed by painting the required marks with non-reflective yellow.

2.1.2 Description of Alternative

2.1.2.1 No-Action Alternative (Current Management Practices Continue)

Under the No-Action Alternative (Current Management Practices Continue), installation conditions would remain *status quo*. The Air Force would continue with the same level of funding to administer and manage Johnston Atoll in a manner consistent with full host-management operations. The BOS contractor would remain, and the same level of operations and maintenance would exist at Johnston Atoll, irrespective of the tenancy. The facilities and utilities would remain with the same level of maintenance, and the same services. The Det 1, 15 AW activities would remain at Johnston Atoll with support from the Johnston Atoll Program Office, 15 AW, and HQ PACAF.

Although this alternative appears to be “outside the jurisdiction” of the Air Force and “beyond what Congress has authorized” or funded, it is nevertheless considered and analyzed because it “provides a benchmark [or baseline] enabling decision-makers to compare the magnitude of environmental effects of [the other] action alternatives” (see 40 CFR Part 1502.14(d)).

2.1.3 Other Alternatives

No alternatives to the termination of the Air Force mission have been identified. The Air Force’s mission was to provide host-management support to PMCSD. PMCSD is now in the final stages of its mission, and the Air Force has not identified any future mission requirements at Johnston Atoll. Because no alternatives to the termination of the Air Force mission have been identified, there are no other alternatives included in this document.

2.2 Other and Future Actions in the Region

Other actions and future actions within the region were evaluated to determine whether cumulative environmental impacts could result due to the implementation of the Proposed Action or alternatives in conjunction with other past, present, or reasonably foreseeable future action(s). Cumulative impacts result from “the incremental impact of actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency undertakes such future actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time” (40 CFR Parts 1500–1508). Other than ongoing D&D, Air Force, and PMCSD activities, no other actions within the region were identified that would result in significant cumulative impacts in combination with the Proposed Action and No-Action Alternative.

2.3 Comparison of Environmental Impacts

A summary comparison of potential environmental impacts from the Proposed Action and No-Action Alternative is presented in Table 2-1.

Table 2-1: Summary of Environmental Impacts for the Proposed Action and No-Active Alternative

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
Air Quality	A positive impact to the air quality at Johnston Atoll would result from the implementation of the Proposed Action because pollutant concentrations would be less than current conditions as a result of the elimination of numerous emission sources associated with normal installation activities (e.g., Power Plant, WWTP, aircraft flights). The closure would also eliminate motor vehicle operations on Johnston Atoll. No new emission sources would be added.	Air quality conditions would remain unchanged.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to air quality. Ongoing JACADS mission closure and the D&D action are expected to cause short-term, localized construction emissions.
Biological	Current biological conditions would remain unchanged or improve, resulting in a positive impact. Anthropogenic influences would be significantly reduced, and therefore, cause certain species to return to a non-anthropogenic-influenced environment.	Biological conditions would remain unchanged.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to biological resources. Ongoing JACADS mission closure and D&D activities of Johnston Atoll facilities is expected to cause short-term, localized construction disturbances. The <i>Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll</i> evaluated D&D impacts (Earth Tech 2002b) and determined that D&D activities would have a temporary impact on avian species in the area due to noise and vibration from the D&D action. However, D&D activities include removing birds from work areas, phased work, and working outside periods of heavy avian use. No other actions have been identified that would contribute to cumulative impacts to biological resources.
Geology and Soils	Under the Proposed Action, the Air Force would not maintain the shoreline protection structures (e.g., seawalls). As part of the impact analysis, an evaluation was conducted regarding the seawalls' fate if they were not maintained. The evaluation determined that no significant impacts would occur. Based on the analysis	Current conditions of the geology and soil would remain unchanged.	Final actions on environmental sites may include land use restrictions, which would limit the use of Johnston Atoll's soils. However, because no impacts to geology and soils were identified for the Proposed Action, no cumulative impacts to geology and soils would be expected.

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
Land Use	By completing the termination of the Air Force mission, land use would be more consistent with a NWR, resulting in a positive impact.	Current land use would remain unchanged.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to land use. Actions being taken at the environmental restoration sites may require access/easements for the responsible parties to complete them. The final actions on these sites may include LUCs (e.g., no digging in a specified area, residential or industrial reuse only, signs posted indicating restricted areas).
Natural Hazards	The Proposed Action would result in a positive impact by reducing exposure to damage from natural hazards such as storms, hurricanes, tsunamis, and floods. The population to evacuate would not be large (i.e., approximately 900 on-island personnel), and activities and operations would no longer be present and would not be affected. The Proposed Action may still be negatively impacted by natural hazards in that storms, hurricanes, tsunamis, and floods may occur during the termination of the Air Force mission activities causing damage and creating delays.	Exposure to damage from natural hazards would remain unchanged.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regard to natural hazards. Positive impacts would be seen in cumulative impacts resulting from the JACADS mission closure and the D&D action. Structurally unsound buildings would be removed, the overall infrastructure would be reduced (approximately 230 of the 569 real property listings on Johnston Atoll would have been demolished, with the rest decommissioned), and JACADS operations would cease. This would reduce exposure to damage that may occur from a natural hazard event.
Noise	A positive impact would result by reducing noise sources as well as personnel and wildlife exposed to noise sources.	Levels and exposure to noise would remain unchanged.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regard to noise. The JACADS mission closure and the D&D action would have a short-term negative impact, as noise levels would increase during these actions because of the increased use of construction equipment and demolition-related activities. Both personnel and birds using Johnston Atoll may be affected. The <i>Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal</i> evaluated the potential noise impacts from D&D activities (Earth Tech 2002b). It determined that to reduce noise impacts to personnel, D&D activities would include working in phases, keeping a distance from noise sources, and using earmuffs and earplugs; to reduce noise impacts to birds, D&D activities would include removing habitat in work areas prior to activities, clearing

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
<p>Safety and Health</p>	<p>Positive impacts would result including reduction in bird strikes due to the elimination of air traffic and the removal of wildlife hazards. No significant change would occur regarding safety and health issues posed by facilities. Negative impacts would be such that Johnston Island would no longer support (to an FAA-certified level) navigation and regional ETOPS use; however, an alternate ETOPS location has been identified and should be available in January 2004.</p>	<p>No changes would occur to safety and health issues associated with airport and aircraft operations and facilities. Negative impacts may occur if wildlife hazards are not addressed.</p>	<p>the area of birds, inspecting the area during work, and working outside of peak migration/nesting times to reduce noise impacts to birds.</p> <p>The Proposed Action would have a cumulative impact on the D&D action and other environmental cleanup activities by removing the airfield from service before these actions are complete.</p> <p>The JACADS mission closure and D&D activities of Johnston Atoll facilities would have a cumulative safety and health impact on the Proposed Action and No-Action Alternative. These impacts are mainly associated with construction-related activities (e.g., personnel working around heavy equipment, slips, trips, and falls).</p> <p>A positive cumulative impact would also occur with the JACADS mission closure and D&D actions. As a result of the termination of the Air Force mission, the D&D action would have demolished 230 of the 569 real property listings, and the remaining structures would have been decommissioned. This would result in a positive (cumulative) impact by reducing Johnston Atoll user exposure to non-maintained facilities.</p>
			<p>Because the airfield would be closed, the FAA would issue an Advisory Circular to users of the area, so that they can modify their aircraft and flight plans. Contractors supporting D&D activities would use chartered air transportation during the time the airfield is restricted to their use only (27 Dec 2003 – 30 June 2004). Contractors supporting ongoing environmental activities would utilize other transportation such as chartered boats or military sealifts (NOAA/USCG).</p>

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
Transportation	<p>Negative impacts would result including the restriction and closure of the airfield (resulting in the removal of the non-directional beacon), removal from ETOPS certification (however, an alternate ETOPS location has been identified and should be available in January 2004), and regular air transportation service. No adverse sea-transportation impacts are anticipated.</p>	<p>No change to transportation resources would occur.</p>	<p>The Proposed Action would have a cumulative impact on the D&D action, and other environmental activities when the airfield is restricted and regular air service and barge service is stopped before these actions are complete.</p> <p>Ongoing JACADS mission closure and D&D activities of Johnston Atoll facilities are expected to increase vehicle traffic on Johnston Island. The <i>Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll</i> (Earth Tech 2002b) evaluated the D&D impacts and determined that short-term impacts of increased traffic during the transport of debris for disposal and general movement of heavy equipment would occur. However, the D&D activities include phased planning and traffic routing to reduce the impacts of congestion.</p> <p>In addition, Johnston Island would no longer support (to an FAA-certified level) navigation and regional ETOPS use; however, an alternate ETOPS location has been identified and should be available in January 2004.</p> <p>While the D&D activities are still occurring, transportation services for the D&D contractors include chartered flights and boat/barge services. Contractors for ongoing environmental activities would utilize alternate modes of transportation to Johnston Atoll, such as chartered boats or military sealifts (NOAA/USCG).</p>
Utilities and Infrastructure	<p>Positive impacts would occur in having a reduced demand for utilities and infrastructure (e.g., upgrading technology and capacity are no longer required), a reduced demand for the resources and fuels that support them, and a reduction in emissions, effluents, and waste. A surplus of facilities may also result in a negative impact. Minor negative impacts would occur in not having regular utility services at the Atoll; however, no significant demand for them would exist.</p>	<p>Utility and infrastructure resources would remain unchanged.</p>	<p>The Proposed Action and No-Action Alternative would not result in significant cumulative impacts in regards to utilities and infrastructure. JACADS mission closure and the D&D action may cause cumulative impacts with regards to the Proposed Action and No-Action Alternative. During JACADS mission closure and the D&D action, facilities would be taken out-of-service, and housing, dining, and other support facilities would not be available for use by contractors and on-island personnel (Earth Tech 2002b).</p>

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
			<p>The facilities at Johnston Atoll would undergo D&D actions. Additionally, the D&D action would result in the establishment of CRDAs to hold inert construction rubble and debris.</p> <p>The <i>Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll</i> (Earth Tech 2002b) evaluated the impacts of D&D actions and determined that the D&D contractors would provide temporary infrastructure support and facilities to the remaining personnel to support continued use of Johnston Atoll during the D&D actions. In addition, the CRDAs include proper construction and re-vegetation for stabilization, habitat support, and improved visual appearance.</p> <p>Positive cumulative impacts would occur, as approximately 230 of 569 facilities (i.e., real property listings) on Johnston Atoll would be demolished, reducing surplus facilities and eliminating short-term exposure to facilities that were structurally unstable. The remaining facilities would be decommissioned (including removing windows, doors, closing vents, lock-out/tag-out) to reduce hazards.</p>
<p>Visual</p>	<p>Positive impacts would be seen in the visual setting with the reduction of personnel (approximately 900 personnel) and activities (no military missions would be operating). A more natural environmental setting with bird habitat would have a higher visual sensitivity than a view of an operating installation, resulting in a positive impact.</p>	<p>The visual setting would remain unchanged.</p>	<p>The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to visual resources. Ongoing JACADS mission closure and the D&D action would result in positive visual impacts by the end of industrial-related activities (JACADS operations) and by the D&D activities (approximately 230 of the 569 real property listings would be demolished, and the remaining facilities would have been decommissioned, e.g., windows and doors removed).</p>

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
Water	Positive impacts to water resources would result with the reduction of personnel and activities utilizing and discharging to Johnston Atoll's water resources.	Water resources would remain unchanged.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to water resources. However, during the JACADS mission closure and D&D action, positive impacts may be seen from a reduction in personnel and activities resulting in a reduction of water resource use. Proper completion of environmental actions associated with the RCRA Part B Permits and other environmental actions should improve the quality of water resources.
Cultural	Because there are no historic properties, traditional properties, or archaeological resources, as defined in the NHPA, on Johnston Atoll, implementation of the Proposed Action would not affect cultural resources.	Similar to Proposed Action.	None identified.
Hazardous Materials and Hazardous Waste Management			
– <i>RCRA Permits</i>	RCRA Part B Permits would remain in effect past the closure date unless administratively closed. Any required monitoring or follow-on work at remedial sites would be completed under the permits. Specific LUCs would be identified for the sites to ensure that potential impacts to visitors are minimized. The completion of the work required by the permits and the use of LUCs is a positive impact because they are protective of health. However, negative impacts may occur if the work needs to be done after the termination of the Air Force mission (i.e., there would be a lack of transportation, utility, and infrastructure resources). Negative impacts may also occur from possible LUCs: the LUCs would have to be maintained with no routine transportation services available, and future land use may not be unrestricted.	RCRA Part B Permits would remain in effect past the closure date unless administratively closed. Any required monitoring or follow-on work at remedial sites would be completed under the permits. Specific LUCs would be identified for the sites to ensure potential impacts to visitors are minimized. Based on current land uses continuing, no adverse impacts are anticipated.	The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to hazardous materials and hazardous waste management. However, positive and negative impacts may occur from JACADS mission closure and the D&D action. Positive impacts include the removal of hazardous materials and wastes that occur in or are associated with facilities (e.g., light ballasts that may contain PCBs). This would result in a positive impact. However, negative effects may occur in that these actions would reduce the available infrastructure at the Atoll. This may hinder ongoing environmental efforts at the Atoll.

Resource Category	Proposed Action	No-Action Alternative (Current Management Practices Continue)	Cumulative ^a
– <i>Radiological Contamination</i>	According to the CMS/FS prepared for the RCA, "After site remediation, the DTRA will monitor the remediation site for construction faults for five years or until routine, normal airline service to Johnston is terminated, whichever is first" (DTRA 2002). Risk calculations indicate that in the event of seawall failure or erosion, and the RCA is impacted, there would be an inconsequential increase to an already negligible risk to the marine biota and humans who might consume fish from the addition of the landfill's contents to the lagoon (DTRA 2002). Land use restrictions would be specified in the transfer documents (i.e., no digging or construction within the RCA landfill boundaries). Land use restrictions reduce possible negative health impacts to users by restricting the type of land use that may occur on a property (e.g., industrial), resulting in a positive impact.	According to the CMS/FS prepared for the RCA, "After site remediation, the DTRA will monitor the remediation site for construction faults for five years or until routine, normal airline service to Johnston is terminated, whichever is first" (DTRA 2002). The completion of the work and the use of the land use restrictions are positive because they are protective of health. Based on current land uses continuing, no adverse impacts are anticipated.	See above.
– <i>Hazardous Materials</i>	Positive impacts would occur because hazardous materials would be removed from Johnston Atoll. The USFWS may continue to use small quantities (i.e., less than 5 gallons) of some chemicals (e.g., solvent, cleaning supplies) in their management of the NWR.	No changes would occur because current quantities of hazardous materials would remain unchanged and hazardous materials would continue to be managed in accordance with applicable regulations and plans.	See above.
– <i>Hazardous Waste</i>	Positive impacts would occur because no hazardous waste would be generated or stored on Johnston Atoll. Proper management of hazardous materials used by the USFWS would preclude the generation of hazardous wastes and any unacceptable impacts.	No changes would occur because current quantities of hazardous wastes would remain unchanged and hazardous wastes would continue to be managed in accordance with applicable regulations and plans.	See above.
– <i>Storage Tanks</i>	Positive impacts would occur because no ASTs or POL system components would remain in use. Proper management of petroleum by the USFWS in their management of the NWR would preclude any adverse impacts.	No changes would occur because current use of storage tanks would remain unchanged and storage tanks would continue to be managed in accordance with applicable regulations and plans.	See above.
– <i>Asbestos</i>	ACM would continue to be managed in accordance with applicable laws, regulations, and rules. Any remaining ACM would be disclosed in the transfer documentation. No significant impacts are anticipated.	No changes would occur because ACM would continue to be managed in accordance with the installation asbestos management and operating plan.	See above.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter describes the affected environment associated with the Proposed Action and the No-Action Alternative at Johnston Atoll. The information provided serves as a baseline from which to identify and evaluate environmental changes resulting from implementation of the Proposed Action or the No-Action Alternative. The baseline conditions assumed for the purpose of analysis are the current installation (pre-closure) conditions. This would assist the Air Force decision-maker and agencies in understanding the potential impacts in comparison to conditions of the active installation.

The affected environment describes the local community along with the natural and man-made environments, which includes air quality, biological resources, geology and soils, land use, natural hazards, noise, safety and health, transportation, utilities and infrastructure, visual resources, water resources, cultural resources, and hazardous materials and hazardous waste management. The Region of Influence (ROI) is defined for each resource area affected by the Proposed Action and the No-Action Alternative. The ROI determines the geographical area to be addressed as the affected environment.

3.1 Local Community

3.1.1 Location

The unincorporated U.S. territory (i.e., possession) of Johnston Atoll is currently under the management of the U.S. Air Force as Johnston Atoll Airfield. It lies in the Central Pacific at 16°44' North latitude and 169°31' West longitude. Johnston is one of the most isolated atolls in the Pacific Ocean (Amerson et al. 1976); the closest landmass is French Frigate Shoals, approximately 460 nm north. Honolulu, Hawaii is approximately 717 nm northeast (see Figure 1-1).

Johnston Atoll is an egg-shaped, northeast/southwest-trending coral reef and lagoon complex residing on a relatively flat, shallow platform approximately 21 miles in circumference. Johnston Atoll comprises four small islands totaling 690 acres in size. Johnston Island, the largest and main island, is natural in origin, but has been enlarged by dredge and fill operations. Sand Island is composed of a naturally formed island (eastern portion) connected by a narrow, man-made causeway to a dredged coral island (western portion). The remaining two islands, North Island and East Island, are completely man-made from dredged coral (see Figure 1-1).

Originally, Johnston Island and Sand Island were much smaller (approximately 60 acres and 13 acres, respectively) (Bryan 1923); since 1942, both islands have been expanded to meet changing military missions and operational needs. Johnston Island now encompasses 625 acres and Sand Island encompasses approximately 22 acres. The two man-made islands, North Island and East Island, encompass approximately 25 acres and 18 acres, respectively. The historical land expansion of Johnston Atoll is presented in more detail in Section 3.2.3.

3.1.2 Installation Background

Early History. Ships navigating in the area from 1625 to 1796 reported sightings of Johnston Island. In 1796, the American brig *Sally* grounded on a shoal of Johnston Island, and sailors noted the presence of two low-lying islands. Interest in the island increased in 1856, when the United States passed the Guano Act to encourage enterprising individuals to claim islands and harvest commercially valuable guano deposits. A succession of claimants mined the heavy guano deposits produced by the large bird populations on Johnston Island. Guano removal from Johnston Island ended around the time of the U.S. Civil War. In 1923, the U.S. Department of Agriculture (USDA), the Bishop Museum, and the Navy took aerial photographs and completed wildlife surveys of Johnston Island as part of the Tanger expedition. They documented the seabird populations and

teaming reef communities, and created a channel in the reef. This survey resulted in the issuance of EO 4467 on 29 July 1926, designating Johnston and Sand Islands for use as a breeding ground and refuge for native birds, managed by the USDA.

Strategic Development. In 1936, the Navy began developing Johnston Island, creating a pier, a channel, and a seaplane landing area. A small base was ordered in 1939, with orders to enlarge the landmass the following year. The Naval Air Station was commissioned on 15 August 1941. EO 8682 established the Johnston Island Naval Airspace Reservation and Johnston Island NDSA.

By World War II, civilian workers had completed additional channel approaches, seaplane landing areas, bombproof shelters, living quarters, runways, storage sheds, and gun emplacements. Johnston Atoll was shelled/attacked four times starting in late 1941, resulting in civilian worker evacuation. By 1944, Johnston Atoll supported increased air-traffic and troop movements; as a result, the landmass of the island and runways of the island were increased. With the reduction in Naval activity after the war, management of Johnston Atoll was transferred to the Air Force by an order of the Secretary of the Navy (01 July 1948).

During the Korean airlifts of 1951 and 1952, Johnston Atoll was again a strategic air station. The airstrip was enlarged by a dredge-and-fill action, and a major construction program was completed, creating a miniature base.

In 1957, 100 personnel were assigned to Johnston Atoll. Because of its strategic location, however, use of Johnston increased from 1957 to 1963 in support of atmospheric nuclear testing and detection. Improvements to Johnston Atoll during this time included a USCG Long-Range Aid to Navigation (LORAN) station on Sand Island, a weather station on Johnston Island, a smoke and sprinkler system to protect the bird population on North and East Islands from mission activities, and creation of an additional 9 acres from causeway dredging (Sand Island). By 1964, the size of Johnston Atoll was increased with the addition of North and East Islands and the addition of landmass to Johnston and Sand Islands.

In 1963, the LTBT was signed. Safeguard C of the LTBT caused Johnston Atoll to be established as the base of operations for possible atmospheric nuclear testing. This readiness posture was maintained until 1970 and included an extensive building program. Effective 01 July 1970, Joint Task Force-Eight was inactivated, and full control of readiness planning was assigned to the early predecessor of DTRA.

Chemical munitions stored in Okinawa were transferred to Johnston Atoll when Okinawa was returned to Japan in 1970. Storage bunkers for these munitions were constructed on approximately 41 acres of the southwest quadrant of Johnston Island. In 1972, the Air Force defoliant Herbicide Orange (HO) was also transferred to Johnston Atoll to await disposal. A total of 1.37 million gallons (25,266 55-gallon drums) of HO were transferred to Johnston Atoll and stored in a secured, fenced area in the northwest corner of Johnston Island.

Change in Mission. During the mid-1970s, HO re-drumming activities and HO incineration (Operation PACER HO) were performed aboard the Dutch incinerator ship *Vulcanus*, staged outside the 3-mile limit of Johnston Atoll. DTRA predecessors began a program to clean up radiological contamination at Johnston and Sand Islands. Hot spot identification was accomplished with gamma-based detectors, and removal actions began in 1975. The Presidential removal of Safeguard C (requirement for the capability to return to atmospheric testing within a specified time frame) in 1976 placed Johnston Atoll into caretaker status. At least 1 year was required for the rehabilitation or construction of facilities prior to any use of Johnston Atoll as a test base. Civilian personnel were

reduced by one-half, test support equipment was disposed of, and many of the scientific and support facilities were inactivated or mothballed. As a result of the installation's inactivation, the maintenance of Johnston Atoll facilities was kept to a minimum and directed primarily at the weather-tightness and structural integrity of priority buildings. DTRA predecessors and the DOI-USFWS entered into a MOU on the responsibilities at Johnston Atoll; DTRA was given jurisdiction over Johnston Atoll residents and visitors, and USFWS was given the responsibility for preservation of natural resources (See Appendix C).

By the 1980s, several environmental efforts had begun at Johnston Atoll. During the late 1980s and early 1990s, radiological investigation and cleanup continued. With the promulgation of Pub. L. No. 99-145 (in 1985) requiring chemical munitions destruction, Johnston Atoll prepared to support destruction efforts with JACADS. This involved increasing the infrastructure (adding more saltwater wells, a reverse osmosis treatment system, and additional chemical storage igloos). The Joint Operations Center (Facility 20) was rehabilitated to be a chemical-protective shelter with a complete decontamination facility. USFWS also began staging biologists at Johnston Atoll.

In November 1993, all Congressional funding for Safeguard C was eliminated, and the mission of Johnston Atoll was redefined for the storage and destruction of chemical munitions. During the 1990s, infrastructure improvements continued until 1998, when the imminent closure of Johnston Atoll was established. The Air Force has host-management responsibilities for Johnston Atoll in support of the Army mission.

3.1.3 Community

No indigenous human population exists on Johnston Atoll. The population of Johnston Atoll consists of military, government service, and government contractor/civilian personnel assigned or employed on Johnston Atoll for varying periods of time, none permanently. Historically, population density has varied between approximately 1,000 and 1,300 people per 1-square-mile area. The population under Air Force host-management prior to the termination of the Air Force mission was approximately 900. This population of 900 comprised approximately 95 percent contractors and 5 percent civil servants and uniformed military personnel.

Being remotely situated in the Central Pacific Ocean, Johnston Atoll does not belong to a larger regional area socially or geographically. Its nearest neighbors include Hawaii (approximately 825 miles to the northeast) and the Marshall Islands (including Kwajalein and Majuro at approximately 1,500 miles to the southwest, and Palmyra/Kingman Reef at approximately 950 miles to the southeast). The Atoll is near shipping routes and extended range routes used by several airlines in the Pacific.

3.2 Environmental Setting

3.2.1 Air Quality

Air quality in a given location is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The significance of a pollutant concentration is determined by comparing it to applicable air quality standards. These standards represent maximum allowable atmospheric concentrations that may occur and still be protective of public health and welfare, with a reasonable margin of safety. For the purpose of air quality analysis, the ROI for air emissions is Johnston Atoll and its adjacent, downwind, nearshore areas.

The Federal law that addresses air quality is the CAA (42 U.S.C. §§ 7401 et seq.). This Act allows the EPA to establish Federal air standards termed the NAAQS. However, the CAA was defined to

include the 50 states, Puerto Rico, Guam, the U.S. Virgin Islands, American Samoa, and the Commonwealth of the Northern Mariana Islands (40 CFR Chapter 1). Being an unincorporated, unorganized territory of the United States, Johnston Atoll is not included in the CAA definition of a “state” and does not have a compliance mechanism for the CAA; the NAAQS are not applicable.

The EPA’s General Conformity regulations (40 CFR Parts 51 and 93) require Federal actions to conform to any State Implementing Plan approved or promulgated under Section 110 of the CAA. An air conformity applicability analysis and possibly a formal air conformity determination are required for Federal actions in areas that are designated by the EPA as being in nonattainment of the NAAQS or maintenance areas. The general conformity rule does not apply to Johnston Atoll because the CAA and NAAQS do not apply.

Although there is no compliance mechanism for the CAA at Johnston Atoll, specific activities that result in air emissions have been regulated under RCRA Part B Permits (i.e., incinerator operations). These emissions are addressed with their respective RCRA Part B Permits in Section 3.2.13.1.

Sources of air emissions not included in the RCRA Part B Permits include stationary sources and transportation equipment. Combustion equipment at Johnston Atoll has been converted to run on cleaner-burning jet propulsion fuel, grade 5 (JP-5). No diesel-, gas-, or coal-powered stationary equipment exist on Johnston Atoll. Stationary sources include the JP-5 powered Caterpillar engines at the Power Plant (Facility 48) on the northeast side of the island, and the WWTP (Facility 740) located on the south shore of Johnston Island. These facilities run 24 hours a day. Mobile sources of emissions include aircraft flying operations, aircraft-related ground equipment, motor vehicles, construction equipment, and ship traffic. There are 315 motor vehicles, 42 golf carts, 2 buses, and some construction equipment on Johnston Atoll. These sources may operate sporadically, on a daily basis. Approximately 36 aircraft use the airfield monthly, and approximately two barge shipments occur per month.

Because no compliance mechanism exists for the NAAQS, these sources are discussed in this section qualitatively. The main pollutants present due to these activities include carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide, and particulate matter equal to or less than 10 microns in diameter. NO_x include all species of nitrogen and are of concern because of their potential contribution to ozone formation. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly volatile organic compounds in the form of hydrocarbons and NO_x.

Johnston Atoll is composed of one large island and three smaller islands with a flat topography and surrounded by shallow reef and ocean. The Atoll’s location in the Central Pacific is in the middle of the easterly tradewind zone. This area has a predominately hot and humid climate dominated by tradewinds. The usual wind direction is from the east to the northeast approximately 70 percent of the time. The average wind velocity is 15.8 miles per hour (mph) (Ogden 1999). A typical tropical climate predominates with heavy shower-type rainfall and small diurnal and seasonal changes. Temperatures are typically 83° Fahrenheit (F) with the highest temperature recorded being 94°F and lowest 62°F. The mean diurnal temperature change is 7°F to 8°F. The mean annual relative humidity is 77 percent (Ogden 1999). Annual precipitation is variable due to sporadic storms. An average of two thunderstorms annually occur, predominantly from July to November. The heaviest rains occur from October to January, with the driest months being May and June. Average annual rainfall at Johnston Atoll ranges from 12.86 inches to 54.65 inches (Ogden 1999). Johnston Atoll has the potential to be affected by Pacific hurricanes from June to November. These seasonal storms, which usually approach the islands from the south or southeast, are characterized by high winds and heavy rainfall.

As discussed in Section 3.1.1, Johnston Atoll is remotely situated in the Central Pacific Ocean and is not located near or adjacent to any other air emission sources.

3.2.2 Biological Resources

Biological resources include the native and introduced plants and animals associated with Johnston Atoll. These resources are discussed below in terms of vegetation, wildlife, sensitive species, and sensitive habitats. The ROI for biological resources includes the islands and reef of Johnston Atoll. Unless otherwise indicated, the information presented below is obtained from the *Environmental Baseline/Property Transfer Survey Report for Johnston Atoll* (Ogden 1999).

3.2.2.1 Vegetation

Little plant life was present on Johnston Atoll before the arrival of humans. Today, 127 species of plants are present. These provide important cover and nesting sites for seabird species residing on Johnston Atoll. The most prevalent shrubs and trees on Johnston Atoll are Indian Fleabane (*Pluchea* sp.), Ironwood (*Casuarina equisetifolia*), Indian Almond (*Terminalia catappa*), Sea Grape (*Coccoloba uvifera*), Kou (*Cordia subcordata*), Naupaka (*Scaevola sericea*), and Tree Heliotrope (*Tournefortia argentea*). Koa Haole (*Leucaena leucocephala*) has recently become established and is beginning to displace other shrubs and trees.

In addition to the vegetation providing cover and nesting sites for seabirds species, Johnston Atoll also has several herbaceous plants, trees, and grasses, including the following:

- Grasses: Bermuda Grass (*Cynodon dactylon*) and Crab Grass (*Digitaria sanguinalis*)
- Trees: Norfolk Island Pine (*Araucaria heterophylla*)
- Ornamentals: Bird of Paradise (*Strelitzia reginae*), Orchids (*Epidendrum* sp.)
- Agricultural plants: Mango (*Mangifera indica*)

These trees, shrubs, and grasses are found predominantly on Johnston Island. Vegetation on North, East, and Sand Islands is sparse and is composed primarily of low-growing shrubs and grasses. A list of plants recorded on Johnston Atoll is presented in Appendix D (Amerson et al. 1976). Figure 3-1 and Figure 3-2 present the predominant locations of vegetation, with the wildlife habitat they support, on Johnston Island and on North, East, and Sand Islands, respectively.

3.2.2.2 Wildlife

Seabirds are the predominant terrestrial species at Johnston Atoll. Gecko lizards, mice, and insects are also commonly observed. Johnston Atoll provides breeding and feeding habitat for 15 species of seabirds, as well as terrestrial and marine mammals, Green Sea Turtles, and a rich diversity of reef fish and invertebrates. The Atoll is of such significance to wildlife that it was established as an NWR in 1926. All the seabirds and shorebirds, including accidental residents, are migratory and are protected by the MBTA (16 U.S.C. §§ 703–712). All 15 species of migratory seabirds at Johnston Atoll nest there and five species of migratory shorebirds overwinter on Johnston Atoll (see Table 3-1). Figure 3-1 and Figure 3-2 present the predominant locations of wildlife on Johnston Island and on North, East, and Sand Islands, respectively.

Table 3-1: Breeding and Winter Resident Bird Populations

Species	Scientific Name	Estimated Population (Number of Individuals) ^a
Breeding Seabirds		
Great Frigatebird	<i>Fregata minor</i>	378 ^{b, c}
Brown Booby	<i>Sula leucogaster</i>	1,108 ^{b, c}
Masked Booby	<i>Sula dactylatra</i>	106 ^d
Red-footed Booby	<i>Sula sula</i>	1,740 ^{b, c}
Red-tailed Tropicbird	<i>Phaethon rubricauda</i>	6,500 ^e
White-tailed Tropicbird	<i>Phaethon lepturus</i>	4
Christmas Shearwater	<i>Puffinus nativitatis</i>	100 ^d
Wedge-tailed Shearwater	<i>Puffinus pacificus</i>	6,000–8,000 ^f
Bulwer's Petrel	<i>Bulweria bulwerii</i>	150
Sooty Tern	<i>Sterna fuscata</i>	360,000
Gray-backed Tern	<i>Sterna lunata</i>	1,000
White Tern	<i>Gygis alba</i>	534 ^b
Black Noddy	<i>Anous minutus</i>	942 ^{b, g}
Brown Noddy	<i>Anous stolidus</i>	16,564 ^{b, g}
Blue-gray Noddy	<i>Procelsterna cerulea</i>	1–4 ^h
Winter Resident Shorebirds		
Bristle-thighed Curlew	<i>Numenius tahitiensis</i>	0–23
Pacific Golden-Plover	<i>Pluvialis fulva</i>	39–421
Ruddy Turnstone	<i>Arenaria interpres</i>	7–219
Sanderling	<i>Calidris alba</i>	0–14
Wandering Tattler	<i>Heteroscelus incanus</i>	0–28

^a Information from Draft USFWS Status Report of the 1990s, unless otherwise identified. (O'Daniel n.d.)

^b DOI (2001).

^c Based on highest total of eggs and chicks counted on a mean incubation count.

^d Hayes, USFWS (2003).

^e Schreiber (2000).

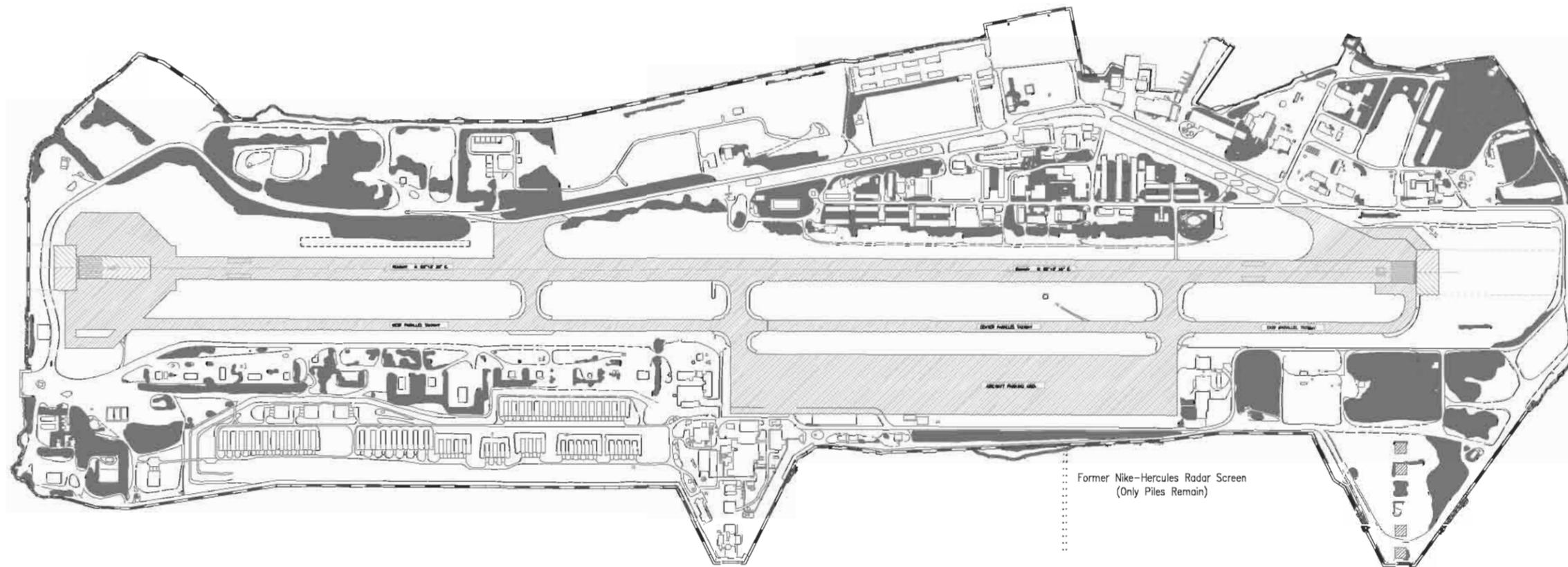
^f USFWS Brochure, October 1999 (DOI 1999).

^g Based on direct count of nests at height of nesting season.

^h Schreiber (1997).

Seabirds. These birds obtain their food from the ocean and have webbed feet and beaks for ease of feeding on fish and squid. Seabirds are also equipped with salt glands, which allow them to drink saltwater and excrete the excess salt. Many of the species have long, narrow wings designed for efficient gliding and soaring during flight. Seabirds are among the longest-lived birds in the world, yet they produce comparatively fewer offspring than other birds. Many seabirds mate for life, and both the males and females incubate, brood, and feed their young. Seabirds serve as useful monitors of the marine ecosystems because their numbers and movements can quickly reflect changes in these environments.

By far the most abundant species at Johnston Atoll is the Sooty Tern (*Sterna fuscata*), with approximately 100,000 to 360,000 nesting pairs (DOI 2001). The Sooty Tern nests on the ground in large colonies on all three of the smaller outer islands. Nine other seabird species nest only on the outer islands, as follows:



PACIFIC OCEAN

Former Nike-Hercules Radar Screen
(Only Piles Remain)

Green Sea Turtle Habitat

Green Sea Turtle Habitat

PACIFIC OCEAN

LEGEND

-  Permanent Structure
-  Seawall
-  Location of Predominant Vegetation and Wildlife
(The vegetative areas consist predominantly of grasses, bushes, shrubs, and trees which are utilized by nesting and/or roosting seabird species)

Note:
The reef surrounding Johnston Island provides marine habitat.

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane, Feet, Clarke 1866
Elevation Datum: MLLW-0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000

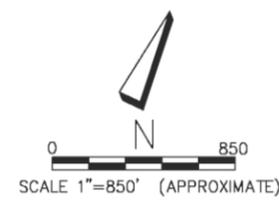
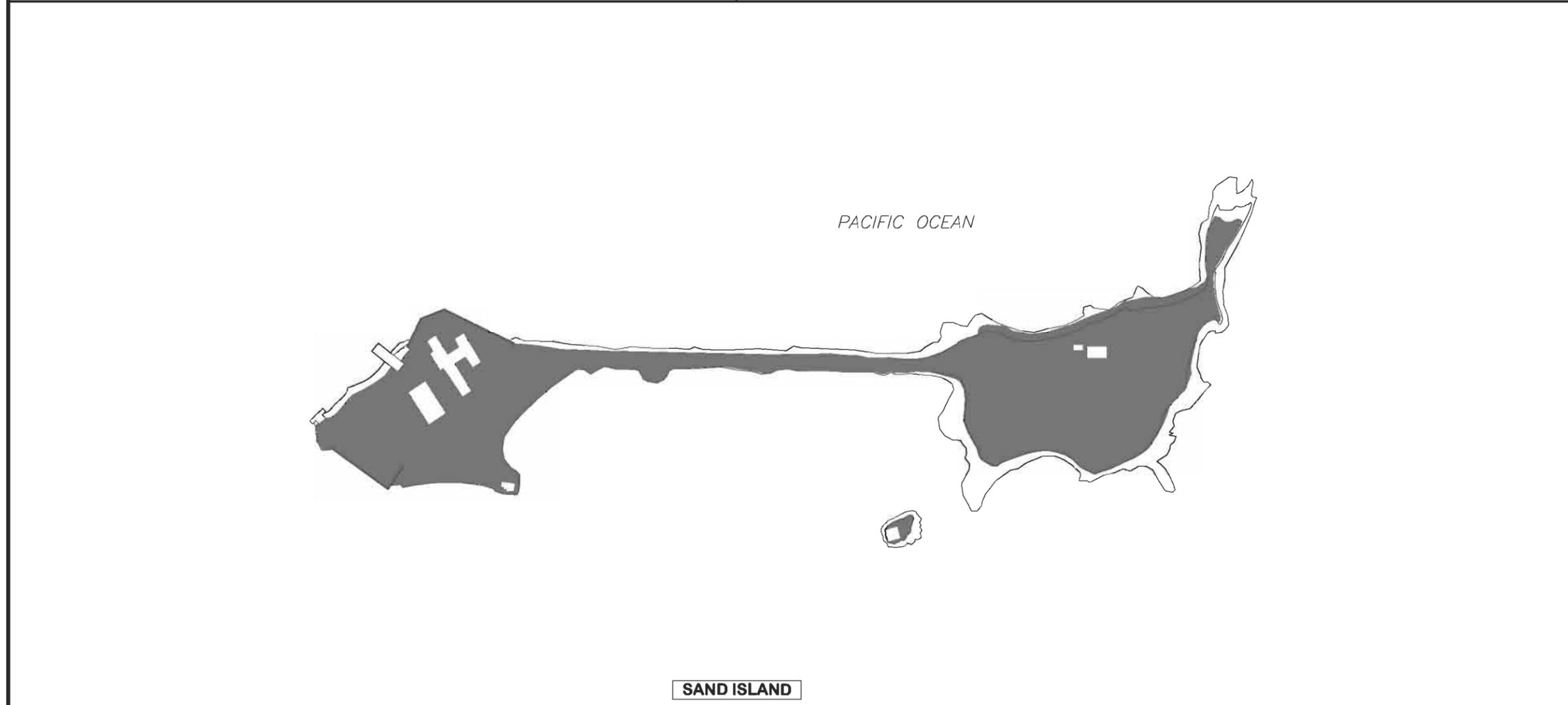
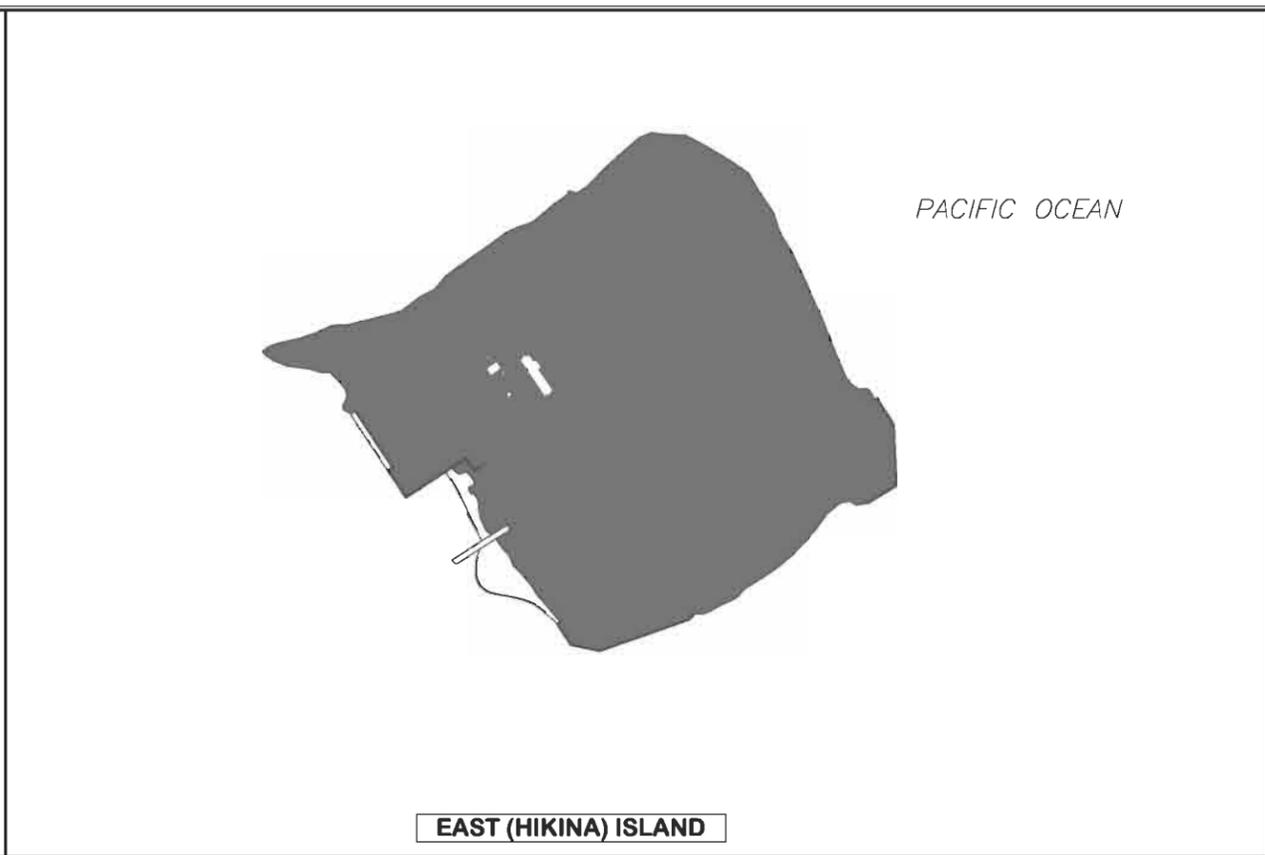
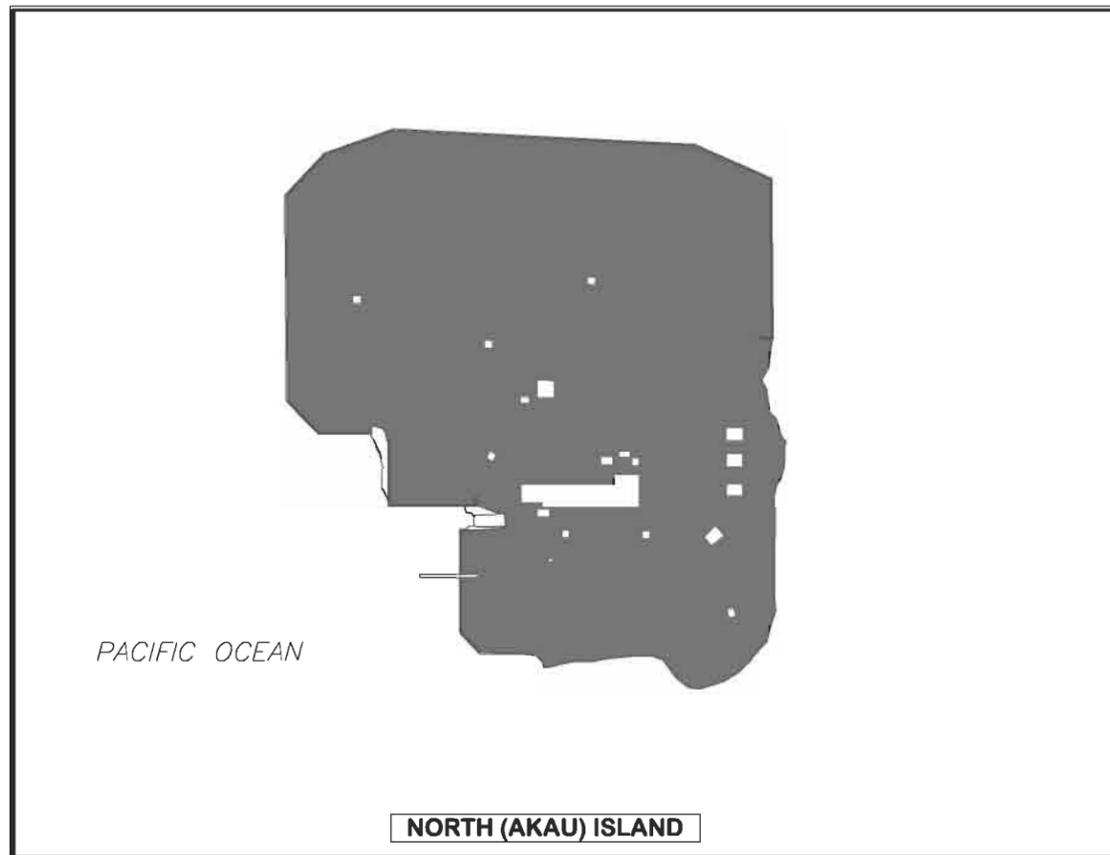


Figure 3-1
Location of Predominant Vegetation and Wildlife
Johnston Island
Johnston Atoll



LEGEND

-  Seawall
-  Former Facilities
(Concrete pads and concrete foundations)
-  Location of Predominant Vegetation
and Wildlife
(The vegetative areas consist predominantly
of grasses, bushes, shrubs, and trees which
are utilized by nesting and/or roosting
seabird species)

Note:
The reef around the outer islands provides marine habitat.

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane Coordinate System
Units in feet, Elevation Datum: MLLW=0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000

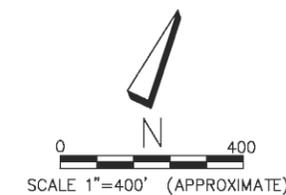


Figure 3-2
Location of Predominant Vegetation
and Wildlife
North, East, and Sand Islands
Johnston Atoll

- Bulwer's Petrel (*Bulweria bulwerii*)
- Christmas Shearwater (*Puffinus nativitatis*)
- Great Frigatebird (*Fregata minor*)
- Red-footed Booby (*Sula sula*)
- Brown Booby (*Sula leucogaster*)
- Masked Booby (*Sula dactylatra*)
- Gray-backed Tern (*Sterna lunata*)
- Brown Noddy (*Anous stolidus*)
- Blue-gray Noddy (*Procelsterna cerulea*)

Other common species on the outer islands are Brown Noddies, Gray-backed Terns, Red-footed Boobies, and Brown Boobies.

Only 5 of the 15 seabird species that occur at Johnston Atoll currently nest on Johnston Island, as follows:

- Wedge-tailed Shearwater (*Puffinus pacificus*)
- Red-tailed Tropicbird (*Phaethon rubricauda*)
- White-tailed Tropicbird (*Phaethon lepturus*)
- Black Noddy (*Anous minutus*)
- White Tern (*Gygis alba*)

The majority of the Wedge-tailed Shearwaters nest in burrows on Sand Island. Approximately 20–40 pairs of Wedge-tailed Shearwaters nest under dense bushes or burrows on Johnston Island (Ogden 1999). The Red-tailed Tropicbird commonly nests under shrubs and trees, including *Pluchea* sp., Naupaka, Tree Heliotrope, Sea Grape, and Ironwood trees. The Red-tailed Tropicbird has also been observed nesting next to buildings and other structures on Johnston Island. Only one or two nesting pairs of White-tailed Tropicbirds have been recorded at Johnston Atoll. Black Noddies nest in trees and are found only on Johnston Island. More than 400 pairs of Black Noddies have been recorded nesting in Indian Almond, Kou, Sea Grape, and Ironwood trees on Johnston Island. White Terns also nest in trees and on structures and are found primarily on Johnston Island.

Shorebirds. Shorebirds are common on Johnston Atoll during their wintering season, arriving in August and September and departing in April and May. The non-breeding winter visitors at Johnston Atoll include the following:

- Pacific Golden-Plover (*Pluvialis fulva*)
- Ruddy Turnstone (*Arenaria interpres*)
- Bristle-thighed Curlew (*Numenius tahitiensis*)
- Sanderling (*Calidris alba*)
- Wandering Tattler (*Heteroscelus incanus*)

The Pacific Golden-Plover and Ruddy Turnstone are the most common of the shorebird species occurring on all four islands. These birds breed in the far north and make remarkable transoceanic voyages to reach their tropical wintering grounds. On Johnston Atoll, these birds are most often found (sometimes in mixed flocks) feeding or resting in grassy or gravelly areas, although some are found along the shoreline. Some stop to rest and feed before flying farther south; others spend the winter on Johnston Atoll; others remain on Johnston Atoll through the following summer season (DOI 1999).

Marine Mammals and Reptiles. The following mammals occur at Johnston Atoll:

- Hawaiian Monk Seal (*Monachus schauinslandi*)
- Humpback Whale (*Megaptera novaeangliae*)
- Cuvier's Beaked Whale (*Ziphius cavirostris*)
- Spinner Dolphin (*Stenella longirostris*)
- Bottlenose Dolphin (*Tursiops truncatus*)

Most marine mammals are visitors outside Johnston Atoll and occasionally to lagoon waters. Hawaiian Monk Seals feed on fish and crustaceans from the reef and lagoon and, although able to spend long periods at sea, often haul out on sandy beaches to bask in the sun. Nine seals were translocated to Johnston Atoll from Laysan Island in 1984, and one or two of these tagged seals have repeatedly been observed at Johnston Atoll (USACHPPM and Raytheon 2000). Cuvier's Beaked Whales were sighted on numerous occasions in the early 1990s both within and outside the lagoon; there were no confirmed sightings of these rare whales in 1993, 1994, or 1995. A Cuvier's Beaked Whale was observed calving off the south side of Johnston Island in 1995 (O'Daniel n.d.; Ogden 1999), but no additional sightings have been documented. The Cuvier's Beaked Whale is protected under the MMPA (16 U.S.C. §§ 1361–1407). Spinner Dolphins and Bottlenose Dolphins are occasionally observed outside the lagoon and are also protected under the MMPA.

Marine reptiles at Johnston Atoll primarily include the Green Sea Turtle (*Chelonia mydas*). This species is known to feed at Johnston Atoll, although nesting has not been observed (Balazs 1985; Ogden 1999). It has been estimated that approximately 200 Green Sea Turtles have utilized the south shore of Johnston Island for a feeding ground. This area has one of the highest concentrations of Green Sea Turtles at a non-nesting foraging ground in the Pacific (APMCD 1990). (As mentioned below in this section under the heading *Other Marine Invertebrates and Algae*, this area contains high amounts of algae due to the presence of the wastewater outfall). A list of marine reptiles recorded on Johnston Atoll is included in Appendix D (Coles et al. 2001).

Reef. The marine environment around Johnston Atoll consists of a shallow coral reef platform encompassing approximately 50 square miles. Johnston Atoll is unlike most coral reef atolls: the protective ridge of coral reef extends only along the northwest side due to its underlying platform subsiding and tilting southeast. The lagoon ranges in depth from 10 to 32 feet. The platform slopes gently to 23–59 feet, then much more steeply to 590 feet. Most of the reef lies outside the lagoon, extending approximately 11 miles east-southeast and 5 miles south of Johnston Atoll. Johnston Atoll underwent two landmass enlargements that were supported by dredge-and-fill operations in the lagoon. The first enlargement occurred in 1949–1950, the second in 1963–1964. This resulted in the landmass being increased to 1 square mile (with four islands) from its original mass of 0.07 square mile (with two islands, Johnston and Sand). As a result of the increase in landmass by dredge and fill operations (i.e., creating more and newer islands as well as boat channels), the topography of the

lagoon was modified (Coles et al. 2001). By 1990, studies indicated that the coral colonies had mostly recovered and have extensive coral growth on hard substrate (APMCD 1990).

In June 2000, investigators from the Hawaii Biological Survey of Bishop Museum and the Department of Zoology of the University of Hawaii completed a report to the USFWS on a survey of species of the reef, with a special interest on non-indigenous species. The survey identified 668 taxa for the Johnston Atoll, compared to 865 taxa found in previous studies. This study has the first reports of *Porifera*, *Hydroida*, *Sipunculida*, *Bryozoa*, *Ascidacea*, and *Montipora hoffmeisteri* present in addition to the previously reported macroalgae, corals, and fishes. In general, the reef at Johnston Atoll is a well-mixed system in terms of species, with little variation. However, the wastewater outfall area on the south side of Johnston Island is eutrophicated, dominated by heavy bloom of the algae *Byopsis hypnoides*. The impact of the eutrophication appears to be limited due to the presence (although in relatively low abundance) of other taxa. Johnston Atoll is listed as a potential area within the WPRFMC jurisdiction that meets some of the criteria for designation as a habitat area of particular concern (HAPC) (WPRFMC 2000). HAPCs are areas that are essential to the life cycle of important coral reef species.

Coral. Being an isolated atoll, fewer coral species are found at Johnston Atoll than are found in the Marshall Islands or Hawaiian Islands. Johnston Atoll has approximately 34 *Scleractinian* and *Hydrozoan* corals present (Ogden 1999), while approximately 366 coral species are present in the Marshall Islands (APMCD 1990). The reef is composed of alternating sand/loose coral and live coral. The most dominant coral species present is *Acropora*. The members of this genus, like the Table Coral (*Acropora cytherea*), are among the fastest growing corals, which grow up to 3.94 inches per year. Table Coral produces the most coverage in the lagoon, and is an important habitat for fish (Ogden 1999). The coral *Montipora* is also widely found. Coral coverage frequency is approximately 80–100 percent of the hard substrate (APMCD 1990). A list of coral species observed at Johnston Atoll is presented in Appendix D (Coles et al. 2001).

Fish. Approximately 300 species of fish have been recorded in the nearshore waters and reefs of Johnston Atoll. This number is smaller than that of other islands in the Central Pacific, and as mentioned previously, is likely due to Johnston Atoll's small size and remote location. One species of angelfish, *Centropyge nahaeki*, is endemic (i.e., characteristic of an area or environment) to Johnston Atoll (Lobel 2003).

Both cartilaginous fish (sharks, skates, and rays) and bony fish (e.g., eels, reef fish, tuna) are present around Johnston Atoll. The cartilaginous fish are represented on Johnston Atoll primarily by the sharks, such as the gray reef shark and the tiger shark (*Galeocerdo cuvier*). Female gray reef sharks (*Carcharhin amblyrhynchos*) aggregate in large numbers in the waters around Sand Island each spring. Bony fish on Johnston Atoll include reef fish, predator fish, open-water fish, and bottom fish. A list of the fish recorded on Johnston Atoll is presented in Appendix D (Coles et al. 2001). As described in Section 3.2.9.6, food waste is dumped daily at the West Wharf. Both reef fish and sharks congregate daily at the West Wharf during this routine dumping to feed from the food waste.

Other Marine Invertebrates and Algae. Studies conducted on Johnston Atoll in 1965, 1976, 1983, 1984, and 1988 have included surveys of marine invertebrates and algae at Johnston Atoll (APMCD 1990). More recently, a study of nonindigenous reef species was completed and presented in *Marine Species Survey of Johnston Atoll, Central Pacific Ocean, June 2000* (Coles et al. 2001). In general, the invertebrate marine fauna at Johnston Atoll includes *macroalgae* (seaweeds), *Porifera* (sponges), *Cnidaria* (jellyfish, anemones, corals – see above), *Aschelminthes* (pseudocoelomate worms, e.g., roundworms, ribbon worms), *Polychaeta* (segmented worms), *Sipunculida* (peanut worms), *Crustacea* (e.g., lobsters, crabs, shrimp), *Mollusca* (e.g., octopus, clams, snails), *Bryozoa*

(moss animals), *Echinodermata* (e.g., starfish, sea urchins), and *Ascidiacea* (sea squirts) (Coles et al. 2001).

Marine arthropods (including Crustaceans) are characterized by having jointed appendages and include organisms such as barnacles, shrimp, lobster, and crab. The only barnacle recorded on Johnston Atoll is the goose barnacle *Lepas anatifera*. Numerous varieties of shrimp, lobster, and crab are found on Johnston Atoll, including the Mantis Shrimp (*Pseudosquilla oculata*), Hawaiian Spiny Lobster (*Panulirus marginatus*), and A'ama Crab (*Grapus tenuicristatus*). Approximately 75 species of marine arthropods have been recorded at Johnston Atoll (a list is included in Appendix D) (Coles et al. 2001).

Focused plankton studies were also performed at Johnston Atoll in 1983 and 1984 in support of the development of the JACADS Facility (APMCD 1990). These studies indicated that Johnston supported a plankton population that was typical of a mid-ocean location. Approximately 93 species of algae have been identified at Johnston Atoll. Two marine species, *Bryopsis pennata* and *Caulerpa racemosa*, grow in abundance on the south side of Johnston Island near the wastewater outfall (APMCD 1990; Coles et al. 2001). These species provide the principal food source for Green Sea Turtles at Johnston Atoll (APMCD 1990).

3.2.2.3 Sensitive Species

“Sensitive wildlife species” refers to those species listed as threatened or endangered and species that are candidates for listing by the USFWS under the ESA of 1973 (16 U.S.C. §§ 1531–1541). Other sensitive wildlife species include those protected under the MBTA and the MMPA.

Several sensitive marine wildlife species have been identified at Johnston Atoll. The Federally listed endangered Hawaiian Monk Seal occasionally visits Johnston Atoll. One pupping event has been recorded, and anecdotal information suggests another pup was born on Johnston Atoll. The NMFS has determined that Johnston Atoll is situated within the range of the Hawaiian Monk Seal (DOC 2001). The Federally listed endangered Humpback Whale has been sighted outside the lagoon on several occasions over the years. The humpbacks may have young calves with them. The Green Sea Turtle is Federally listed as threatened and occurs in large numbers (200 or more individuals) within the lagoon (Balazs 1985).

No other species that occurs regularly on Johnston Atoll is listed as threatened or endangered. The Bristle-thighed Curlew (*Numenius tahitiensis*), a winter visitor on Johnston Atoll, has been removed as a candidate for the Endangered Species List. The Peregrine Falcon (*Falco peregrinus*), a rare visitor to Johnston Atoll, has also recently been removed from the Endangered Species List (DOI 2001).

3.2.2.4 Sensitive Habitats

Wetlands refer to specific areas that have specific soil, plant, and water characteristics that support wetland habitats. These habitats can be coastal, fresh-water, permanent, or seasonal. The USACE regulates the nations navigable and non-navigable waters under the Rivers and Harbors Act, as amended (33 U.S.C. §§ 401 et seq.) and the CWA (33 U.S.C. §§ 1251–1387). USACE and the EPA define wetlands as “Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under natural circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas” (see 33 CFR Part 328.3 and 40 CFR Part 230.3).

In June 2002, USACE, Honolulu District conducted a wetland survey for the Air Force to determine if regulatory wetlands meeting the criteria of the USACE (1987) *Wetland Delineation Manual* exist at Johnston Atoll. It was concluded that while facultative wetland plant species Sea Purslane (*Sesuvium portulacastrum*), Indian Fleabane (*Pluchea indica*), and Heliotrope (*Heliotropium curassavicum*) are found on Johnston Atoll, the required hydrology and soil indicators are not present; thus, there are presently no jurisdictional wetlands present on Johnston Atoll (USACE 2002).

3.2.3 Geology and Soils

This section describes the geologic resources and hazards present at Johnston Atoll. The ROI for geology and soils includes the four islands and supporting platform (submerged land) of Johnston Atoll.

Johnston Atoll is the near-surface portion of a submarine mountain peak situated on the northern extension of the Christmas Ridge. This peak is near the junction of that ridge with the Mid-Pacific Ridge (Ogden 1999). Erosion has planed off the top of the volcanic cone, after which the earth's crust in that locality subsided, carrying the truncated volcano (guyot) to its present depth of approximately 1 nm below the surface of the sea. Apparently, subsidence tilting occurred, so that the southeast side sank and the northeast was raised. The platform on which Johnston Atoll sits has some similarities to other atolls in the Pacific Ocean. The main outer reef has typical cross-section with a sequence of a gentle slope, an algal ridge, and a reef flat. The composition of the platform is similar to that of other atolls, with sediments being supplied by debris from masses of coral and coralline algae. Johnston Atoll is estimated to be 85 million years old, formed during the Cretaceous period, and is one of the oldest atolls in the world (Keating 1985).

The major difference between Johnston Atoll and typical atolls is that the main outer reef extends around only the northwest quarter of the platform and not around the entire edge of the platform. The Atoll itself is defined by the main outer reef and a poorly defined southern reef that cuts across the platform to enclose a shallow lagoon. Johnston and Sand Islands are situated on this southern reef. Most of the platform is east and southeast of the lagoon, with the distance to the 100-fathom (600-foot) line varying from 2.5 to 6.5 nm. In the shallow lagoon, south and east of Johnston Island, numerous ridges with an east–west trend are visible beneath the surface of the water.

Borings made by USACE show that sand, sandstone (beach rock), and loose coral compose the foundation of Johnston Island. The soils of Johnston Island have been so reworked by construction and grading that it is difficult to distinguish fill material from natural soil. Surface and shallow soils generally consist of a loose- to medium-dense mixture of coral fragments in a silty sandy matrix that is very permeable. For unpaved areas, with due allowance made for further consolidation of the fill material with the passage of time, it is estimated that the runoff coefficient will eventually stabilize at a value where approximately 55 percent of the water will run off and 45 percent will percolate into the ground (USACE 2002).

Beneath the surface and shallow soils is a hard sandstone layer (beach rock) formed by the in-place cementation of old sand deposits. It extends beneath most of Johnston Island, and it is encountered at elevations from –2 to +4 feet mean low water, ranging in thickness from 4 to 14 feet. This very hard stratum has a crushing strength of 1,000 pounds per square inch (psi) and makes deep excavations slow and costly. Beneath the beach rock stratum is a 10- to 30-foot-thick deposit of white to pink, uncemented, but dense, sand.

As previously stated, the islands of Johnston Atoll have been created (i.e., North and East Islands and western portion of Sand Island) with dredged material, and have been significantly reworked so

that native soil and fill material are difficult to distinguish. The approximate locations of the original and man-made portions of the islands are shown in Figure 3-3 and Figure 3-4. No other soils (such as clays) that represent significant building or engineering difficulties are present.

The four islands have or are artificial land expansions of dredged coralline reef material. As such, their shorelines require extensive protection to prevent damage and erosion by waves and currents. Existing shoreline protection structures include seawalls, bulkheads, and revetments. Much of the island shorelines of Johnston and North Islands are protected by these structures and, to a lesser degree, East and Sand Islands. The seawalls were built during the last main dredge and fill operation conducted in 1963–1964, and have had maintenance, as required. These shoreline protection structures are included on the Johnston Atoll Air Force Real Property Inventory Listing.

A field reconnaissance covering all four islands and resulting in qualitative Condition Ratings for shoreline protection was performed in September 2002 (Appendix E). The shorelines (including piers, wharfs, seawalls, bulkheads, and revetments) were visually inspected, and the presence of natural and unprotected shoreline sections was noted. Underwater and unexposed piers, wharfs, and toe conditions were not part of this inspection survey. The following Condition Ratings, indicating the estimated remaining life of systems before failure or breach, were used to characterize the seawalls:

- Condition 1: 0–5 years
- Condition 2: 5–10 years
- Condition 3: longer than 10 years

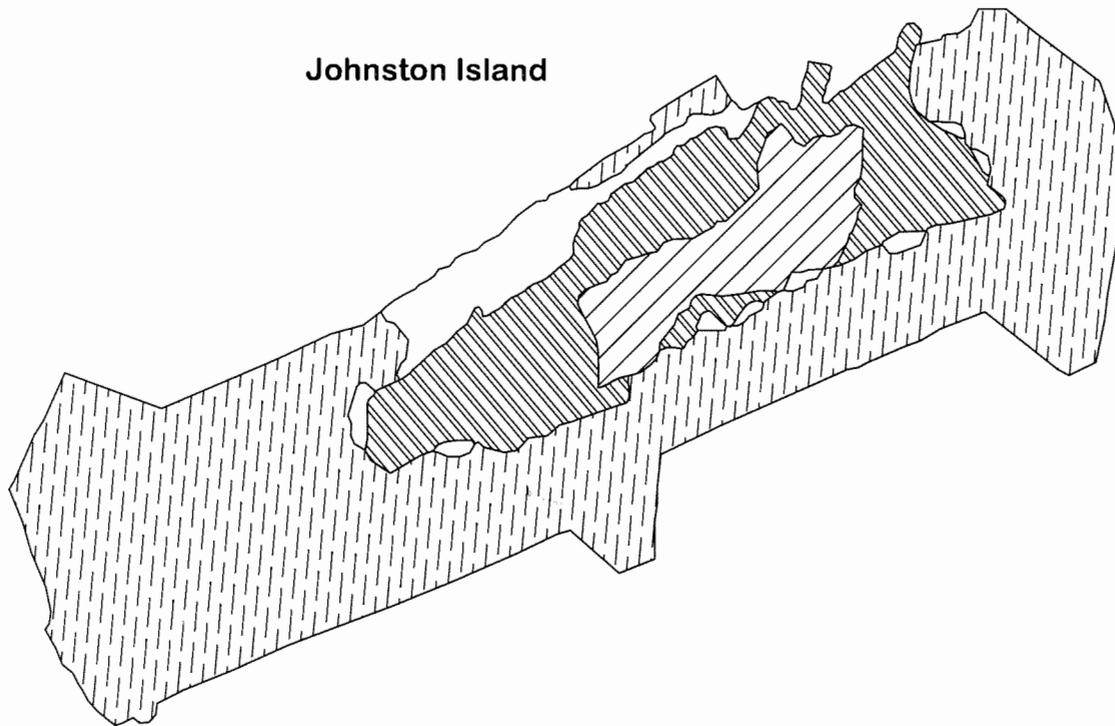
The Condition Ratings, by island, are as follows:

- *Johnston Island.* The shoreline of Johnston Island consists of (in order from most recent to oldest) bulkheads, revetments, seawalls, unprotected beach, and concrete rubble debris. The existing shoreline protection systems on Johnston Island are considered to have an overall Condition Rating 3.
- *North Island.* The north side and parts of the east and west sides of North Island are protected by an elaborate reinforced concrete seawall. The existing shoreline protection systems on North Island are considered to have an overall Condition Rating 3. The east and south sides have unprotected shorelines.
- *East Island.* The existing shoreline protection systems on East Island are generally considered to have an overall Condition Rating 3. However, much of the shoreline is unprotected.
- *Sand Island.* Distinct shoreline protection on Sand Island is non-existent. Unprotected beach is present with random concrete rubble revetment and steel sheet pilings in some sections. The Condition Rating for Sand Island includes not applicable (unprotected shoreline), Condition 1, Condition 2, and Condition 3.

Johnston Atoll is not situated in an active fault area. There are no historical data that earthquakes have occurred or caused damage at Johnston Atoll. In terms of seismic activity, Johnston Atoll has been placed in Category 1 (minor hazard) by USACE (DNA 1988). The subsidence activity referred to in the creation of Johnston Atoll is still occurring at a rate imperceptible to man. Additionally, other mass-wasting features and geologic hazards such as sinkholes are not present.

Johnston Atoll lacks sufficient natural geologic resources, such as easily usable surface or ground water, gravel, or minerals, to be economically feasible or in demand.

Johnston Island



LEGEND

Original Island 1942		60 Acres
1958		158 Acres
1962		220 Acres
1964–Present		625 Acres

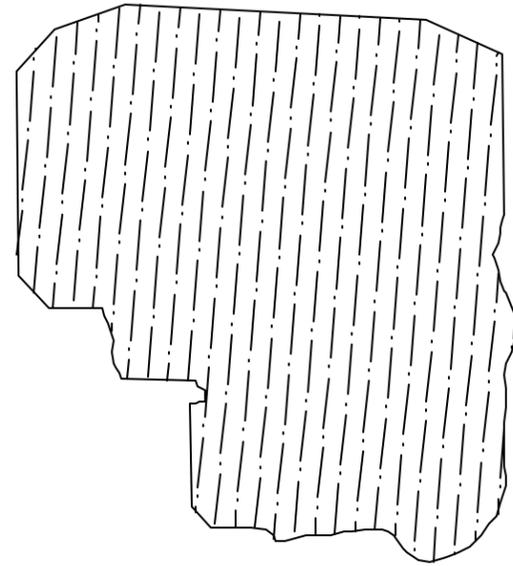
SOURCE

Environmental Baseline/Property
Transfer Survey Report for
Johnston Atoll, January 1999

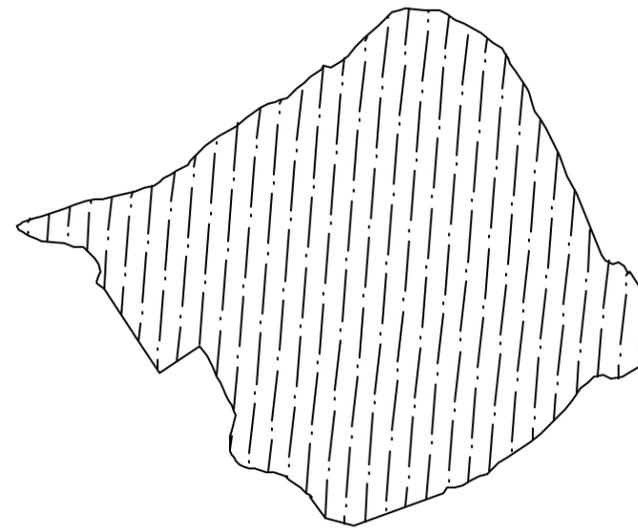


NOT TO SCALE

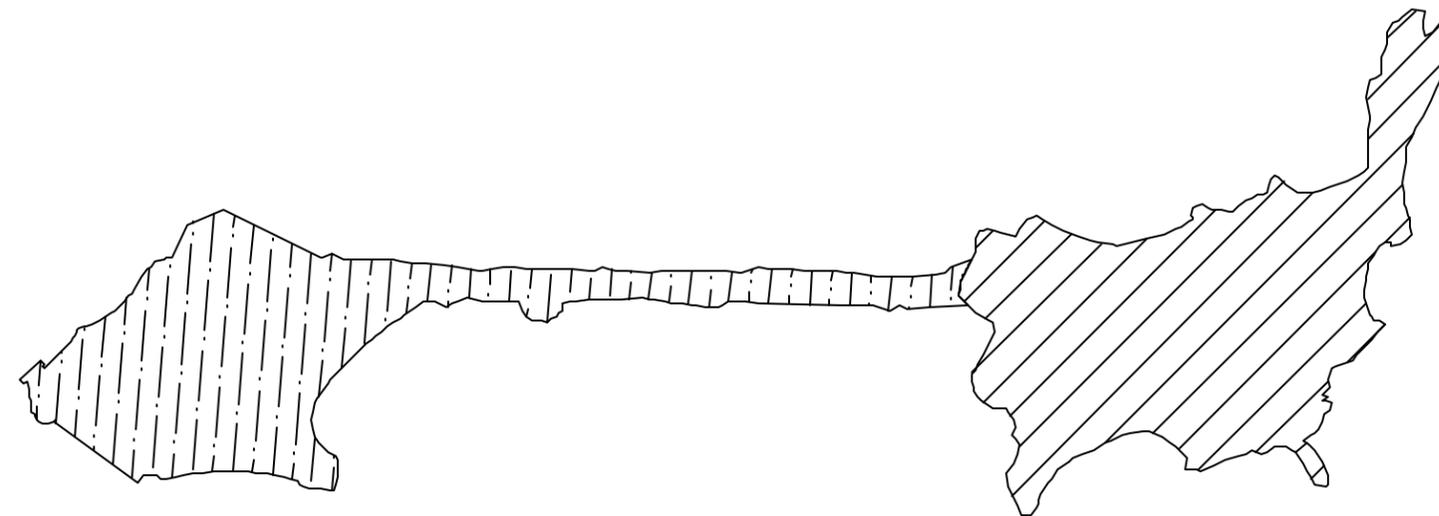
Figure 3-3
Historical Land Expansion
of Johnston Island
Johnston Atoll



Akau (North) Island

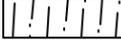


Hikina (East) Island



Sand Island

LEGEND

NORTH ISLAND Present		25 Acres
EAST ISLAND Present		18 Acres
SAND ISLAND Original Island		13 Acres
Present		22 Acres

NOTE

1. North and East Islands were created in 1964.
2. Additions to Sand Island (causeway and Western portion) were completed in 1960.

SOURCE

Final Historic Building Inventory and Evaluation, Johnston Atoll, January 2003



N

NOT TO SCALE

Figure 3-4
Historical Land Expansion of North, East, and Sand Islands Johnston Atoll

3.2.4 Land Use

This section describes the land uses for Johnston Atoll. The ROI for land use includes the four islands comprising Johnston Atoll and their immediate nearshore waters.

As an unincorporated, unorganized possession of the U.S. government, Johnston Atoll lacks the traditional land use plans and regulations that are usually placed by state and local government agencies.¹ The land use of Johnston Atoll has been primarily used for military purposes, as well as a NWR. The latest military mission has been the destruction of chemical munitions at the JACADS Facility. The NWR has been in place since 1926 and is currently managed by USFWS.

The two predominant land uses overlap and coexist at Johnston Atoll. Detailed illustrations of primary land uses are presented in Figure 1-2 and Figure 1-3 on Johnston Island and on North, East, and Sand Islands, respectively. In general, Johnston Island land use is dominated by the airfield complex in the center of the island and the Army (JACADS chemical demilitarization structures and former U.S. Army Chemical Activity, Pacific [USACAP] storage facilities) on the south side of the island. The north-central portion of Johnston Island contains a DTRA area of responsibility, the RCA. The northwest portion of the island is open and contains the air curtain burner area. The northeast portion of Johnston Island contains mixed residential, recreational, and industrial (e.g., warehousing, wharfs, fuel storage, power plant) use. Petroleum storage and wastewater processing facilities are also situated on the southern portion of Johnston Island.

The submerged land (i.e., reef) of Johnston Atoll contains channel areas that allow watercraft to access the island(s) (see Figure 1-1). An abandoned seaplane ramp and runway area is located near the Main Wharf on Johnston Island.

The outer islands—North, East, and Sand—are vacant with no current use other than as a bird sanctuary and refuge.

3.2.5 Natural Hazards

This section describes the natural hazards (including tsunami, hurricanes, storms, and floods) that interact with the human and natural environment of Johnston Atoll. The ROI for natural hazards includes all the islands and nearshore submerged land of Johnston Atoll.

Human habitation of Johnston Atoll marks the beginning of recordkeeping documenting natural hazards at Johnston Atoll and the occurrence of damage to structures and risk to human life. Records of damage associated with tsunamis, hurricanes, storms, and floods are relatively recent, essentially starting in the 1950s and 1960s.

NOAA maintains a tide gauging station (Facility 108), situated on the eastern side of the northern portion of Johnston Island, as part of its Pacific Tsunami Warning System. Data from this station are used to support navigation in nearby waters, provide tsunami warnings, and support global warming studies.

¹ A *Master Plan* for Johnston Atoll was last completed in July of 1994 by DTRA predecessors (FCDNA 1994). It described the layout and capacity of facilities at Johnston Atoll as well as military land uses.

3.2.5.1 *Tsunamis*

The NOAA defines a tsunami as “a series of traveling ocean waves of extremely long length generated by disturbances associated primarily with earthquakes occurring below or near the ocean floor.” In the deep ocean, tsunamis can have wavelengths (the distance between crests) of hundreds of miles and wave heights (the distance between the trough and the crest) of only a few feet or less. Because of this, they cannot be seen by planes flying overhead, nor felt by ships passing over them. A tsunami’s propagation speed is proportional to the depth of the water it is traveling through; therefore, tsunamis typically propagate across the Pacific Ocean at speeds equal to or greater than 500 mph. As a tsunami approaches land, its speed decreases and its wave height increases according to the topography of the sea floor and the shape of the shoreline. As a tsunami comes on shore, its height can be increased to over 100 feet, although still having a very long wavelength, so that most tsunamis appear on shore as an advancing tide lacking a developed wave face. Tsunamis are usually generated by seismic activity, but may also occur from subaerial and submarine landslides or any other great displacement of ocean water (e.g., meteor or explosion). In the Pacific Ocean, tsunamis have been generated in the waters off South America, the west coast of the United States, Alaska, Japan, and Indonesia.

Scientists cannot predict when ocean water-displacing events (such as earthquakes or landslides) will occur, and, as a result, they cannot predict when tsunamis will occur. However, with historical data and numerical modeling, scientists can predict when possible tsunamis might occur when an ocean water-displacing event happens. Utilizing past tsunamis height data with modeling allows scientists to forecast future tsunamis impact and flooding limits in coastal areas. On average, two destructive tsunamis per year occur in the Pacific Basin, while rare Pacific-wide tsunamis occur an average of one every 10–12 years (NOAA 2003b).

No damaging or destructive tsunami event at Johnston Atoll has been recorded. Between 10 June 1996 and 23 January 2003, 17 tsunamis were measured and recorded in the Pacific Ocean basin (NOAA 2003a).

Historic records indicate that between 1952 and 1989, ten tsunamis were measured by the Johnston Island tidal gauge. Johnston Island experienced minimal wave run-ups associated with these tsunamis, with a maximum wave run-up of 1.6 feet recorded as a result of the 8.6 magnitude Chilean earthquake in May 1960. During the 1960 tsunami, the sea level in the dredged shipping channel off Johnston Island fluctuated to a maximum of 3.2 feet for the duration of the tsunami. The 8.3 magnitude Kamachatka Peninsula earthquake in November 1952 created a wave run-up of 0.7 foot on Johnston Island. On average, measured tsunamis on Johnston Island have created wave run-up heights of 0.3 foot (APMCD 1990).

One of the possible reasons that Johnston Atoll has not experienced significant effects associated with historical tsunamis is that the size of Johnston Atoll in relation to the wavelength of a tsunami is very small. Tsunamis can have wavelengths up to 300–400 miles in the open ocean, and Johnston Atoll, being approximately 1 mile in length, does not present an obstacle significant enough to induce appreciable shoaling (APMCD 1990).

3.2.5.2 *Hurricanes*

The term hurricane is a regionally specific name for a strong tropical cyclone. Tropical cyclone is the generic term for a non-frontal, synoptic-scale, low-pressure system over tropical or subtropical waters with organized convection (i.e., thunderstorm activity) and definite cyclonic surface wind circulation (Holland 1993).

Tropical cyclones with maximum sustained surface winds of less than 17 meters per second (m/s), (34 knots, 39 mph) are called tropical depressions. When the tropical cyclone reaches winds of at least 17 m/s, it is typically called a tropical storm and assigned a name. If winds reach 33 m/s (64 knots, 74 mph), it is called a hurricane (the North Atlantic Ocean, the Northeast Pacific Ocean east of the international dateline, or the South Pacific Ocean east of 160E). Johnston Atoll has the potential to be affected by Pacific hurricanes from June to November. These seasonal storms, which usually approach the islands from the south or southeast, are characterized by high winds and heavy rainfall. The storms have the potential to create localized flooding and coastal storm surges.

Hurricane and storm damage data for Johnston Atoll are presented in Table 3-2.

Table 3-2: Historical Hurricane and Damage Data

Storm Event Date	Storm Event	Resulting Status
19 August 1972	Hurricane Celeste	Hurricane Celeste forced the evacuation of all personnel to Honolulu, Hawaii (first time an evacuation of all island personnel occurred). Johnston Atoll experienced winds in excess of 100 knots and resulting cleanup and repair costs of approximately \$3.2 million.
August 1984	Hurricane Keli	Evacuation of all personnel to Honolulu, Hawaii; minimal shoreline and facility damage occurred – no associated dollar value for cleanup or repairs.
18 December 1992	Unnamed tropical system	Gust fronts associated with collapse of several tropical thunderstorms stalled in general vicinity of Johnston Atoll; no personnel were evacuated; peak wind gusts of 85 mph; resulting cleanup and repair costs of approximately \$2 million.
August 1993	Hurricane Keoni	Evacuation of all personnel to Honolulu, Hawaii; minimal facility damage – no associated dollar value for cleanup or repairs.
26 August 1994	Hurricane John	Evacuation of all personnel to Honolulu, Hawaii; sustained winds of 85 knots with gusts to 105 knots; JACADS sustained minor damage, but the island infrastructure experienced substantial damage; cost of storm damage and evacuation of personnel totaled approximately \$10 million.
August 1999	Hurricane Dora	Evacuation of all personnel to Honolulu, Hawaii; minimal facility damage – no associated dollar value for cleanup or repairs.

3.2.5.3 Floods

The flood history of Johnston Atoll is not well documented historically. Reports that are more recent indicate that flooding from rainfall, hurricanes, and tsunamis has not been a serious problem. Due to its small size, low elevation, and location in the middle of the Pacific Ocean, Johnston Atoll is potentially vulnerable to hurricane surge and wave action (USACE 1984, 1985). Typical effects of flooding on Johnston Atoll have included the following:

- Transient rise in water level
- Backup of water in storm drains and drainage ditches
- Occasional breakers to higher than normal levels with some ponding as a result of splash accumulation
- Some erosion of fill material where seawalls do not exist
- Higher than usual currents in the boat channels

Johnston Island is not in a 100-year riverine flood plain; however, ponding and pooling of water from storm events is possible (CSC 1984). The Federal Emergency Management Agency (FEMA) has not developed a Flood Insurance Rate Map (FIRM) for Johnston Atoll. FIRM maps include data such as flood plain boundaries and base flood elevations. Representatives at the FEMA National Call Center indicated that although FEMA has not developed a FIRM Map for Johnston Atoll, all coastal areas should be considered at risk for flooding (Bradley 2003).

3.2.6 Noise

This section presents data for noise in the Johnston Atoll environment. The ROI for noise is the four islands of Johnston Atoll. Significant underwater noise sources are not present.

“Noise” is defined as sound that is undesirable because it interferes with speech communication and hearing, or is intense enough to damage hearing, or is otherwise annoying. Under certain conditions, noise can interfere with human activities at home or work and affect human health and well-being. Noise may also affect animal behavior.

The accepted unit of measure for sound levels is the decibel (dB) because it reflects the way humans perceive changes in sound amplitude. Sound levels are easily measured, but human response and perception of the wide variability in sound amplitudes is subjective.

Different sounds have different frequency content. When describing sound and its effect on a human population, an A-weighted (dBA) sound level is typically used to account for the response of the human ear. The term “A-weighted” refers to a filtering of the noise signal to emphasize frequencies in the middle of the audible spectrum and to de-emphasize low and high frequencies in a manner corresponding to the way the human ear perceives sound. The American National Standards Institute established this filtering network. The A-weighted sound level has been found to correlate well with a person’s judgment of the noisiness of different sounds and has been used for many years as a measure of community noise.

Community noise levels change continuously during the day; therefore, to compare levels over different time periods, several descriptors have been developed that take into account this time-varying nature. The most common descriptor is the annual average day-night sound level (L_{dn}). The L_{dn} is the average A-weighted level for a 24-hour period with a 10 dB upward adjustment added to the nighttime levels (10:00 PM to 7:00 AM). This adjustment accounts for the increased sensitivity of most people to noise in the quiet nighttime hours. L_{dn} has been adopted by many Federal and state agencies as the accepted unit for quantifying human annoyance to general environmental noise and for assessing and correlating the various effects of noise on humans and animals, including land use compatibility, sleep interference, annoyance, hearing loss, speech interference, and startle effects.

Noise sources for Johnston Atoll include aircraft using the runway, Power Plant engines, vehicular traffic, TDS blowers, and demolition activities (construction equipment). Noise levels at the southwest end of Johnston Island are significantly lower than those at other areas because of its distance from the more industrialized areas or areas associated with remedial actions or D&D related activities.

Recent noise studies have not been performed at Johnston Atoll. However, Table 3-3 lists typical noise levels created by Johnston Atoll-related noise sources and serves as the pre-closure baseline for noise.

Table 3-3: Noise Levels Associated with Johnston Atoll-Related Noise Sources

Noise Source	Generated Noise Level (dBA)
Aircraft	115 (500 feet above land)
Power Plant Caterpillar engines	109 (average for six engines)
TDS blowers	99
Dump truck	75
Crane	75
Flat-bed truck (18-wheel)	75
Backhoe (rubber tire)	80
Front loader (rubber tire)	80
Bulldozer	88
Scraper	89

Source: USACE (1978); Det 1, 15 AW (2003)

3.2.7 Safety and Health

This section focuses on features and activities that increase a risk to safety and health of users (people and wildlife habitat) associated with Johnston Atoll. The main safety and health concerns related to the termination of the Air Force mission include airport and aircraft operations, facilities, and wildlife hazards. Safety and health concerns related to demolition, decommissioning, and debris disposal were addressed in the *Environmental Assessment, Demolition, Decommissioning, and Debris Disposal, Johnston Atoll* (Earth Tech 2002b). The ROI for safety and health includes Johnston Atoll.

3.2.7.1 Airfield and Aircraft Operations

As stated in Section 3.2.8, Johnston Atoll Airfield is an FAA 139-certified airport. Because the airfield occupies most of Johnston Island, and numerous facilities and structures surrounding it, the airfield maintains a waiver for operations with flight hazards. No historical reports of accidents at Johnston Atoll Airfield exist.

To protect against bird strikes, the Air Force utilizes the Bird/Wildlife Aircraft Strike Hazard (BASH) Team as well as following the Operations Plan (OPLAN) 91-2, *Johnston Island Bird Aircraft Hazard Operations Plan*. The goal of the BASH Team is “the preservation of war fighting capabilities through the reduction of wildlife hazards to aircraft operations.” Incidences involving bird or wildlife strikes with aircraft are reported to the BASH Team via the Safety Automated System. Information gathered by the BASH Team is incorporated into a database, which can then be used to formulate appropriate base-specific measures to minimize wildlife strikes to aircraft. These measures may include the following:

- Avoidance and harassment (e.g., bird capture/relocation)
- Mitigation (e.g., providing a lack of habitat by monitoring grass height, alternative ground cover)

To minimize wildlife strikes to aircraft, the following guidance and regulations are utilized:

- Advisory Circular 150/5200-33. FAA Advisory Circular: Hazardous Wildlife Attractants On Or Near Airports. 01 May 1997.

- AFI 11-202. Volume 3. General Flight Rules. 06 June 2003.
- AFI 13-201. (Attachment 5.) Air Force Airspace Management. 20 September 2001.
- AFI 13-213. Airfield Management. 09 September 2002.
- AFI 32-7064. Integrated Natural Resources Management. 01 August 1997.
- AFI 91-202 (Chapter 7.11). The US Air Force Mishap Prevention Program. 01 August 1998.
- AFI 91-204 (Chapter 7.4.7). Safety Investigations And Reports (Bird Strike Reporting). 11 December 2001.
- BASH Management Techniques. 01 April 1997.
- DOT, FAA Regulations (FAR) (14 CFR Part 139.337). Certification And Operations: Land Airports Serving Certain Air Carriers. 18 November 1987 (unless otherwise noted in publication).
- OPLAN 91-2. *Johnston Island Bird Aircraft Hazard Operations Plan*. Det 1, 15 AW, Johnston Island. 01 December 2002.

These measures are normally successful; however, bird strikes can occur due to airfield operations (Det 1, 15 AW 2003). Table 3-4 lists numbers of bird strikes per year at Johnston Atoll from records dating to 1986.

Table 3-4: Recorded Bird Strikes at Johnston Atoll since 1986

Year	No. of Strikes	Year	No. of Strikes	Year	No. of Strikes
1986	2	1992	3	1998	16
1987	6	1993	11	1999	21
1988	1	1994	8	2000	25
1989	5	1995	10	2001	8
1990	7	1996	18	2002	8
1991	6	1997	18	2003 (to date)	2

3.2.7.2 Facilities

Approximately 569 real property listings support an operating installation at Johnston Atoll. These facilities were assessed to document their existing structural condition.

Approximately 16 facilities were deemed as currently unsafe, and 31 facilities were deemed in poor condition, which could pose a safety hazard if left abandoned for 5–10 years. The remaining facilities were categorized as not representing a hazard for the next 10–30 years (Earth Tech 2002e).

3.2.7.3 Wildlife Hazards

Occasionally, wildlife at Johnston Atoll encounters man-made hazards that can result in injury or mortality. Accounts of wildlife injury and mortality as well as features present at the operating installation were studied to determine if wildlife hazards were present (Earth Tech 2002d). Certain features, outlined below, were found to be present at Johnston Atoll creating an increased risk to wildlife safety and health. Species of concern were identified to be the endangered Hawaiian Monk Seal, threatened Green Sea Turtle, and migratory birds. These species were then placed into wildlife categories as follows:

- Wildlife Category I – endangered and threatened species including the endangered Hawaiian Monk Seal and threatened Green Sea Turtle.
- Wildlife Category II – species not identified as endangered or threatened including all migratory birds.

Thirty-two hazards and grouped hazards were identified. A *hazard* was defined as a man-made structure or object that in its existing condition can cause mortality or injury to wildlife. A *grouped hazard* was defined as similar structures that occur in multiples on each island. The types of hazards were classified as follows:

- *Entanglement* – material on the ground, beach, in debris piles, or attached to abandoned structures or poles, in which the Hawaiian Monk Seal, Green Sea Turtle, and birds may become entangled in objects (including wire and cable, barbed wire or chain link fencing, fishing nets, rope, or monofilament line).
- *Entrapment* – man-made vaults and piping that have deteriorated, essentially becoming open trenches, holes, and pits that have the potential to entrap wildlife. These structures may result in mortality. Entrapment hazards include deteriorated seawall material, including concrete and rebar, vaults, valve boxes, drains, manholes, fenced enclosures, dilapidated structures, eroded areas around sheet pile seawalls, and debris piles.
- *Obstructions* – stationary structures that extend from the ground into the air and that can result in death or serious injury to birds flying in their vicinity. Any structure extending more than a few feet above the ground constitutes a physical hazard to flight for certain species, and taller structures represent a greater threat. The most significant flight hazards include utility poles, light poles, signposts, and flagpoles, utility lines and other above-ground wires, towers and associated guy-wires, fences, aircraft in motion, lighted buildings, and windows.

The number and types of identified Wildlife Category hazards are summarized as follows:

- Johnston Island: Nine hazards, including entrapment, entanglement, and obstruction hazards (1 Category I, 8 Category II).
- North Island: Ten hazards, including entrapment (9 Category II, 1 Category I & II).
- East Island: Three hazards, including entrapment and entanglement (1 Category I, 1 Category II, 1 Category I & II).
- Sand Island: Ten hazards, including entrapment and entanglement (7 Category II, 3 Category I & II).

3.2.8 Transportation

Transportation resources for Johnston Atoll include on-island roadways, airspace/air traffic, air transportation, and sea transportation (Figure 3-5 and Figure 3-6). The ROI for transportation includes the roadways and airfield of Johnston Island, the airspace, and the channels and harbors of Johnston Atoll.

3.2.8.1 Roadways

The basic road system on Johnston Island consists of approximately 10 miles of hard surface (asphaltic concrete paved) roadway and approximately 10 miles of gravel (compacted coral) roadway (see Figure 3-5). The main access road, divided into 3 miles of paved roadway and 3 miles

of gravel road, is 20–25 feet wide and generally aligned parallel to the runway, but curves on the northeast and southwest ends of the island to form a loop. Other paved roads with short runs exist in and around the housing, maintenance, and JACADS areas, and a one-way road exists around the Joint Operations Center (Facility 20). The posted speed limit is 25 mph, with reduced speeds on Arnold Avenue, Perimeter Road south of the JACADS Facility, and the Perimeter Road directly in front of the Air Passenger and Freight Terminal (Facility 285) (DNA 1990; FCDNA 1994).

Vehicle traffic on Johnston Island includes motor vehicles, golf carts, and bicycles. Two buses are used for island-wide transportation; however, only one is used at a time. There are 315 motor vehicles, 42 golf carts, and 790 bicycles on Johnston Island (Det 1, 15 AW 2003). All vehicles are government-owned except for those brought on island by government contractors, as authorized by contract.

3.2.8.2 *Airspace/Regional Air Traffic*

The FAA defines two categories of airspace or airspace areas:

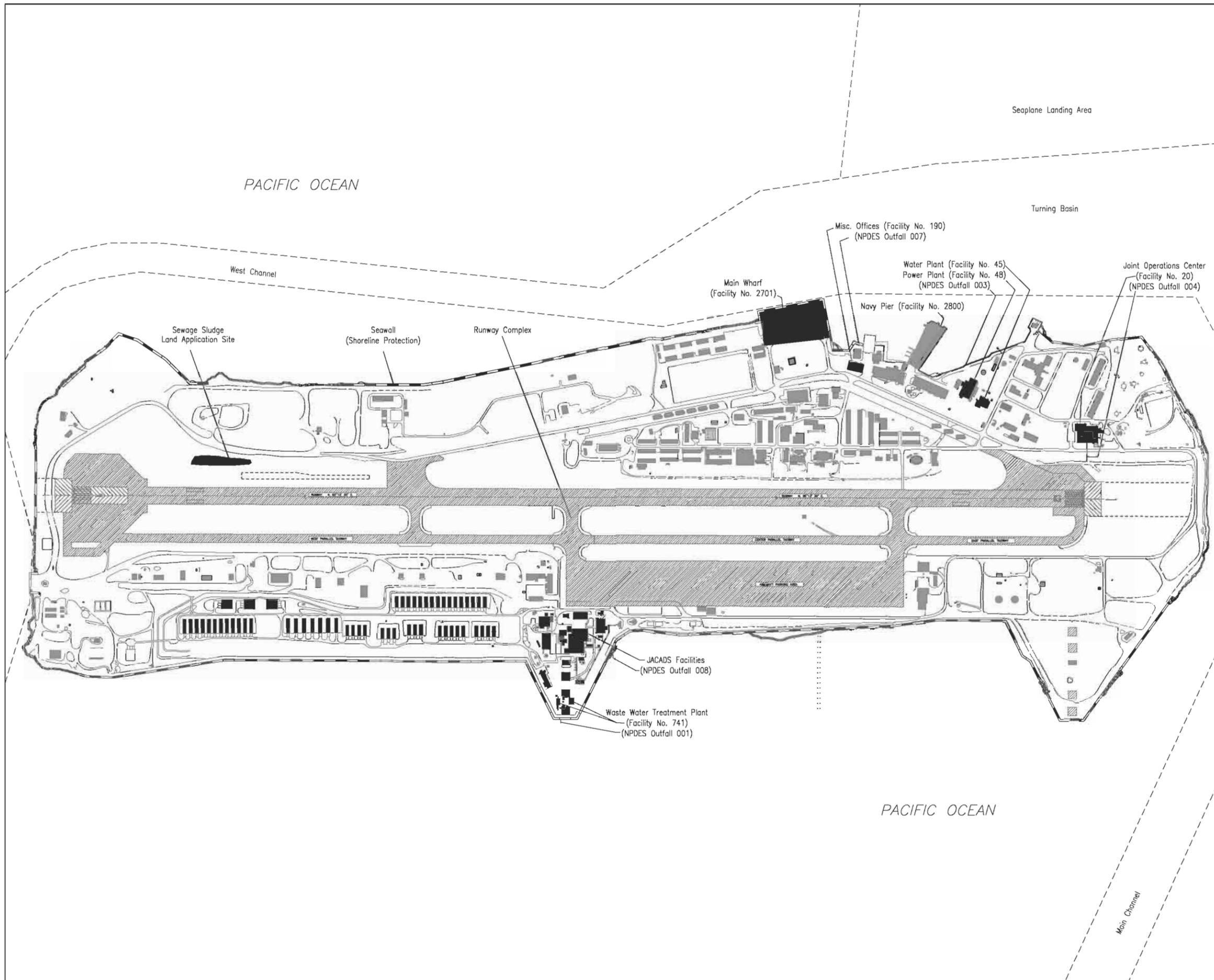
- Regulatory: Class A, B, C, D, E, and G airspace areas; restricted and prohibited areas
- Non-regulatory: military operations areas, warning areas, alert areas, and controlled firing areas.

Within these two categories are four types of airspace: controlled, uncontrolled, special use, and other (FAA 2002).

The airspace associated with Johnston Atoll is classified as Class G (uncontrolled). Class G airspace has no specific definition, but generally refers to airspace that has not been designated Class A, B, C, D, or E airspace. Because Johnston Atoll is situated in the middle of the Pacific Ocean and surrounded by at least 500 miles of water, visual flight rule traffic is non-existent. An instrument procedures waiver (for instrument flight rules) is required and in place for Air Traffic Control (ATC) operations and services into and out of Johnston Atoll.

Oakland ARTCC–San Francisco Sector monitors Johnston Atoll airspace, which extends from 5,500 feet above ground level to unlimited. A Letter of Agreement exists between Oakland ARTCC and Det 1, 15 AW that prescribes procedures for providing ATC services. In general, Oakland ARTCC forwards the type and estimated time of arrival of aircraft to Johnston Atoll Base Security. Johnston Atoll may request ATC clearance or advisories from Oakland ARTCC when requested from the aircraft pilot or in the event of an emergency. Johnston Atoll ensures that all aircraft have prior landing approval at Johnston Atoll except in the event of an emergency. Johnston Atoll is responsible for providing Oakland ARTCC aircraft arrival and departure times, changes in navigation aide status, abnormal field conditions, and weather reports.

A military use airfield is maintained on Johnston Island. The runway is approximately 9,000 feet long and 150 feet wide and has a paved, all weather surface. Oriented with the long axis of the island, it bears N 65°13'30" E True and has an elevation of 7 feet above mean sea level (msl). Turnaround areas, blast pads, and overruns adjoin each end of the runway. South of the middle of the runway is a large, lighted parking area. The runway is equipped with lights and visual glide indicators for approaches from the west. Air/ground communications and navigational aids include air/ground tactical communications, low-frequency nondirectional beacon, and aircraft obstruction lights (FCDNA 1994).



LEGEND

- Permanent Structure
- Seawall
- Location of Infrastructure and Utilities
- Location of Specific Infrastructure and Utilities

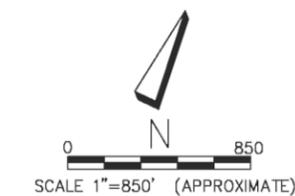
(See Figure 1-1 for Additional Channel and Turning Basin Details)

NOTES

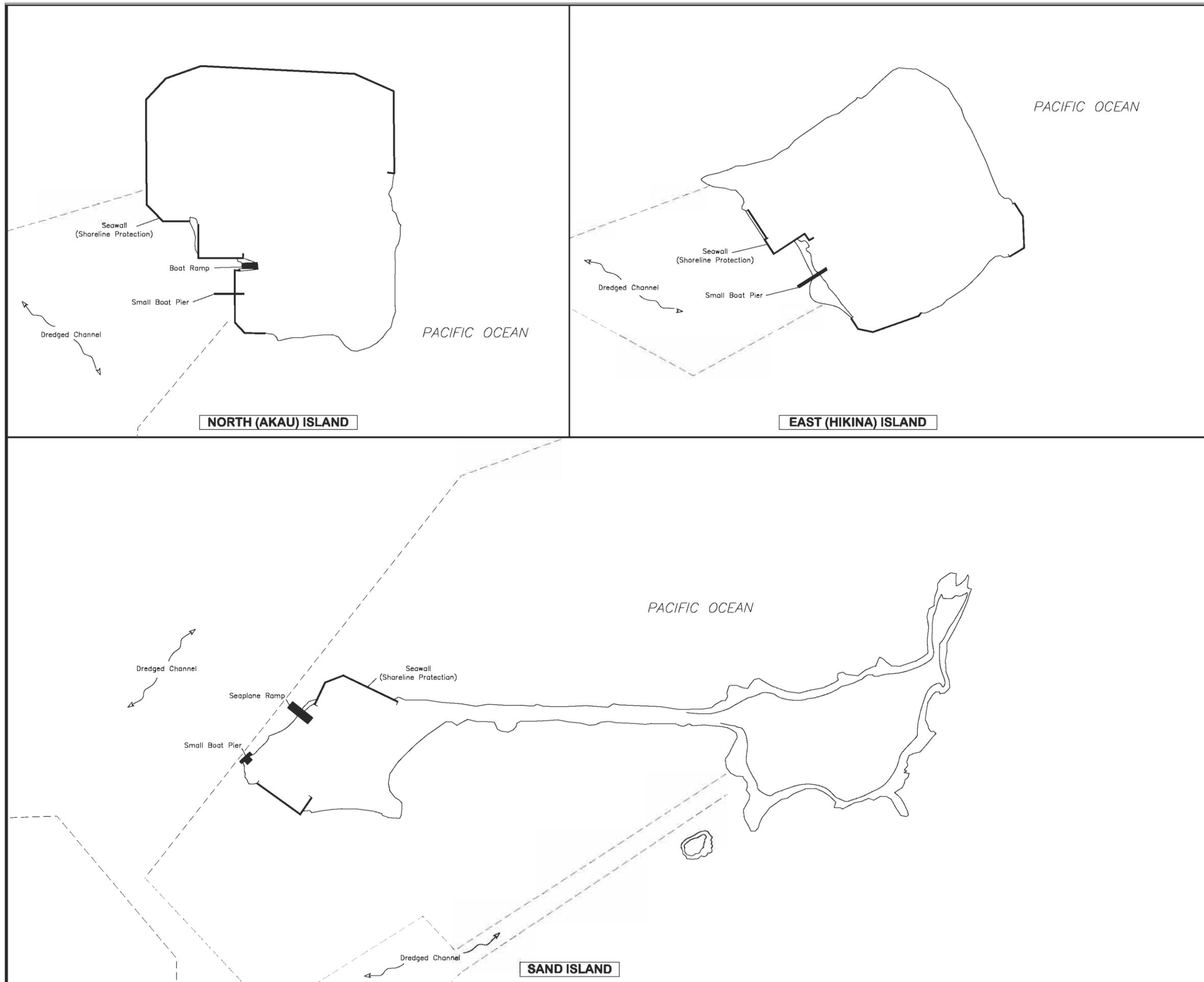
1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane, Feet, Clarke 1866
Elevation Datum: MLLW-0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

Aerial Photography, 12/18/1969
 Development Plan, Defense Atomic Support Agency, 1970
 Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
 Final Environmental Baseline/Property Transfer Survey, 1999
 Final Environmental Management Plan, Johnston Atoll, 2000



**Figure 3-5
 Location of Infrastructure, Utilities,
 and Transportation
 Johnston Island
 Johnston Atoll**



LEGEND

-  Seawall
-  Location of Existing Infrastructure

(See Figure 1-1 for Additional Channel and Turning Basin Details)

Note:
Utilities are no longer present on the outer islands.

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane Coordinate System Units in feet, Elevation Datum: MLLW=0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000

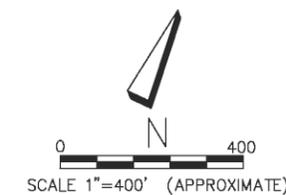


Figure 3-6
Location of Infrastructure and Transportation
North, East, and Sand Islands
Johnston Atoll

Numerous airspace safety regulations have been modified for Johnston Atoll due to its limited amount of land area and the location of essential facilities, including reduction of runway widths and clearances, reduction of clearances for hardstands and aprons, and reduction of clearances for taxiways. In 1966, a list of airspace safety exemptions to the Air Force Manual (AFM) 86-8 (which has subsequently been superceded by AFM 86-5) was submitted by the Johnston Atoll Commander (then Commander, Joint Task Force 8.6) and were subsequently approved by the Joint Task Force Eight (JTF-8). In February 1994, the Commander, Johnston Atoll requested a permanent waiver to these exemptions, in accordance with AFM 86-5. In 2001, a Building Restriction Line proposal was evaluated under the Air Force Airfield Obstruction Reduction Initiative. Johnston Atoll was found to be exempt from the Building Restriction Line of 1,000 feet from the centerline of the runway. The Johnston Atoll Airfield currently operates under the permitted exemptions indicated in Table 3-5.

ETOPS refers to the criteria for airplanes and airports involved in long-range flights (FAA 1988). ETOPS refers to aircraft with capabilities equal to or greater than two-engine aircraft that operate over a route containing a point farther than 1-hour flying time at the normal one-engine inoperative cruise speed (in still air) from an adequate airport. An adequate airport is defined as “certified as a FAR Part 139 airport or is found to be equivalent to FAR [Part] 139 safety requirements” (FAA 1988).

Johnston Atoll Airfield is an FAA-certified (139-certification) airfield that can be used for ETOPS emergency landings. The Johnston Atoll Airfield is certified in accordance with FAR Part 139. The airport meets specifications for runway/taxiway marking and lighting, rescue and firefighting, ground traffic control, weather indicators, airport condition reporting, pavement and safety area requirements, safe fuel handling, and wildlife hazard controls. Being a landmass with an airfield in the remote Central Pacific, Johnston Atoll Airfield is used by six airlines with extended routes in that area for ETOPS purposes. These airlines include Aloha, Air Pacific, Polynesian, Air New Zealand, Continental Micronesia, and Qantas (Spencer 2003). In general, Johnston Atoll Airfield meets the standards for emergency use by these airlines. Emergency landings taking place at Johnston Atoll are recorded for documentation. A review of the documentation indicates only one emergency landing occurring at Johnston Atoll in recent years. On 17 September 2002, a military C-130 diverted to Johnston Atoll Airfield due to an engine emergency (Barclay 2003).

Table 3-5: Key Airfield Exemptions, Johnston Atoll Airfield

Airfield Component	Exemption/Height (feet) ^a
Runways	
Lateral safety zone	250
Lateral safety zone without taxiway	250
Clearance North	250
Clearance South	500
Transitional Slope North	3:1
Transitional Slope South	7:1
Taxiway	
Lateral North	160
Lateral South	200
Apron	
Lateral	15
Critical Obstacle/Obstructions	
Joint Operations Center (Facility 20)	24.9 ^b

Airfield Component	Exemption/Height (feet) ^a
Fire Station (Facility 287)	14.0 ^c
Outdoor Theatre (Screen) (Facility 504)	4.9 ^b
A/G Communications Center (Facility 507)	18.5 ^b
Laundry Facility (Facility 510)	5.2 ^b
Boiler Facility (Facility 511)	7.7 ^b
Warehouse (Facility 512)	3.2 ^b
Cold Storage Facility (Facility 517)	31.7 ^b
Dining Facility (Facility 519)	21.7 ^b
USACAP Dormitories (Facility 521)	27.7 ^b
Education Center (Facility 660)	21.0 ^b
Apartments (Facility 692)	11.7 ^b
Apartments (Facility 696)	11.7 ^b
Apartments with Antennae (Facility 699)	33.4 ^b
Warehouse (Facility 720)	2.8 ^c
Rubber Goods Cleaning Facility (Facility 724)	5.6 ^c
Storage Building (Facility 726)	3.3 ^c
Chemical Laboratory (Facility 727)	10.1 ^c
Warehouse (Facility 868)	3.8 ^c
Warehouse (Facility 878)	0.9 ^c
JACADS Storage (Facility 881)	2.5 ^c
JACADS Storage (Facility 886)	3.6 ^c
JACADS Storage (Facility 888)	9.8 ^c
Storage (Facility 960)	0.9 ^c

^a Permanent waiver granted for Johnston Atoll Airfield IAW Air Force Regulation 86-5, paragraph 4-4, and paragraph 4-6.

^b Violation of airspace above 3:1 transitional slope

^c Violation of airspace above 7:1 transitional slope

3.2.8.3 Air Transportation

An Air Passenger and Freight Terminal (Facility 285) is situated east of the aircraft parking area on the south side of Johnston Island. It has an area of 14,000 square feet (ft²) and contains areas for freight handling, baggage and ticket offices, lounges, restrooms, security briefings, and a waiting area. Johnston Atoll is presently serviced by one commercial airline (Aloha Airlines). A Letter of Agreement exists between the Air Force and Aloha Airlines for commercial air carrier operations at Johnston Atoll. Several reserve support wings provide Johnston Atoll with air cargo service on a weekly basis. There is also a seaplane landing area adjacent to Johnston Island that is no longer used.

Visits to Johnston Atoll are restricted because 1) Johnston Atoll is a military installation, 2) Johnston Atoll's airspace is defined as non-regulatory (military operations areas), and 3) EO 8682 created an NDSA and Naval Airspace Reservation around Johnston Atoll. As a result, all visits to Johnston Atoll are controlled by the Johnston Atoll Installation Commander and are limited to official purposes. Prior notification is required before an entry authorization will be issued. Without clearance, Johnston Atoll-bound personnel will not be boarded on commercial or military aircraft. Passengers with other destinations are not permitted to deplane during intermediate stops at Johnston Island.

Approximately 36 aircraft use the Johnston Island airfield on a monthly basis. Of these, 56 percent (20 aircraft) are commercial and 44 percent (16 aircraft) are military.

3.2.8.4 *Sea Transportation*

Johnston Atoll maintains an artificially dredged turning basin and harbor area inside the lagoon, which is situated to the north of Johnston and Sand Islands (Figures 1-1, 3-5, and 3-6). The minimum navigation depth is 35 feet. The main entrance channel (east channel) has a maximum width of 400 feet and a navigable width of 170–190 feet. The harbor and turning basin varies in width from 1,200 to 2,000 feet and is approximately 1.2 miles long. A smaller and shallower 300-foot-wide, 17-foot-deep channel continues around the west end of the island to deeper water. Separate channels, 120 feet wide and 8 feet deep, connect North and East Islands to the harbor area. Harbor facilities (Figure 3-5) include the principal bulkhead pier (Main Wharf) on the north side of Johnston Island. It has more than 183,000 ft² of open dock area with approximately 900 feet of concrete bulkheads along two sides of the pier. Fresh water, electrical power, fuel pipelines, mobile cranes, floodlights, and saltwater fire protection facilities are available on this pier. East of the main pier is a 360-foot long small boat pier (Navy Pier) parallel to the wharf area, approximately 450 feet in length. This wharf area is also equipped with lighting, fire protection, freshwater, and fuel lines. Another wharf at the west end of the island has 14,000 ft² of dock area, but its utility has been impaired by silting and coral re-growth in the channel (USACE 1988). The outer islands also have small boat piers and a seaplane ramp (Figure 3-6).

No truly defined shipping lanes occur near Johnston Atoll. Most ships follow the “Great Circle” for travel (i.e., the shortest point between two points on a globe is not a straight line, but rather an arc). A common route for ships traveling between Hawaii and the Solomon Islands passes approximately 120 nm southeast of Johnston Atoll (Johnson 2003).

Currently, 19 various aids to navigation (e.g., channel markers, lights, buoys) are installed at Johnston Atoll. The Air Force has requested that the USCG maintain the current navigational aids for three years, because several government agencies may be traveling to Johnston Atoll for ongoing environmental activities (Ainardi 2003).

Matson Navigation transports bulky cargo and dry goods to Johnston Atoll on a monthly basis. In addition to Matson Navigation, Aloha Petroleum supplies petroleum to Johnston Atoll via fuel barges. Approximately one cargo barge and one fuel barge service Johnston Atoll on a monthly basis. Regular, routine fuel barge service is scheduled to end in November 2003, with fuel barge services for the D&D activities continuing through June 2004.

3.2.9 **Utilities and Infrastructure**

A general description of the utilities and associated infrastructure is presented below. The ROI for utilities and infrastructure includes the four islands of Johnston Atoll. General locations of utilities and infrastructure at Johnston Island and at North, East, and Sand Islands are presented in Figure 3-5 and Figure 3-6, respectively.

3.2.9.1 *Infrastructure*

The infrastructure of Johnston Atoll is composed of the pavement, wharfs/docks, shoreline protection structures, and buildings. Pavement consisting of roadways and the airfield and wharfs/docks are discussed in Section 3.2.8. Shoreline protection features including seawalls and revetments are discussed in Section 3.2.3. The utilities that support Johnston Atoll are described in the paragraphs below. Buildings at Johnston Atoll include approximately 569 real property listings. Most buildings are situated on Johnston Island and support housing, dining, retail, entertainment,

administrative functions, warehousing, utility support, and JACADS operations. General land use is described in Section 3.2.4.

3.2.9.2 *Telecommunications*

A submarine cable to Oahu, Hawaii and a satellite communications terminal have supported telecommunications on Johnston Island, providing 108 off-island telecommunication channels. Currently, the submarine cable is inoperable. No telephone service is provided between Johnston Island and the outer islands. A land mobile radio system is supplied by very high frequency (VHF) and includes various channels utilized by operations and maintenance, the Power Plant (Facility 48), crash/fire/security, and USACAP. UNICOM radios and VHF channels support aircraft communications with Johnston Island. Ultra high frequency aircraft radio capability on Johnston Atoll has been eliminated as of October 2003. Single-sideband radio and VHF supply marine communications with Johnston Island. Telecommunications utilize a common electrical and telephone underground cable duct network using conventional manholes and duct configuration.

3.2.9.3 *Drinking Water Supply*

Drinking water on Johnston Island is produced by processing the saline groundwater through three RO systems (two operational and one backup) housed in the Water Plant (Facility 45). The RO units are fed by two well fields situated in the northeastern portion of Johnston Island, near the Joint Operations Center (Facility 20). The original well field consists of two saltwater wells 15 feet deep. The newer well field, situated adjacent to the original well field, consists of three wells 60–70 feet deep (Ogden 1999). The production rate for the RO systems is approximately 255,000 gallons per day (gpd) (Det 1, 15 AW 2003).

Potable water is stored in a 200,000-gallon underground concrete reservoir (Facility 653), a 500,000-gallon underground concrete reservoir (Facility 652), and a 500,000-gallon aboveground steel water storage tank (Facility 8). The underground reservoirs and the aboveground storage tank (AST) each have a pump house system for providing controlled pressure distribution throughout underground piping to all Johnston Island facilities. The water pressure is controlled at 60–70 psi and, with some exceptions, is distributed by 6-inch water mains. One of the exceptions is the southwest end of the island. Current freshwater consumption is approximately 245,000 gpd (Det 1, 15 AW 2003).

3.2.9.4 *Electrical Power*

Electrical power on Johnston Island is provided by the Power Plant (Facility 48), which consists of six Caterpillar generator engines that use JP-5 fuel (Ogden 1999). Each generator is rated at 2,500 kilowatts (kW) and has an 82–87 percent power factor (Det 1, 15 AW 2003). Feeders distribute power to all Johnston Island facilities through 84 substations. Power is distributed through a common electrical and telephone underground cable duct network using conventional manholes and duct configuration. The daily production rate is approximately 4,750 kW, with an approximate peak usage of 5,102 kW and a minimum usage of 4,477 kW (Det 1, 15 AW 2003).

3.2.9.5 *Wastewater*

The saltwater-based sanitary sewer system serves all Johnston Island facilities. The forced main is a series of 3- to 16-inch cast iron and asbestos cement pipes. Lift stations with electric pumps are situated where required by elevation. The overall system is laid out in parallel runs along the north and south sides of the island with laterals connecting the runs.

Johnston Island sanitary sewer wastewater enters a collection system and is pumped to the WWTP (Facility 740) situated south of the JACADS Facility. This secondary treatment facility treats an

average of 165,000 gpd of wastewater (Det 1, 15 AW 2003), and is operated by appropriately licensed BOS contractor personnel. The capacity of the WWTP is 217,000 gpd of wastewater (Ogden 1999). Sludge from WWTP operations is applied just south of Perimeter Road-North, on the northwest side of Johnston Island, as presented in Figure 3-5.

3.2.9.6 *Solid Waste*

The 15 AW maintains a Solid Waste Management Plan for the proper management of solid waste at Johnston Island. Solid waste is separated and disposed of on-island and off-island. Wastes are separated into food waste, municipal wastes, and recyclables. Food waste is accumulated in a dumpster at the Dining Hall (Facility 519) and deposited at the West Wharf daily. Municipal wastes (approximately 14 tons per week) are disposed of in the air curtain burners. The resultant ash, approximately 4.5 tons per week, is tested and transported to the mainland for proper disposal. Recyclable wastes, approximately 14,000 pounds per week, are taken for mainland processing.

3.2.9.7 *Industrial Discharges*

Point-source discharges from Johnston Island are regulated under National Pollutant Discharge Elimination System (NPDES) Permit No. JA0110001. Discharges are managed in accordance with effluent limitations, monitoring requirements, and conditions set forth within the permit. The NPDES permit and authorization to discharge expires at midnight, 29 January 2007 (EPA Region 9 2001).

Discharge outfalls covered under this permit are:

- Outfall 001 – Treated domestic wastewater effluent from the Johnston Island WWTP (discharge outfall is 100 feet offshore south of the WWTP).
- Outfall 003 – Non-contact cooling water from the Power Plant (Facility 48), RO backwash from the Water Plant (Facility 45), and pressure relief water from the Salt Water Pumphouse (Facility 3) discharged from two outfall pipe along the seawall to the north of Tank No. 49.
- Outfall 004 – Non-contact cooling water from the Facility 20 (Joint Operation Center) chillers (discharge outfall is south of Facility 20 in a ditch that flows eastward along the south side of the Johnston Island perimeter road and empties into the ocean at the eastern end of Johnston Island).
- Outfall 007 – Non-contact cooling water from the Facility 190 chillers (discharge outfall along the northern seawall outside Facility 130).
- Outfall 008 – JACADS non-contact cooling water and storm water from the JACADS Facility (discharge outfall along seawall east of the JACADS Facility). It should be noted that with JACADS closure, JACADS terminated discharging into Outfall 008 on 27 May 2003 (Army 2003).

Based on the activity providing discharge at the specific outfalls, the Permittee is allowed to discharge effluent limited to specific characteristics, within certain time periods (i.e., monthly average, weekly average, and daily maximum). These characteristics include flow, biological oxygen demand, total suspended solids, oil and grease, metals (e.g., copper, silver), pH, and temperature. The Permittee is required to perform monitoring and comply with the limitations. Figure 3-5 presents the location of the permitted outfalls.

3.2.9.8 *Storm Water*

Storm water discharges for Johnston Island are regulated under Multi-Sector General Permit No. JAR05A01F, and address the discharge of storm water associated with industrial activity. As stated in *Industrial Discharges*, discharges at the specific outfalls result in effluents limited to specific characteristics, within certain time periods (i.e., monthly average, weekly average, and daily maximum) based on the type of discharging activity. Characteristics and monitoring requirements that the Permittee must comply with are presented in the permit. The Det 1, 15 AW also maintains a Storm Water Management Plan for Johnston Atoll to aid in achieving the requirements of the permit.

3.2.10 **Visual Resources**

Visual resources are the aggregate of characteristic features imparting visually aesthetic qualities to a natural, rural, or urban environment. The visual qualities, settings, and any irreplaceable visual resources at Johnston Atoll are evaluated. The ROI for visual resources includes Johnston Atoll and its reef.

Johnston Atoll's setting is a remote Pacific island. It is a group of four, flat, mostly artificial islands. The visual qualities on the island include the buildings, the presence of birds (especially on the outer islands), and the most dominant feature, the runway/taxiway complex, which occupies most of Johnston Island. Roads and parking lots cover most of the rest of the surface, while crushed coral and sparse grasses characterize the unpaved areas and the surface of the outer islands. Few trees and bushes are present, most of them on Johnston Island. The nearshore reef and ocean can be seen from all points on Johnston Atoll. No irreplaceable visual resources have been identified at Johnston Atoll.

3.2.11 **Water Resources**

This section addresses surface and groundwater resources and their quality. The ROI for water resources includes the groundwater present on the islands and the nearshore surface waters within the lagoon area of Johnston Atoll.

3.2.11.1 *Surface Water*

No surface waters or natural, permanent freshwater bodies occur on Johnston Atoll. Their absence is due to high permeability of the soil, low rainfall, small land area, flat topography, and high evaporation rates. Natural freshwater bodies exist only as occasional, ephemeral puddles on man-made substrates where the ratio of surface water runoff to permeation is approximately 1:1. Because there are no natural, permanent freshwater bodies, freshwater is produced locally by desalination of saline groundwater, as discussed in Section 3.2.9.

3.2.11.2 *Groundwater*

A thin lens of brackish water underlies the original portion of Johnston Island (central 60-acre portion that existed prior to dredge and fill operations). This lens of tea-to coffee-colored groundwater lies at a depth of 4–8 feet below ground surface (bgs). The water bears a slight smell of hydrogen sulfide, a result of soluble organic matter from the unmined guano deposits. With time, this thin lens is expected to extend into the fine colloidal material of the fill areas. The original brackish water lens was 4–10 feet thick. Following construction of a reinforced concrete seawall around most of Johnston Island in the early 1960s, the lens is now 8–20 feet thick in the central part of the island.

Saline groundwater flows through the porous island structure at an estimated rate of 1.6–3.3 feet/year and at depths of 4–14 feet bgs. Groundwater flow is from east to west in the same general direction

as the ocean currents. Saline groundwater is generally encountered at an elevation of 2 feet above msl, with minor fluctuations due to tidal conditions (USACHPPM and Raytheon 2000).

In terms of a resource, fresh groundwater for drinking water purposes is not present on Johnston Atoll. Brackish groundwater (which is in contact with and recharged by nearshore waters of the lagoon) is collected and desalinated at great expense. Saltwater from the lagoon is used for other (non-potable) purposes. Saltwater is pumped from the lagoon on the north side of the island to Facility 3 (Saltwater Pumphouse), where it is then used for sanitary facilities, fire protection, and non-contact cooling water.

3.2.11.3 *Nearshore Ocean Water Resources*

The four islands of Johnston Atoll reside upon a coral reef that is approximately 11 miles in length, 21 miles in circumference, and trends from the northeast to the southwest. A main outer reef lies to the north of the islands, while a poorly developed reef is present to the south (Ogden 1999). Water depths are relatively shallow; an average of 20 feet in depth at 0.5 mile from shore, with an irregular bottom containing coral patches. The water depths around each island are less than 6 feet with the exception of the dredged channel areas (USACE 1987). The West Channel is situated on the western side of Johnston Island, while the Main Channel is situated on the eastern side of Johnston Island. Both channels approach the island from the south. The Turning Basin and Sea Plane Landing Areas are present to the northeast of Johnston Island, within the fringing northern reef (see Figure 1-1).

Johnston Atoll receives four types of general waves: tradewind waves, north swell waves, south swell waves, and southwesterly storm waves. Wave types are described in Table 3-6.

Table 3-6: Ocean Conditions

Type	Generation/Season	Period	Height
Tradewind waves	Tradewinds blowing from east to northeast, throughout the year.	6–8 seconds (outer reef) 4 seconds (inner reef)	4–10 feet (outer reef) 1–2 feet (inner reef)
South swell waves	Southern Hemisphere storms from April to September.	12–20 seconds (deep water)	1–6 feet (deep water)
North swell waves	Severe North Pacific storms and low-pressure zones during the year, but most prevalent October through March.	12–18 seconds (deep water)	5–15 feet (deep water)
Southwesterly storm waves	Local fronts or low-pressure systems, generally infrequent.	6–10 seconds	10+ feet

Source: USACE 1984

The Atoll lies near the southern portion of the North Pacific Ocean gyre and is in the zone of the North Pacific Equatorial Current (Coles et al. 2001). This current moves water past the southern Hawaiian Islands toward Johnston Atoll. The eastward-flowing North Equatorial Countercurrent may also bring water from other tropical areas. Prevailing currents are influenced by tradewinds and the North Pacific Equatorial Current to have a net flow to the west, both in and out of the lagoon. This flow is stronger in the winter than in the summer (Coles et al. 2001). Like other mid-Pacific atolls, tides are mixed and semi-diurnal, with the tidal range at Johnston Atoll being only 3.4 feet. The high tides are 29 minutes later and low tides are 23 minutes later than in Honolulu, Hawaii (USACE 1987).

Previous studies of Johnston Atoll have found that water quality varies, depending upon the substrate, position on Johnston Atoll, and the history of dredging, erosion, and discharge at the location (USACE 1987). In general, nearshore water quality at Johnston Atoll is typical of coral reef conditions with an annual temperature range of 77°F to 80.6°F, clear oceanic water, and a surface salinity of 34.6–34.8 parts per thousand (Coles et al. 2001).

3.2.12 Cultural Resources

Cultural resources can include three categories: archaeological resources, historic properties, and traditional resources. For this analysis, the ROI is synonymous with the Area of Potential Effect, as defined by NHPA regulations. The ROI for the analysis of cultural resources includes all areas within Johnston Atoll.

According to criteria (36 CFR Part 60.4) used to determine eligibility for the National Register of Historic Places (National Register), a district, site, building, structure, and objects is considered “significant” if it meets one of the following conditions:

- Is associated with events that have made a significant contribution to the broad patterns of history.
- Is associated with the lives of persons significant in the past.
- Embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction.
- Has yielded or is likely to yield, information important to prehistory or history.

To be listed in or considered eligible for listing in the National Register, a cultural resource must be considered significant as defined above and must possess integrity of location, design, setting, materials, workmanship, feeling, and association. Integrity is defined as the authenticity of a property’s historic identity, as evidenced by the survival of physical characteristics that existed during the property’s historic or prehistoric occupation or use. If a resource retains the physical characteristics it possessed in the past, it has the capacity to convey information about a culture or people, historical patterns, or architectural, engineering design, and technology.

Compliance with requirements of cultural resource laws and regulations ideally involve four basic steps:

- Identification of significant cultural resources that could be affected
- Assessment of the impacts or effects of proposed actions
- Determination of significance of potential historic properties within the ROI
- Development and implementation of measures to eliminate or reduce adverse impacts

The primary law governing cultural resources in terms of their treatment in an environmental analysis is the NHPA, which addresses the protection of archaeological, historic, and traditional resources. Under the traditional resources, pursuant to the Native American Graves Protection and Repatriation Act, no evidence of Native Americans exists at Johnston Atoll. In compliance with the NHPA, the Air Force has consulted the Council, as required by Section 110 of the Act.

In 1994, an archaeological survey was conducted at Johnston Atoll to determine compliance with the NHPA (Knudsen 1994). The survey consisted of an extensive literature review of existing

documents and a determination of the existing structures based upon significance in American history, architecture, archaeology, engineering, and culture. Based on the review, a recommendation was provided that no cultural sites exist, and that the structures at Johnston Atoll were not eligible for listing on the National Register. The recommendations were based on the information that Johnston Atoll was used primarily for military purposes since 1939, and has been extensively reworked and includes (portions of) man-made islands. In terms of cultural resources: “No cultural resources exist at Johnston Atoll. Cultural resources are understood to mean historic property, a traditional use area, and sacred or religious site. No indigenous populations existed on Johnston Atoll at anytime in history; therefore, no traditional use or sacred sites exist” (Knudsen 1994).

In 2003, the *Historic Building Inventory and Evaluation for Johnston Atoll* (Earth Tech 2003) was provided to the Council for review and comment. The HBIE described the early known history of Johnston Atoll. It was believed to have been sighted by a fleet of Dutch ships in January of 1625. The next reported sightings include one in 1786 by the Spaniard Don Jose Comisares and one in 1796 by Don Quintana. In 1796, the American Brig *Sally* and the British schooner *Prince William Henry* ran aground on the marginal reef. Published accounts of the encounter indicated, “The main island is a guano-covered patch of sand, which is about 1,000 yards long and about 200 yards wide. The highest elevation is 44 feet at the northern end. Approximately a mile and one quarter to the northeast of the larger island is a smaller island of about 200 yards in diameter, reaching to a height of 8 feet” (DNA 1994). The islands were again encountered in 1841 and mapped by Charles Wilkes. He indicated that “...there are two low islets; the one to the westward was covered with bushes, but no trees; the other was no more than a sand bank.” With little land mass, no fresh water, and few other resources to support a human population, evidence of human habitation was unlikely and not noted.

The HBIE also documents the claims to the islands during the Guano mining period of the mid-to-late 1800s. The Atoll was annexed by the United States following the enactment of the Guano Act of 1856. Several claimants from California, Hawaii (which was rescinded), and Great Britain also claimed the islands. The claims usually involved mining of some guano, erecting a flag, and occasionally erecting a shack.

Also documented was the 1923 Tanger expedition. Accounts of the expedition note the presence of a wharf and guano hauling tramline, but no other prehistoric evidence of human habitation. The account indicates, “Hundreds of sea birds were the principal inhabitants of the islands. The reefs and shallow lagoons abounded with fish and other marine life.” The account also documents the types of plants and animals present; these accounts do not indicate introduction of alien species associated with human habitation.

Results of the HBIE indicated the following:

- No pre-World War II facilities are present on Johnston Atoll; the history prior to U.S. military occupation is sporadic and largely undocumented.
- The World War II history of Johnston Atoll is unremarkable and ancillary to the significant events that occurred during the war. Few features from the time period remain, and the physical integrity of most of those has been lost.
- The landscape and facilities on the four islands of Johnston Atoll have been radically and dramatically changed over the last 60 years; hundreds of facilities have been demolished, and nearly all of the extant facilities have been modified on several occasions.

- Facilities associated with atmospheric nuclear testing activities have been demolished, are in a state of significant decay, or are situated within a radiologically controlled area. The historic landscape of the missile launch complex is essentially destroyed.
- The history of the JACADS Facility is barely 12 years in age, and there is insufficient historical perspective within which to evaluate the properties. The facility is a product of planned obsolescence; its life cycle is nearly complete; and the facility is slated for dismantlement in accordance with its RCRA Part B Permit (Earth Tech 2003).

The HBIE concluded “that there are no historic properties on Johnston Atoll with sufficient historical associations or physical integrity to be recommended as eligible for inclusion on the National Register” (Earth Tech 2003). The Council has concurred that there are no historic properties at Johnston Atoll.

3.2.13 Hazardous Materials and Hazardous Waste Management

Hazardous materials and hazardous waste management activities at Johnston Atoll are governed by specific environmental regulations. For the purpose of the following analysis, the term hazardous waste or hazardous materials will mean those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 et seq., and RCRA, 42 U.S.C. §§ 6901–6992. In general, these include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, may present an unreasonable risk to health, safety, and the environment when released.

Transportation of hazardous materials is regulated by the DOT regulations within Title 49 CFR.

The ROI encompasses all geographic areas of Johnston Atoll that are exposed to the possibility of a release of hazardous materials or hazardous wastes. The ROI for known contaminated sites includes the area within Johnston Atoll boundaries, as well as soil and groundwater contamination that originated on Johnston Atoll but is known to have migrated off into the adjacent lagoon. The areas of known site contamination are being addressed under RCRA Part B Permits. The Air Force maintains one RCRA B Permit (Permit No. TT9-570-090-002) for the operation of a hazardous waste treatment and storage facility, and the Army maintains one RCRA Part B Permit (Permit No. TT0-570-090-001) for the treatment, storage, and disposal of chemical munitions at Johnston Atoll. The actions associated with both of these permits are discussed in more detail in the following sections.

3.2.13.1 RCRA Permits and Radiological Contamination

Johnston Atoll is under the jurisdiction of the EPA Region 9 Administrator and is not regulated by any state environmental agency. The Air Force and Army maintain two separate regulatory-driven permits as required by RCRA. These RCRA Part B Permits have been issued to the Air Force and Army for governing environmental actions at Johnston Atoll. RCRA typically address actions at currently operating facilities. The RCRA process (in general) includes the following:

- RCRA Facility Assessment
- RCRA Facility Investigation
- Corrective Measures Study
- Statement of Basis and Permit Modification
- Corrective Measures Implementation (including short-term operations and maintenance)
- Operation and Maintenance (O&M) (long-term)

Radiological contamination was addressed by DTRA, pursuant to the Defense Environmental Restoration Program (DERP), a program that provides for the cleanup of hazardous substances associated with past DOD activities and is consistent with CERCLA, as amended. The permits and radiological contamination project are discussed below.

Air Force RCRA Part B Permit. On 30 April 2002, EPA Region 9 issued a renewed hazardous waste permit (Permit No. TT9-570-090-002) to the Air Force for the operation of a hazardous waste treatment and storage facility, solely for the purpose of conducting corrective actions on existing SWMUs and areas of concern (AOCs). An overview of the SWMUs and AOCs on Johnston Island is presented in Figure 3-7. No additional hazardous waste will be brought to Johnston Atoll for treatment or storage (EPA 2002).

Air Force sites addressed under the RCRA Part B Permit include 12 SWMUs and 3 AOCs. One additional site, being addressed as part of the termination of the Air Force mission is also included in Appendix F. For an overview of each of these sites, please refer to Appendix F.

The environmental status of the Air Force sites, outlined in Appendix F, and addressed under the Air Force RCRA Part B Permit and the termination of the Air Force mission, is presented in Table 3-7. No Further Action is specified for six of the sites, long-term monitoring is specified for eight of the sites; and further investigation/assessment or removal actions are required for the two remaining sites before final site remedies can be selected.

Table 3-7: Environmental Status of SWMUs and AOCs Associated with Air Force RCRA Part B Permit (Permit No. TT9-057-090-002)

SWMU/ AOC No.	Description	Environmental Status	Anticipated LUCs
1	Solid Waste Burn Pit	Soil excavation and treatment, biomonitoring in adjacent lagoon	LTM (lagoon)
2	Former HO Storage Area	Management of dioxin-contaminated soil, excavation and treatment of dioxin contaminated soil, biomonitoring in adjacent lagoon	LTM (lagoon)
5	Recycle Yard	Soil excavation and treatment/disposal	To be determined
6	Mixed Metal Debris Area	Groundwater monitoring, cap inspection and maintenance	LTM (groundwater and cap), prohibit excavation and construction in area
7	Vehicle Salvage Yard	No Further Action ^{DTRA}	None
9	Building 780, Hazardous Waste Storage Area	Conduct further soil and groundwater characterization when activities are terminated, groundwater monitoring	To be determined
15	Aboveground JP-5 Storage Tanks	Conduct further soil and groundwater characterization when tanks are emptied and/or removed, groundwater monitoring	LTM (groundwater)
16	Power Plant Spill Site	Management of PCB-contaminated soil, removal and treatment of PCB- and petroleum-contaminated soil and groundwater, groundwater monitoring, biomonitoring in adjacent lagoon (in conjunction with AOC-1)	LTM (groundwater and lagoon)
18	Temporary Drum Storage Area	No Further Action ^{DTRA}	None
19	Motor Pool	No Further Action	None
21	Maintenance Shops	No Further Action	None

SWMU/ AOC No.	Description	Environmental Status	Anticipated LUCs
22	Paint Shop	No Further Action	None
AOC-1	MOGAS Site	Management of PCB-contaminated soil, removal and treatment of PCB- and petroleum-contaminated soil and groundwater, groundwater monitoring, biomonitoring in adjacent lagoon (in conjunction with SWMU No. 16)	LTM (groundwater and lagoon)
AOC-2	Swimming Pool Site	Conduct further soil and groundwater characterization, excavation of impacted soil (if warranted), groundwater monitoring (in conjunction with AOC-3)	LTM (groundwater)
AOC-3	Taxiway Site	Conduct further soil and groundwater characterization, excavation of impacted soil (if warranted), groundwater monitoring (in conjunction with AOC-2)	LTM (groundwater)
UST/POL System Closure ^a	Historical UST and POL System Closure Action	No Further Action	None

Note: All actions being conducted by the Air Force with the exception of those designated ^{DTRA}.

LTM long-term monitoring

MOGAS motor gasoline

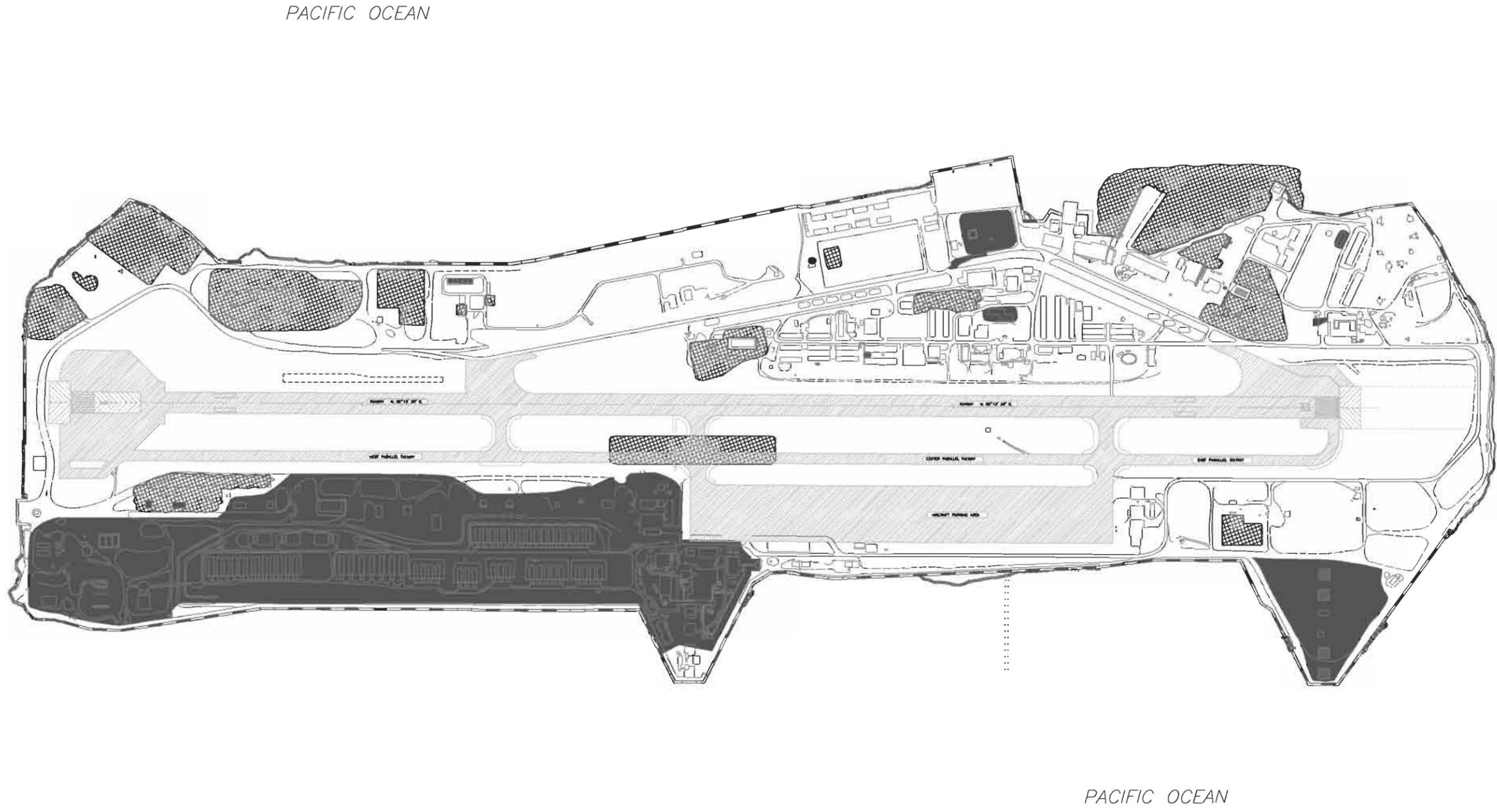
POL petroleum, oil, and lubricant

UST underground storage tank

^a This action is not associated with the Air Force RCRA Part B Permit; it is being conducted as part of the termination of the Air Force mission.

The most environmentally significant action associated with the permit is the thermal treatment of dioxin and polychlorinated biphenyl (PCB) contamination at two former hazardous waste management areas (SWMU No. 2 and SWMU No. 16). The permit controls the hazardous waste treatment process to ensure protection of human health and the environment. The thermal treatment is anticipated to be completed by April 2004. Once cleanup is complete, the TDS will be shut down, disassembled, and removed from Johnston Island. The demobilization of the TDS is anticipated to be completed by June 2004.

The TDS has numerous requirements for safe operation, including air emissions that are protective of human health and the environment. These emissions not only include allowable emissions, but also a series of dependent performance standards. The resulting emission standards (not to exceed) are specified in Table 3-8.



LEGEND

-  Permanent Structure
-  Seawall
-  Air Force RCRA Part B Permit SWMUs and AOCs
-  Army RCRA Part B Permit SWMUs and AOCs

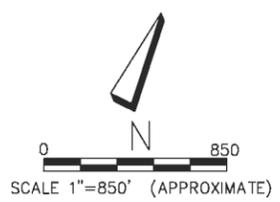
Note:
Solid Waste Management Units and Areas of Concern are not present on the outer islands.

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane, Feet, Clarke 1866
Elevation Datum: MLLW-0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

Aerial Photography, 12/18/1969
Development Plan, Defense Atomic Support Agency, 1970
Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
Final Environmental Baseline/Property Transfer Survey, 1999
Final Environmental Management Plan, Johnston Atoll, 2000



**Figure 3-7
Overview of
Solid Waste Management Units
and Areas of Concern
Johnston Island
Johnston Atoll**

Table 3-8: Emission Standard for Thermal Desorption System

Constituent	Performance Standard
CO or hydrocarbons, as a surrogate for listed organic pollutants other than dioxin/furans	100 ppm by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane.
Hydrocarbons	10 ppm by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane.
Particulate matter, as a surrogate for other metals (antimony, cobalt, manganese, nickel, and selenium)	34 mg/dscm when corrected to 7 percent oxygen.
Hydrogen chloride and chlorine gas combined	77 ppm by volume, combined emissions, expressed as hydrochloric acid equivalents, dry basis and corrected to 7 percent oxygen.
Low-volatile metals (arsenic, beryllium, and chromium combined)	Arsenic, beryllium, and chromium in excess of 97 mg/dscm, combined emissions, corrected to 7 percent oxygen.
Semivolatile metals (lead and cadmium combined)	120 micrograms per dry standard cubic meter, combined emissions, corrected to 7 percent oxygen.
Mercury	45 mg/dscm corrected to 7 percent oxygen.
Dioxin/furans	0.2 nanogram toxicity equivalent per dry standard cubic meter corrected to 7 percent oxygen.

mg/dscm milligram per dry standard cubic meter
ppm part per million

Army RCRA Part B Permit. The Army holds one RCRA Part B Permit (Permit No. TT0-570-090-001) with EPA Region 9 for the treatment, storage, and disposal of chemical munitions, as well as secondary waste generated from these activities.

Army sites addressed under the RCRA Part B Permit include 131 SWMU and AOC sites (see Appendix F). The locations of the SWMUs and AOCs on Johnston Island are presented in Figure 3-7. These sites are being evaluated with corrective action sampling that occurred in October 2003. The corrective measures (which have not yet been determined) may include land use controls (LUCs). Any LUCs stipulated for any of the SWMUs or AOCs will be included in the Final Environmental Baseline Survey (EBS) for Johnston Atoll.

Also included in the Army RCRA Part B Permit is the operation of the JACADS Facility. The JACADS Facility had numerous requirements for the safe operation of the facility, including requirements for air emissions that were protective of human health and the environment. These emission requirements included not only allowable stack emissions, but also a series of dependent performance standards. The resulting maximum emission levels (not to exceed) included the following (EPA Region 9 1998):

- Particulate matter 180 mg/dscm when corrected to 7 percent oxygen
- Hydrogen chloride emissions shall not exceed 1.8 kilograms per hour or 1 percent of the hydrogen chloride in the stack gas prior to entering pollution control equipment
- Agent concentration in any incinerator exhaust not exceeding the following levels:
 - Non-persistent nerve agent = 0.0003 milligrams per cubic meter (mg/m³)

- Persistent nerve agent = 0.0003 mg/m³
- Mustard gas = 0.03 mg/m³
- Dioxins and furans (total equivalent) not exceeding 0.000000021 gram per second

3.2.13.2 Radiological Contamination

Johnston Atoll was the site of a program to conduct very-high-altitude atmospheric nuclear weapons testing. In 1962, activities associated with OPERATION DOMINIC resulted in aborted events that caused radiological contamination at Johnston Atoll. These events are discussed below along with DTRA actions taken to address the contamination.

Missile Event History. The first high-altitude test of a Thor missile (BLUEGILL) with a nuclear test device was launched from Johnston Island on 03 June 1962. Although the missile apparently flew a normal trajectory, the tracking system lost track of the missile as it neared the point of planned detonation. With ships and aircraft in the vicinity and no way of predicting where the nuclear test device would detonate if the test continued, the RSO gave the signal to destroy the missile. Destruction occurred approximately 15 minutes into the flight by a non-nuclear explosion. The aborted event occurred approximately 36 kilometers (22 miles) downrange and at high altitude. Due to the distance of the abort from Johnston Atoll, it is unlikely that contamination from the destruction of the missile and test device reached Johnston Atoll. This event has, therefore, been excluded as a contributor to Johnston Atoll radiological contamination (DTRA 2002).

The second high-altitude launch of a Thor missile (STARFISH) with a nuclear test device occurred on 20 June 1962. After flying a normal course for the first minute, the missile's rocket motor stopped, and the RSO ordered destruction of the missile. Although specific trajectory information regarding this launch is limited, it has been determined through personal communications with two eyewitnesses that the non-nuclear detonation from the event occurred directly over or nearly directly over the LE-1 launch pad. Two references place the detonation altitude at 28,000 feet and a third places the altitude at approximately 30,000–35,000 feet. One experimental reentry pod, the instrument pod, and various missile parts fell on Johnston Island. A substantial amount of debris fell on Johnston Island, Sand Island, and in the surrounding water. Navy Explosive Ordnance Disposal and Underwater Demolition Team swimmers spent 2 weeks recovering debris from the lagoon waters around Johnston Atoll. They recovered and disposed of approximately 250 pieces of debris; some were radiologically contaminated (DTRA 2002).

By far the most significant source of contamination on Johnston Island was the result of the third high-altitude test in the series, BLUEFISH PRIME. On 25 July 1962, the launch team made their second attempt to launch the BLUEFISH PRIME test device. For this event, one pod and two reentry vehicles, each heavily instrumented, and the test device itself were mated to the Thor missile. The missile malfunctioned after ignition. Before liftoff, the RSO destroyed the missile and test device by radio command. The resulting explosion and fire of the missile and test device caused extensive damage to the LE-1 launch pad and associated equipment. Although destruction of the warhead prevented any possible nuclear explosion, it caused extensive radioactive contamination on the launch pad. Contaminated debris was scattered throughout the pad area. The explosion and wind carried most of the particulate contamination into the lagoon northwest of the RCA (DTRA 2002).

Cleanup Summary. DTRA legacy organizations began cleanup of Johnston Atoll immediately to resume testing. The primary contaminant of concern is plutonium (which quickly oxidizes to plutonium oxide) from the weapons-grade plutonium originally in the warheads. The chemical and

physical properties of plutonium oxide limit the radiological risk to humans and inhibit migration within the Johnston Atoll environment.

The agency repeatedly surveyed the contamination, reduced it by using available and specially developed technologies, and shipped large quantities of material off-island for appropriate disposal. Cleanup efforts also included the establishment of the fenced, 24-acre RCA on Johnston Island for placement of contaminated material that was found throughout Johnston Atoll during numerous radiological surveys. In September 2002, the EPA recommended that the cleanup standard for Johnston Atoll be 13.5 picocurie per gram (pCi/g) of coral soil. Radiological surveys have shown that Johnston Atoll's surfaces and buildings meet this cleanup standard (DTRA 2002).

Groundwater investigations in 1999 concluded that in-situ groundwater concentrations (at the area of maximum potential contamination) were 1 percent of the Federal drinking water standard for alpha-emitting radionuclides. Tests indicated that plutonium oxide does not go into solution under environmental conditions encountered at Johnston Atoll. There is also no evidence to indicate that plutonium oxide is mobile in Johnston Atoll soils (DTRA 2002). The Nuclear Regulatory Commission does not regulate the plutonium or plutonium oxide on Johnston Island, because Johnston Atoll is not under their jurisdiction. However, DTRA utilized their plutonium air standard for the general public (10 CFR Part 20 Subpart B); air monitoring at Johnston Island indicates that concentrations were well below the standard (DTRA 2002).

Biota sampling, analysis, and risk assessment indicated that the species present at Johnston Atoll are not at significant risk from the existing radiological contamination. An analysis of consumption by humans of plutonium oxide-contaminated fish at Johnston Atoll estimates that the risk to humans is similar to current radiation risks from commercially available seafood, and that resulting exposure is below public radiation exposure limits (DTRA 2002).

A sediment sampling program in the lagoon found that the highest concentrations of plutonium oxide are at sediment depths of 15–30 centimeters, presenting minimal risk to humans or the marine environment (DTRA 2002).

Approximately 240 tons of contaminated metal debris, 200 cubic meters of concrete debris, and approximately 45,000 cubic meters of coral soil above the cleanup standard of 13.5 pCi/g were buried in the former RCA in a landfill capped with at least 61 centimeters of clean coral soil to limit human exposure and further release to the environment. Only 1.1 percent of the original amount of weapons-grade plutonium is contained within the landfill; 87 percent is in the lagoon; the remainder, 11.9 percent, was shipped off-island during earlier cleanup activities or was incorporated into the island when it was expanded by dredge-and-fill operations. This action was selected by DTRA as the preferred alternative pursuant to the DERP. The actions taken meet applicable or relevant and appropriate requirements and were coordinated with the Air Force, EPA, and USFWS. A comprehensive public involvement effort was conducted over a 3-year period. Permanent markers identify the area of the landfill situated within the former RCA (DTRA 2002).

3.2.13.3 *Hazardous Materials Management*

The BOS contractor and individual tenants at Johnston Atoll are responsible for the proper handling and disposal of any materials that they use. Det 1, 15 AW maintains a Hazardous Materials Management Plan and has implemented a Spill Prevention Control and Countermeasures (SPCC) Plan that establishes responsibilities and provides spill prevention guidelines and contingency plans in the event of a hazardous materials release. The materials described in this section are used on a small, consumptive basis, and are not covered under either of the RCRA Part B Permits. The

hazardous materials most commonly used on Johnston Atoll include a variety of petroleum products, solvents, cleaners, and pesticides (see Section 3.2.13.7).

3.2.13.4 Hazardous Waste Management

Normal operations at Johnston Atoll produce wastes defined as hazardous by RCRA (40 CFR Part 261). Johnston Atoll has implemented a Hazardous Waste Management Program that establishes procedures, assigns responsibilities, and provides handling guidelines for facilities that generate hazardous waste in accordance with RCRA regulations (40 CFR Parts 260–265). A RCRA Contingency Plan has also been implemented that provides spill prevention and contingency guidelines in the event of a hazardous waste release. Hazardous waste is generated at numerous facilities on Johnston Atoll; these hazardous wastes are collected at eight satellite accumulation points where up to 55 gallons can be stored. Once a satellite accumulation point has reached the 55-gallon limit, hazardous wastes are transferred to the Hazardous Waste Storage Facility (Facility 780) (large quantity generator < 90 days) for storage prior to being shipped off-island for disposal. Hazardous waste is shipped to Clean Harbor, a permitted California-based disposal facility.

3.2.13.5 Storage Tanks

ASTs are managed under the Uniform Fire Code and National Fire Protection Association guidance. The Installation Fire Department monitors the ASTs with respect to these guidance documents. Underground storage tanks (USTs) are subject to RCRA Subtitle I (42 U.S.C. §§ 699 et seq.) and its implementing regulations (40 CFR Part 280). However, it should be noted that since 1998, all known USTs on Johnston Atoll have been closed and have been either removed from service or replaced with other ASTs. The Hazardous and Solid Waste Amendments of 1984 mandated these regulations. An SPCC Plan has been implemented at Johnston Atoll, which establishes responsibilities and provides spill prevention guidelines, as well as contingency plans in the event of a release.

A petroleum, oil, and lubricant (POL) system is in-place at Johnston Island to provide fuel to users that require an on-island fuel source. Fuels are delivered by barge or tanker to the Main Wharf in the north-central part of the island. Motor gasoline (MOGAS) and JP-5 are delivered from the valve intake box through 6-inch pipelines to fuel storage facilities situated in two areas of Johnston Island. The first POL storage area is situated in the northeastern portion of the island (near the Power Plant and Vehicle Maintenance area), and the second is situated in the southeastern portion of the island (POL Tank Farm). A 4-inch JP-5 pipeline runs from the POL Tank Farm to the JACADS Facility. All diesel motors on Johnston Island have been converted to burn JP-5. All other fuel and lubricants are stored in smaller quantities (i.e., drums or 5-gallon buckets).

The POL storage areas consist of the following:

- *Tank 49*: a 567,000-gallon cone-roof tank containing JP-5 situated north of the Power Plant.
- *Tank Farm 50*: six horizontal, 25,000-gallon cylindrical tanks located east of the vehicle maintenance area. Three (Tanks 52, 53, and 54) contain JP-5; three (Tanks 55, 56, and 57) contain MOGAS. A service station island adjacent to Tank Farm 50 is used to issue MOGAS to vehicles and JP-5 to tank trucks for delivery to various end users.
- *POL Tank Farm*: used in support of aircraft refueling and support of the JACADS Facility. The tank farm comprises two 567,000-gallon ASTs for storing JP-5, a tank truck loading assembly, a pump complex with electrical equipment, and an outdoor POL storage area.
- *Other Facilities*: a propane AST situated near the north-central portion of the island in proximity to the outside refrigeration units associated with the Dining Hall (Facility 519).

Approximately 55 ASTs are present at Johnston Atoll. These tanks range in size from 60 gallons to 567,000-gallons and contain propane, MOGAS, or JP-5 fuel. Since 1998, all known USTs on Johnston Atoll have been closed and have been either removed from service or replaced with ASTs.

3.2.13.6 *Asbestos*

ACM is regulated under OSHA. Asbestos fiber emissions into the ambient air are regulated in accordance with Section 112 of the CAA (42 U.S.C. § 7412), which established the National Emissions Standards for Hazardous Air Pollutants (NESHAP). The NESHAP regulations address the demolition or renovation of buildings containing ACM. The Toxic Substances Control Act (TSCA) (15 U.S.C. §§ 2601–2671) and the Asbestos Hazard Emergency Response Act (AHERA) (15 U.S.C. §§ 2641–2656) also establish requirements for worker protection concerning ACM. AHERA and OSHA regulations cover worker protection for employees who work around or remediate ACM. Johnston Atoll maintains an Asbestos Management and Operating Plan that reflects these regulations.

Two categories describe ACM: friable and non-friable. Friable ACM is defined as any material containing more than 1 percent asbestos (as determined using methods specified in 40 CFR Part 763, Section 1, polarized light microscopy) that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM are those materials that contain more than 1 percent asbestos, but do not meet the other criteria for friable ACM.

Surveys for ACM at Johnston Atoll, were conducted in 1992, 1994, and 2002 (Earth Tech 2002a). Most of the facilities sampled for ACM are situated on Johnston Island. Approximately 569 facilities on Johnston Atoll were surveyed for ACM. The surveys indicated that ACM was either not detected, detected in a friable form, detected in a non-friable form, or detected in friable and non-friable forms. In general, approximately 50 percent of the facilities had no ACM detected, and 50 percent of the facilities had non-friable ACM present. Facility 25 has only friable ACM, while Facilities 4, 20, and 48 have friable as well as non-friable ACM present.

3.2.13.7 *Pesticide Usage*

The Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. §§ 136–136y) regulates the registration and use of pesticides. Pesticide management activities are subject to Federal regulations contained in 40 CFR Parts 162, 165, 166, 170, and 171.

Small quantities (e.g., 2 quarts to 15 gallons) of pesticides, insecticides, rodenticides, and herbicides have been typically stored in Facility 840 (Pesticide Storage Facility). Aerosol and bait pesticide products are used at Johnston Island in accordance with Integrated Pest Management methods as required by the Food Quality Protection Act of 1996 (Pub. L. 104-170). USFWS approval has been obtained for all pesticides used on Johnston Atoll. Johnston Atoll maintains a Pest Management Plan and conducts pest management activities in accordance with AFI 32-1053, *Pest Management Program*. A certified applicator applies pesticides in accordance with manufacturer's instructions. Table 3-9 lists the insecticides, pesticides, rodenticides, and fungicides utilized at Johnston Atoll. Further use/disposal of insecticides, pesticides, rodenticides, and fungicides will continue and will reduce the quantities shown in Table 3-9.

Table 3-9: Insecticides, Pesticides, Rodenticides, and Fungicides Utilized at Johnston Atoll

Product Name	Manufacturer	Material Usage	Stock	Annual Usage
Drax	VW&R	Ant Baiting	15 pints	NA
Talon	VW&R	Rodent Baiting	32 pounds	400 pounds
Maxforce Ant Kill	VW&R	Insect Control	12 boxes	4 boxes
Maxforce Roach Control	VW&R	Roach Control	20 boxes	5 boxes
Boracare	VW&R	Fungus Control	20 gallons	NA
Round-up	VW&R	Vegetation Control	20 gallons	40 gallons
Garlon-4	Dow Elanco	Vegetation Control	17.5 gallons	NA
Demon E	VW&R	Insect Control	18 pints	4 pints
Dragnet	VW&R	Insect Control	11 quarts	NA
Gentrol	VW&R	Insect Control	7 pints	10 pints
Killmaster	VW&R	Insect Control	6 gallons	NA
Tempo	VW&R	Insect Control	12 pints	NA
CB-40	VW&R	Insect Control	225 pounds	NA
Wasp Freeze	VW&R	Insect Control	32 cans	50 cans

NA not available

VW&R Van Waters and Rogers

3.2.13.8 Polychlorinated Biphenyls

Commercial PCBs are industrial compounds produced by the chlorination of biphenyls. PCBs are used in electrical equipment, primarily in capacitors and transformers, because they are electrically non-conductive and stable at high temperatures. Disposal of these compounds is regulated under TSCA (15 U.S.C. §§ 2601 et seq.), which banned the manufacture and distribution of PCBs except those used in enclosed systems. By Federal definition, PCB equipment contains 500 ppm or more, whereas PCB-contaminated equipment contains PCB concentrations of 50 ppm or greater, but less than 500 ppm. Under TSCA, the EPA regulates the removal and disposal of sources of PCBs containing 50 ppm or more. The applicable regulations are more stringent for PCB equipment than for PCB-contaminated equipment.

Thirty pieces of PCB-containing equipment were removed from Johnston Atoll in 1995. PCB-containing equipment associated with the former USCG LORAN Station on Sand Island was disposed of in 1992. DTRA completed removal of their PCB-containing equipment (one transformer) in 2002 (Earth Tech 2002c). Equipment containing PCBs on Johnston Atoll has been removed or replaced. PCBs may be present in ballasts of older light fixtures (manufactured prior to 1979). While not defined as PCB equipment, these older light ballasts could contain sealed PCB-containing components.

3.2.13.9 Radon

Radon is a naturally occurring, colorless, and odorless radioactive gas that is produced by radioactive decay of naturally occurring uranium. Uranium decays to radium, of which radon gas is a by-product. Radon is found in high concentrations in rocks containing naturally occurring uranium, such as granite, shale, phosphate, and pitchblende. Atmospheric radon is diluted to insignificant concentrations. Radon is a concern in enclosed areas, such as basements.

There are no Federal standards regulating radon exposure at the present time. Air Force policy requires implementation of the Air Force Radon Assessment and Mitigation Program (RAMP) to determine levels of exposure of military personnel and their dependants. The RAMP is designed to study family housing and schools on Air Force property. Because no family housing or schools are present at Johnston Atoll, no RAMP study has been conducted. Additionally, no basements or subsurface, habitable structures where radon could accumulate are present at Johnston Atoll.

3.2.13.10 Medical/Biohazardous Waste

Medical or biohazardous waste is considered a solid waste that is generated in the diagnosis, treatment, or immunization of humans or animals. OSHA regulations (29 CFR Part 1910) set forth requirements for the management of medical and biohazardous waste to ensure safe and healthy working conditions for workers. In following the regulations, contaminated reusable sharps and other regulated wastes are required to be placed in puncture-resistant, color-coded, leak-proof containers as soon as possible after use. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, and treatment.

Johnston Atoll has a Health Clinic (Facility 20) that is capable of providing ambulatory care, including minor illness, injuries, and noninvasive diagnostic procedures (occupational medical health services and emergency care to stabilize patients for evacuation). Medical wastes are sterilized by autoclave twice a week. Sharps are shipped to Hawaii Bio-waste System in Honolulu, Hawaii for proper disposal. The remainder of the waste (after autoclave treatment) is disposed of on-island in the air curtain burner as general waste.

3.2.13.11 Ordnance

In 1971, an Interservice Support Agreement between the Army and the Air Force provided for 41 acres on the southwest side of Johnston Island to be used by the Army as a chemical agent and munitions storage area. This acreage was home to the RHSA and the JACADS Facility, which completed its Munitions Campaign (complete destruction of stockpiled chemical munitions) on 29 November 2000. USACAP and its predecessor provided integrated command and control of Army units stationed at Johnston Atoll and its mission included safe, secure, and environmentally compliant receipt, storage, surveillance, reconfiguration, and on-island transport of unitary chemical munitions. This command occasionally provided transport and security for receipt and movement of chemical surety materials arriving on island by sea or air. USACAP also provided support to JACADS operations such as security, quality assurance, surety, and emergency actions. As of 31 August 2001, the USACAP mission was completed, and all USACAP personnel had departed Johnston Atoll.

Two abandoned small arms firing ranges exist at Johnston Atoll: one in the northeast quadrant of North Island, and one at the southwest end of Johnston Island. The Abandoned Firing Range on North Island was satisfactorily remediated (Earth Tech 2002c). The former USACAP Firing Range (Facility 17900) on Johnston Island is being investigated under the Army RCRA Part B Permit. The Army conducted additional sampling there in October 2003, after which corrective actions will be determined.

3.2.13.12 Lead

Human exposure to lead has been determined to be an adverse health risk by agencies such as OSHA and the EPA. Sources of exposure to lead are through dust, soil, and paint. Wastes containing levels of lead exceeding a maximum concentration of 5.0 milligrams per liter (as measured using the Toxicity Characteristic Leaching Procedure) are defined as hazardous under 40 CFR Part 261. HUD presents guidelines for lead in paint in *Guidelines for the Evaluation and Control of Lead-Based*

Paint Hazards in Housing. In general, paint is considered LBP if it contains a lead concentration equal to or greater than 1.0 milligram per square centimeter of lead as measured by an x-ray fluorescence analyzer, or lead equal to or greater than 0.5 percent (5,000 ppm) by dry weight.

The Air Force conducted a LBP survey of Johnston Atoll in 2002 (Earth Tech 2001). Results indicated that approximately 238 facilities had paint that meets the definition of LBP provided by HUD present on a portion of the facility.

3.2.14 Socioeconomics

The scope of this study includes economic activity, population, housing, public services, public finance, transportation, and utilities and infrastructure. It should be noted that Johnston Atoll is not part of a wider economic area, and that socioeconomic elements discussed below are primarily supplied by the DOD to operate Johnston Atoll. The ROI for the purpose of describing and qualitatively analyzing socioeconomic effects is Johnston Atoll, including any connecting points that are economically tied to Johnston Atoll.

3.2.14.1 Economic Activity

The last military mission for Johnston Atoll was the destruction of chemical munitions. The Air Force as host-manager supported the mission, and the PMCSD completed the mission with the closure of the JACADS Facility. The Air Force, with its supporting contractors (e.g., BOS contractors), has spent approximately \$46 million annually. The Army, and its supporting contractors (i.e., BOS contractors), has spent approximately \$105 million annually. The Army funds the USFWS managing the NWR at Johnston Atoll.

3.2.14.2 Population

No indigenous human population is present on Johnston Atoll. The population of Johnston Atoll consists of military, government service, and government contractor/civilian personnel assigned or employed on Johnston Atoll for varying periods of time, none permanently. Historically, population density has varied between approximately 1,000 and 1,300 people per 1-square-mile area. The population under Air Force host-management prior to the termination of the Air Force mission was approximately 900.

Table 3-10 illustrates the assigned population and associated population drawdown as the termination of the Air Force mission proceeds and closure is achieved.

3.2.14.3 Employment

The individuals comprising the Johnston Atoll population maintain residency in various CONUS and/or Hawaii locations. These individuals are assigned or employed for the sole purpose of performing day-to-day Johnston Atoll job-related operational duties and functions. No unemployed individuals reside at Johnston Atoll. As a result of operational downsizing, numerous individuals have sought or are in the process of seeking employment at other Pacific island (e.g., Kwajalein, Hawaiian islands) or CONUS locations (e.g., specialized personnel seeking employment at Umatilla).

3.2.14.4 Housing

Housing on Johnston Atoll is provided by the Air Force. Single-family-type housing is available in four units: Commander's Residence (Facility 1), VIP Quarters (Facilities 295 and 296), and the former USACAP Commander's Quarters (Facility 297). The remaining housing is dormitory or apartment-style quarters (Facilities 16, 18, 208–210, 250–252, 290, 291, 293, 294, 298, 382–387, 414, 418, 520–521, 690–692, and 694–699). General locations are shown in Figure 3-5.

Table 3-10: Assigned Johnston Atoll Population Drawdown

Organization	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	
WDC	402	389	368	352	289	136	108	73	53	47	30	28	TBD	0						
Southwest Research Institute Personnel	89	88	87	81	80	41	37	34	34	24	18	15	TBD	0						
Northwest Demolition	0	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subcontractors	0	0	0	0	0	16	24	28	30	30	22	22	0	0	0	0	0	0	0	0
PMCS	18	16	16	15	15	16	15	15	3	3	3	3	TBD	0						
Subtotal	509	502	480	457	384	209	184	150	120	104	73	68	0	0						
RTSC	300	263	262	259	254	269	280	280	275	263	233	104	0	0	0	0	0	0	0	0
COMBAT COMM	0	0	0	0	0	0	0	0	10	20	20	20	0	0	0	0	0	0	0	0
Air Force	21	20	20	20	20	20	20	19	17	15	14	5	5	2	2	2	2	1	1	0
CH2M HILL/ Subcontractors	35	40	35	35	35	63	63	63	63	63	40	50	65	70	70	70	70	70	70	0
SDVT	11	11	11	11	11	11	11	11	11	11	11	11	0	0	0	0	0	0	0	0
USFWS	3	3	3	3	3	3	3	3	2	2	2	2	3	TBD	TBD	TBD	TBD	TBD	TBD	0
Salvage Contractor	0	0	0	0	0	0	0	0	0	0	13	13	13	13	0	0	0	0	0	0
AAFES	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
Subtotal	372	339	333	330	325	368	379	378	380	374	333	205	86	85	72	72	71	71	71	0
DTRA/Weston/Earth Tech	1	1	1	1	1	0	13	13	13	0	0	0	0	0	0	0	0	0	0	0
Subtotal	1	1	1	1	1	0	13	13	13	0	0	0	0	0	0	0	0	0	0	0
Total	882	842	814	788	710	577	576	541	513	478	406	273	86	85	72	72	71	71	71	0

Notes: 3-person Air Force staff at Hickam AFB not listed.

Population for January through May 2003 as of 30 October 2002, and population for June 2003 through June 2004 updated as of 20 June 2003.

TBD To be determined

CH2M HILL Demolition and TDS contractor

3.2.14.5 *Public Services*

Johnston Atoll has limited services, all provided by the Air Force. The Air Force BOS contractor provides fire protection and security services. Other personal and recreational services are also provided by the BOS contractor and include a Health Clinic, Barber Shop, outdoor movie theater, Library, Dining Hall, Tiki Club, Waikiki Club, golf course, basketball courts, softball field, pool, jacuzzi, gym, marina (with sailboat and scuba rentals), and Base Laundry. The AAFES BX provides small-scale retail facilities and is operated by AAFES.

3.2.14.6 *Public Finance*

Johnston Atoll has limited services with respect to finance. No banking facilities exist at Johnston Atoll. Personnel assigned to Johnston Atoll are provided an account for dining purposes, which are paid (by check) on a scheduled basis or upon their departure. Cash is accepted at most facilities for dining and recreation. Checks can be cashed and accounts settled at the BOS contractor's Finance Department, Cashier Window (Second Floor of the Joint Operations Center – Facility 20). The AAFES BX allows the use of cash and credit cards; this is the only location that accepts credit cards at Johnston Atoll.

3.2.14.7 *Transportation*

On-island transportation includes government-supplied vehicles, golf carts, bicycles, and buses. Transport to Johnston Atoll is by military and commercial aircraft flights. Approximately 36 aircraft use the airfield on a monthly basis (56 percent commercial and 44 percent military). The commercial airlines Aloha, Air Pacific, Polynesian, Air New Zealand, Continental Micronesia, and Qantas use Johnston Atoll Airfield as an ETOPS facility (Spencer 2003). Two barge shipments a month arrive at Johnston Atoll: one cargo shipment from Matson Navigation and one fuel shipment from Aloha Petroleum.

3.2.14.8 *Utilities and Infrastructure*

All of the utilities and infrastructure are provided and maintained by the Air Force. These include communications, drinking water, wastewater treatment, permitted industrial and storm water discharges, and electrical power. The road system on Johnston Island consists of approximately 10 miles of hard surface (asphalt and concrete paved) roadway and approximately 10 miles of gravel (compacted coral) roadway. The buildings at Johnston Atoll include approximately 569 real property inventory listings. Most buildings are situated on Johnston Island, and support housing, dining, retail, entertainment, administrative functions, warehousing, utilities, and JACADS operations. More complete discussions of the utilities and infrastructure can be found in Sections 3.2.3, 3.2.8, and 3.2.9.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter discusses the potential environmental consequences associated with the Proposed Action or No-Action Alternative. To provide the context in which potential environmental impacts may occur, discussions of potential changes to the Johnston Atoll community including population, land use, visual resources, transportation, and public services have been considered. Issues relating to current and future management of hazardous wastes are also discussed. Impacts to the physical and natural environment are evaluated for geology and soils, water resources, air quality, noise, biological resources, and cultural resources. These impacts may occur as a direct or indirect result of the Proposed Action or No-Action Alternative. Possible mitigation measures to minimize or eliminate the adverse environmental impacts are also discussed, where applicable.

Cumulative impacts result from “the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time” (40 CFR Part 1508.07).

Means of mitigating adverse environmental impacts that may result from implementation of the Proposed Action or alternatives are discussed, where appropriate. Mitigation measures are suggested for those components likely to experience substantial and adverse changes under any or both of these alternatives. Potential mitigation measures depend upon the particular resource affected. In general, mitigation measures result in a physical change to the environment; and are defined in NEPA regulations (40 CFR Part 1508.20) as actions that include the following:

- Avoiding the impact altogether by not taking an action or certain aspect of the action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations over the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

This section presents an analysis of the potential impacts to each resource from implementation of the Proposed Action and the No-Action Alternative (Current Management Practices Continue). The methods for analysis of potential impacts are presented in Appendix G. For those aspects of resources that are governed by regulations, the project activities are considered in terms of regulatory requirements. For resources where there are no specific regulatory conditions, impacts are defined by the amount of change to the natural environment resulting from each action.

4.2 Air Quality

4.2.1 The Proposed Action

A positive impact to the air quality at Johnston Atoll would result from the implementation of the Proposed Action because pollutant concentrations would be less than current conditions as a result of the elimination of numerous emission sources associated with normal installation activities (e.g., Power Plant, WWTP, aircraft flights). The closure would also eliminate motor vehicle operations on Johnston Atoll. No new emission sources would be added. No adverse air quality impacts are anticipated from implementation of the Proposed Action.

4.2.2 No-Action Alternative (Current Management Practices Continue)

No change in the air quality at Johnston Atoll is anticipated from the implementation of this alternative. Pollutant concentrations in the area of Johnston Atoll would not change from current levels due to the continued O&M activity at the same level as currently performed. No additional emission sources would be added. Because no increases in emissions are anticipated, no adverse air quality impacts are expected from implementation of this alternative.

4.2.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to air resources. Ongoing JACADS mission closure and D&D activities of Johnston Atoll facilities are expected to cause short-term, localized construction emissions. The *Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll* evaluated potential air quality impacts from D&D activities (Earth Tech 2002b). D&D activities include dust suppression techniques (i.e., wetting, covering stockpiles, and covering trucks transporting materials) to minimize potential impacts. No other actions have been identified that would contribute to cumulative impacts to air quality such that adverse impacts would result.

4.2.4 Mitigation Measures

Because no significant impacts to air quality would occur from implementation of either the Proposed Action or the No-Action Alternative, no mitigation measures would be required.

4.3 Biological Resources

4.3.1 The Proposed Action

4.3.1.1 Vegetation

Generally, the plants currently on Johnston Atoll were introduced as landscape features (lawns, decorative trees, and shrubs) and do not occur naturally. Although Johnston Atoll receives annual average precipitation of just over 26 inches, landscaping vegetation typically receives additional irrigation. The Proposed Action would halt any irrigation practices currently in place. All vegetation on Johnston Atoll, native and introduced, would be dependent on natural precipitation cycles. This would likely have the impact of slightly reducing the amount of cover and forage available to terrestrial animals. Because the original portions of Johnston Atoll were set aside as a NWR in 1926, well before landscape plants were established, it is likely that natural precipitation cycles provide sufficient fresh water to support adequate vegetation for wildlife. The Proposed Action is not likely to have a significant impact on existing flora.

Naturally occurring erosion processes may potentially expose some of the existing buried pipelines and other conduits estimated to exceed 125,000 feet (see Section 4.1.1 for a description of material that may be exposed). No impacts to existing vegetation are expected from such materials becoming exposed through erosion. In places where erosion is sufficient to cause “daylighting” of such material, establishment of vegetation is likely to be prevented by the action of erosion. Only when erosive processes cease will flora have the opportunity to revegetate the area.

4.3.1.2 Wildlife

The predominant terrestrial species of wildlife observed at Johnston Atoll are avian. All avian species found on Johnston Atoll are migratory and are subject to protection under the MBTA. Potentially positive impacts may be seen in the reduction of personnel and military activities because more space usable as habitat would be available.

Exposure by erosion of buried material is not likely to adversely affect avian species on Johnston Atoll. Those species that regularly migrate to the Atoll (i.e., *all* avian species) have long established roosting, foraging, and nesting habits that utilize existing vegetation. As it is unlikely that vegetation will propagate in areas with active erosion, it is equally unlikely that avian species would use these areas. *Seabirds*. Of the 15 species of seabirds known to visit Johnston Atoll, only 5 nest in the area. These nesting species typically use existing shrubs, trees, and bushes for cover and nesting material. The Proposed Action would not affect this practice, as the vegetation is not likely to significantly change.

Shorebirds. Of the 17 species of shorebirds known to visit Johnston Atoll, none has been reported as utilizing the area for breeding purposes. Nevertheless, these migratory birds use Johnston Atoll's vegetation for cover and forage. The Proposed Action would not affect this practice, as the vegetation is not likely to significantly change.

Marine Mammals and Reptiles. Marine mammals that use Johnston Atoll include four cetaceans (whales and their allies) and a pinniped. All species of marine mammals that use Johnston Atoll are protected by the MMPA. Further protection is afforded to the Humpback Whale, listed as endangered by the ESA. The NMFS identifies a number of known or potential impacts to Humpback Whales. These impacts include subsistence-hunting, entanglement in fishing gear, collisions with ships, acoustic disturbance, and habitat degradation (NMFS 1991). Although the NMFS identified these impacts as potentially harmful to Humpback Whales, they certainly are potentially harmful to all cetaceans. With the cessation of mission activities on Johnston Atoll (the Proposed Action), the possibility of any of these disturbances occurring becomes negligible. By extension, other cetaceans found in the area (Cuvier's Beaked Whale, Spinner Dolphin, and Bottlenose Dolphin) would also be unaffected by the Proposed Action.

Potential impacts to the Hawaiian Monk Seal and the Pacific population of the Green Sea Turtle, listed as endangered and threatened, respectively, by the USFWS, are discussed in Section 4.3.1.3 Sensitive Species.

Reef, Fish, Coral, Other Marine Invertebrates, and Algae. The 50-square-mile shallow reef platform that composes Johnston Atoll shows a moderate amount of biodiversity. The Proposed Action would not likely alter the reef or the ecosystem it supports, with a few exceptions. Two species of green algae (*B. pennata* and *C. racemosa*) are abundant on the south side of Johnston Island near the sewage outfall (APMCD 1990; Coles et al. 2001). This abundance may contribute to the eutrophication of the aquatic systems by depleting available dissolved oxygen supplies. Oxygen-dependent marine animals cannot flourish in such areas, and the habitat is generally considered to be degraded. By implementing the Proposed Action, wastewater effluent discharges would be eliminated. The corresponding algal blooms would also diminish, allowing the return of a more natural reef environment.

Use of the West Wharf for food waste dumping would also be discontinued with the Proposed Action. Reef fish and sharks that currently congregate at the West Wharf to take advantage of food waste would need to find appropriate forage elsewhere. The reef associated with Johnston Atoll provides sufficient forage to fish without needing supplementation from anthropogenic sources. The sharks that congregate at the West Wharf are likely responding to the sound of the daily truck as well as the scent of the food waste in the water. Sharks are known to be drawn to a specific area based on sensory (hearing and olfactory) changes in their environment (Johnston et al. 1994). They are also described as generally asynchronous opportunistic feeders on the most abundant prey items, which is often other fish (Motta and Wilga 2001). Once sensory changes cease and the abundant prey items are no longer present, it is likely that the sharks would also disperse. In addition, the sharks and fish

would be weaned from the garbage due to the steady reduction in food wastes over time resulting from fewer personnel present on Johnston Atoll. This would be a beneficial effect, because the area would be returning to a more natural environment (a non-anthropogenic state). Therefore, the Proposed Action would result in a positive impact to these species.

Coralline sands and other materials previously used to enlarge and stabilize the islands will erode, albeit slowly (see Section 4.4.1 for erosion rates [CH2MHill 2003h]). This process may deposit material into the lagoon, or onto live coral reefs. It is also possible that the process may deposit materials into the deeper dredged seaplane lanes that exist at the Atoll. These lanes generally have greater rates of current flow with lower rates of deposition relative to the shallower, naturally occurring original reef depths. Determining the extent of impacts from such erosion and deposition require extensive modeling that is currently unavailable and subject to large levels of uncertainty. Depending on the site of materials deposition, the impact may be minimal to non-existent.

4.3.1.3 *Sensitive Species*

Three animal species on Johnston Atoll are protected under the ESA. Although the endangered Humpback Whale has been sighted outside the lagoon, activities associated with the military mission on Johnston Atoll have had little impact on this cetacean. The cessation of military activities would only serve to decrease any possible impacts.

The endangered Hawaiian Monk Seal's range includes Johnston Atoll. Although seal pupping has occurred at Johnston Atoll, it is rare. Threats to the species within its range include human beach activity near haul-out areas, and entanglement in fishing gear (most notably netting) (NMFS 1983). Discontinuing the current mission on Johnston Atoll would significantly reduce the potential for negative impacts to this species and may contribute to increased seal populations. A well-documented increase in beach counts at French Frigate Shoals occurred following closure of the USCG LORAN Station there (NMFS 1983).

The threatened Green Sea Turtle occurs in large numbers within Johnston Atoll's lagoon (Balazs 1985). The NMFS identifies 26 potential threats to this species within its Pacific range. These potential threats are divided into two categories: nesting environment and marine environment. All potential threats listed in the first category are inconsequential at Johnston Atoll because this species does not nest on Johnston Atoll due to the existence of seawalls and limited beach access. Implementation of the Proposed Action would not result in the removal of these seawalls. In terms of other turtle behavior, particularly feeding, some unknown effects such as changes in feeding behavior or population may occur. With the elimination of discharge from the WWTP, possible reduction of the large algae population existing on the reef near the south side of Johnston Island may occur. This reduction of algae may produce an unknown impact (that has not been studied) on the turtles using the area for feeding purposes.

Of the threats to the Green Sea Turtle that NMFS listed in the Marine Environment category only Environmental Contaminants and Reef Degradation occur at Johnston Atoll and these are listed as "minor threats." The species recovery plan specifically states "[m]ilitary toxic and hazardous waste have contaminated coastal waters at Johnston Atoll (Agent Orange, [and] radionuclides) during the 1960s" (NMFS 1983). The later occurrence of large numbers of turtles at Johnston Atoll (approximately 200 were sighted in 1990) indicates that these environmental contaminants do not (or no longer) have a detrimental effect on the turtles' population size. The Proposed Action is not likely to increase environmental contamination of the marine environment. Reef degradation would also likely decrease with the cessation of wastewater effluent discharges, as described in Section 4.3.1.2.

Both Hawaiian Monk Seals and Green Sea Turtles are particular about the shore conditions at locations where they come ashore. Both species are likely to avoid any beaches littered with debris or with exposed pipelines or conduits. The areas where these materials are currently buried are protected by seawalls or other shoreline protection structures. Neither species currently use these areas (NMFS 1983, Balazs 1985). As buried materials are “daylighted” through erosion, these areas will become less suitable for use by these species. Consequently, such exposure is unlikely to affect these sensitive species.

4.3.2 No-Action Alternative (Current Management Practices Continue)

No change in the environment at Johnston Atoll is anticipated from the implementation of this alternative. Conditions for vegetation (flora), wildlife (fauna), and sensitive species would remain unchanged. No adverse environmental impacts are expected from implementation of this alternative.

4.3.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regard to biological resources. Ongoing JACADS mission closure and D&D activities of Johnston Atoll facilities is expected to cause short-term, localized construction disturbances. The *Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll* evaluated D&D impacts and determined that D&D activities would have a temporary impact on avian species in the area due to noise and vibration from building demolition (Earth Tech 2002b). However, D&D activities include removing birds from work areas, phased work, and working outside of heavy avian use periods. No other actions have been identified that would contribute to cumulative impacts to biological resources.

4.3.4 Mitigation Measures

Because no significant impacts to biological resources would occur from implementation of the Proposed Action or the No-Action Alternative, no mitigation measures would be required.

4.4 Geology and Soils

4.4.1 The Proposed Action

Under the Proposed Action, the Air Force would not maintain the shoreline protection structures (e.g., seawalls). Several evaluations have been completed regarding the condition and projected lifetime of the shoreline protection structures at the Atoll including a *Corrective Measures Study/Feasibility Study* (CMS/FS) (DTRA 2002), a qualitative condition rating in Shoreline Protection Assessment (Appendix E), and an erosion analysis to determine the effects and timeline of erosion as presented in *Draft Recommended No Further Action for SWMU No. 6, Appendix A, An Estimate of Island Erosion and Return to Natural Conditions, Johnston Island* (CH2MHill 2003h). At the termination of Air Force mission, the shoreline protection structures are generally considered competent, and erosion would not be a significant impact. The studies also considered what would occur to the shoreline protection structures if they were not maintained in the future. This information is presented below.

Concern for impacts associated with the gradual erosion of the islands composing Johnston Atoll, and their eventual fate, were initially addressed in the *Corrective Measures Study/Feasibility Study* (CMS/FS) (DTRA 2002). Further evaluation is provided in the Shoreline Protection Assessment (Appendix E), which evaluated the current state of the existing seawall and other shoreline structures. Another separate evaluation was performed by CH2MHill (2003h) that specifically considered possible erosion scenarios and suggested the process by which the island might return to natural conditions. The impact discussion presented below will provide a qualitative assessment of

the potential for seawall failure and eventual erosion of the islands. This discussion focuses on the physical conditions of the islands, the environmental forces at work, and potential scenarios for erosion of the islands.

As described in Section 3.2.3, Johnston Island existed prior to development in its natural size of approximately 60 acres through a series of dredge-and-fill operations. In its present configuration, Johnston Island has a total shoreline of between 8,500 meters (28,000 feet) and 9,100 meters (30,000 feet) in length. Approximately 86 percent of this distance is protected by bulkhead, seawall, or revetment; the remaining 14 percent is either unprotected or protected by concrete rubble or other non-designed features. The Shoreline Protection Assessment of the designed portions of the shoreline protection (Appendix E) rated them according to their expected longevity. Almost 96 percent received the highest rating (remaining life expected to be greater than 10 years); only 1 percent received the lowest rating (remaining life expected to be less than 5 years).

Johnston Island is roughly rectangular in shape, and almost four times longer than it is wide. Its long axis is aligned approximately from the northeast to the southwest, accommodating the airstrip runways. The prevailing winds average 25.4 km/h (15.8 mph) and generally come out of the northeast or the east (Ogden 1999). The CMS/FS prepared by DTRA attempted to put the expected rate of normal erosion into perspective with an analysis of how quickly it might proceed (DTRA 2002). The CMS/FS estimated that seawall protection would last for 50–60 years (in the absence of regular maintenance), and would then be followed by erosion at a rate of about 5–50 acres per year. Using this rate, and assuming that the erosion would proceed down the long axis of the island after seawall failure, the expected time for erosion to consume the “non-original” portion of the island would be from 10 to 100 years. Additionally, the CMS/FS noted that this assessment of high-frequency, low-magnitude, “normal” erosion activity does not take into consideration the possible effects from hurricanes, rising sea levels, tsunamis, or earthquakes (DTRA 2002). Such catastrophic events are described in Section 3.2.5.

The CH2MHill (2003h) evaluation looked at the physical forces exerted on the shoreline of Johnston Island, primarily by wave action, and the resulting long-term changes. In their evaluation, they considered both oceanographic conditions (winds, waves, currents, and water levels) and physical factors on the island that provide resistive forces. In addition, they discussed the potential impacts from tsunamis, hurricanes, and sea level rise, and how they were included in the evaluation process. They conclude that nearly 90 percent of the time the wind direction (and hence the corresponding wave direction) is from the northeastern or eastern sectors. As a result, the assault of these waves on the Johnston Island would primarily affect the long side of the island facing toward the southeast. Their plausible scenario of events in the erosion of the island is divided into three stages, each with a general “order-of-magnitude” estimate of the time it would take until completion. The three stages include:

- Stage 1. The first stage would address the gradual breakdown of the seawall. This would occur in distinct segments as a combination of the physical pounding of waves and the chemical deterioration of the metal and concrete seawall components are broken down. The duration of this stage is estimated to be from 2018 to 2050.
- Stage 2. The next stage would involve perched beach erosion and subsequent shoreline retreat. This process would result in a reduction in the size of the island through shoreline retreat estimated to be on the order of 40 to 50 feet. Assuming all shorelines would retreat, this would be a loss of less than 5 percent of the island area. The duration of this stage is estimated to be from 2050 to 2150.

- Stage 3. The final stage would include continued erosion of the island along with beach formation according to a new equilibrium profile without the seawall structures. The ultimate outcome of this stage would be a Johnston Island that is very similar in size and shape to the Johnston Island that existed prior to discovery and subsequent alteration. To reach the ultimate configuration of the island, they estimate it would take on the order of 400 more years after Stage 2. However, they also discuss the potential results of sea level rise on the island (projected at a constant rate of about 2 feet per 1,000 years). This could result in further reduction of island area to two small “pinnacles” of resistant, cemented sands as the only remnants of land area above sea level at about 1,500 years after Stage 2. The duration of this stage is estimated to be from 2150 to 4000.

An alternate hypothesis might suggest that if seawall protection were not a factor, normal wind and wave activity would be expected to erode the islands from their windward sides and deposit material on their leeward sides. Such activity therefore would cause the islands to move in the direction of their accretion, but not to actually disappear. For Johnston Island, this means that erosion would be expected primarily on the northeast-facing end of the island and secondarily on the southeast-facing side of the island. Deposition would be expected primarily on the southwest-facing end of the island and secondarily on the northwest-facing side of the island. However, because much of the island’s landmass was not naturally formed, it is also likely that the balance between erosion and deposition might not stabilize until reaching the island’s natural size, as suggested in the CH2MHill evaluation (CH2MHill 2003h). Hence, Johnston Island would eventually decrease in size to less than 100 acres, Sand Island to less than 20 acres, and North and East Islands would probably cease to exist. The natural limit of such island movement would be the edge of the guyot, or the reef that runs along the northwestern side of the Atoll (see Section 3.2.3).

The normal processes of erosion and deposition would be altered by the shoreline protection structures (whether maintained or not). This could result in varying the nature and rate of the processes, and whether any migration of the islands would occur. It should be noted that on Johnston Island, where the greatest erosive activity would be expected (on the northeast end of the island), there is little shoreline protection and no engineered structure. Thus, if not maintained, this shoreline could erode down the long axis of the island, eventually attacking shoreline protection structures on the long sides of the island from behind and in front. How this might affect the rate of erosion and eventual shape of the islands is difficult to predict. Also impacted by erosion would be the remaining infrastructure of the island. As sand is removed from the island and deposited in the lagoon, any remaining buildings or aboveground structures would be gradually undermined and eventually broken up. Some building materials like reinforced concrete and metal (such as pipes or structural members) would be more persistent in the environment, and may end up as depositional detritus. At-grade structures such as roadways, runways, tarmac, parking lots, and other paved or concrete covered areas also would be broken up over time. Some of these hardened surfaces, particularly the runways and consolidated coralline deposits (due to their massive nature), would provide greater resistance to the erosive forces than would the unconsolidated coral and sand deposits. However, over time they would also wear away to become finer sediment. Finally, erosion would eventually unearth the remaining subsurface utilities (such as water lines, sewer lines, POL lines, communications lines, or electrical lines). This material would provide a range of resistance, similar to that of the aboveground or at-grade structures. Among the materials expected to be the most resistant are the following:

- Structural Materials. There are approximately 569 listings on the Real Property Inventory for Johnston Atoll. These facilities are constructed of a variety of materials including concrete (e.g., blocks and reinforced), steel, and wood. After removing any hazardous materials, approximately 230 of the 569 Real Property listings on Johnston Atoll would have

been demolished, with construction and demolition debris placed in on-island CDRA or left in-place. Facilities not demolished would be abandoned in-place.

- Asphalt in the Runways, Taxiways, and other Paved Areas. There is one main runway on Johnston Island, which is about 150 feet wide by 9,800 feet long, and a parallel taxiway that is about 80 feet wide by 9,800 feet long. There are adjacent taxiways and parking aprons totaling an additional 2,000,000 square feet of surface. Most, if not all, of these areas are asphaltic that may reach a thickness up to 4 inches. The total volume of this asphaltic concrete material therefore is between 23,000 and 24,000 cubic yards (CH2MHill 2003h).
- Sheet-Piling for Shore Protection Structures. Remnant pieces of sheet pile that were once at the island shoreline, but subsequently were buried as the island expanded, will likely daylight as erosion progresses. The quantity of buried shoreline protection material on Johnston Island is unknown.
- POL System Components. Approximately 32,500 feet of POL system piping remains in place, and will eventually be abandoned in-place with grout plugs every 1,000 feet (CH2MHill 2003f). The steel pipeline material ranges in diameter from 2 inches to 18 inches.
- Water System Piping. Current utility drawings for Johnston Island show more than 75,000 feet of water system piping as remaining underground. This piping makes up the potable (drinking water) and non-potable (salt water and sanitary sewer) distribution system. Piping materials include PVC, copper, and asbestos cement, and range in size from less than 1 inch to 10 inches in diameter (DNA 1994).
- Electrical and Communication System Conduits. Current utility drawings for Johnston Island show more than 20,000 feet of conduit as remaining underground. Conduit materials are primarily asbestos cement, and generally are about 4 inches in diameter. The conduits also contain electrical wire and cable (DNA 1994).

The catastrophic events noted in Section 3.2.5 could conceivably result in the destruction and disappearance of these islands. However, this is not necessarily a safe assumption, particularly for hurricanes. The USGS noted that both the erosive forces and the depositional activity associated with hurricanes could be significant (USGS 1994). Studies in the Hawaiian Islands and in Guam suggest shallow offshore reefs (and presumably lagoons) play an important role for dissipating energy and allowing deposition. In addition, the onshore sediment-carrying capacity of hurricanes can be substantial and the depositional potential significant. Therefore, hurricanes can be considered an island building factor as well as an island destroying force. However, the role of a sizeable topographic presence above the water (found in both Hawaii and Guam, but not in the Johnston Atoll islands) was not discussed in relation to hurricane activity.

Catastrophic events generally exceed the protection capacity of most engineered structures, and therefore are outside the normal design objectives for shoreline protection. Thus the catastrophic events are interesting to consider, but should not warrant additional protection measures or expense.

Based on the evaluations conducted, the Proposed Action would not have a significant impact to the geology and soils of Johnston Atoll.

4.4.2 No-Action Alternative (Current Management Practices Continue)

This alternative would involve no change to the availability of resource potential, erosion potential, soil strength, permeability, expansive soil characteristics, or problems related to geologic hazards.

4.4.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not have significant impacts to geology and soils. Final actions on environmental sites may include land use restrictions, which may limit the use of Johnston Island's soils. However, because no significant impacts to geology and soils were identified for the Proposed Action, no cumulative impacts would be expected.

4.4.4 Mitigation Measures

No significant impacts have been identified for geology and soils from the implementation of the Proposed Action or No-Action Alternative; therefore, no mitigation measures would be required.

4.5 Land Use

4.5.1 The Proposed Action

By terminating the Air Force mission, the Air Force would vacate Johnston Atoll, while the USFWS would continue to manage the NWR. The current scenario of mixed land use (housing, recreational, warehousing, airfield, military/industrial with concurrent NWR use) would change to sole use as a NWR. The USFWS would still manage the NWR at Johnston Atoll. This would result in a land use scenario consistent with that of a NWR, resulting in a positive impact.

4.5.2 No-Action Alternative (Current Management Practices Continue)

The No-Action Alternative (Current Management Practices Continue) would not result in any significant change in land use patterns at Johnston Atoll. The Air Force and military tenants would continue to use Johnston Atoll, and USFWS would continue to manage the NWR.

4.5.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regard to land use. Actions being taken at the environmental restoration sites may require access/easements for the responsible parties to complete them. The final actions on these sites may include LUCs (e.g., no digging in a specified area, residential or industrial reuse only, signs posted indicating restricted areas). However, it should be noted that complete analysis of the potential land use impacts cannot be fully addressed since future land use of the property is not yet known.

4.5.4 Mitigation Measures

No significant impacts to land use would occur from implementation of the Proposed Action or the No-Action Alternative; therefore, no mitigation measures would be required.

4.6 Natural Hazards

4.6.1 The Proposed Action

The Proposed Action would result in a positive impact by reducing exposure to damage from natural hazards such as storms, hurricanes, tsunamis, and floods. The population requiring evacuation would not be large (i.e., D&D contractor personnel only), and activities and operations would no longer be present and would not be affected. The Proposed Action may still be negatively impacted by natural hazards in that storms, hurricanes, tsunamis, and floods may occur during the termination of the Air Force mission, causing damage and creating delays.

4.6.2 No-Action Alternative (Current Management Practices Continue)

Under the No-Action Alternative (Current Management Practices Continue), the Air Force would continue host-management operations of Johnston Atoll, resulting in no change in exposure to

natural hazards. The Atoll would continue to be exposed to damage from natural hazards at the same levels; approximately 900 personnel would require evacuation from severe events, and installation operations would cease and/or damage could occur.

4.6.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regard to natural hazards. Positive impacts would be seen in cumulative impacts resulting from the JACADS mission closure and the D&D action. Structurally unsound buildings would be removed, the overall infrastructure would be reduced (approximately 230 of the 569 real property listings on Johnston Atoll would have been demolished, with the rest decommissioned), and JACADS operations would cease. This would reduce exposure to damage that may occur from a natural hazard event.

4.6.4 Mitigation Measures

No significant impacts due to natural hazards would occur from implementation of the Proposed Action or the No-Action Alternative; therefore, no mitigation measures would be required.

4.7 Noise

4.7.1 The Proposed Action

The Proposed Action would result in a positive impact by reducing noise sources and reducing the number of personnel exposed to noise. A component of the Proposed Action is the termination of the Air Force mission, which would reduce noise sources by terminating noise-generating activities. These activities include aircraft use (115 dBA at 36 flights per month), Power Plant engine operation (109 dBA; average for six engines), TDS Blowers (99 dBA), and intermittent use of construction equipment (75–89 dBA). Other low-level noise sources that would be eliminated include intermittent vehicle traffic (315 motor vehicles, 42 MOGAS-powered golf carts, and 2 buses) and barges (2 barges per month). Exposure to noise would also be reduced because personnel (approximately 900) would be removed from Johnston Atoll. The birds that utilize Johnston Atoll, especially Johnston Island, are also exposed to these noise sources. They have become acclimated to the noise and/or have modified their behavior (i.e., loafing or nesting away from disturbing noise sources). With a reduction in noise sources, the birds may re-adjust their behaviors.

After the termination of the Air Force mission, the USFWS would continue to manage the NWR.

4.7.2 No-Action Alternative (Current Management Practices Continue)

Under the No-Action Alternative (Current Management Practices Continue), the Air Force would continue host-management operations of Johnston Atoll, resulting in no change in noise levels or in effects resulting from noise. The Atoll users would continue to be exposed to noise at the same levels; approximately 900 personnel would remain and have potential for noise exposures, and migratory birds using Johnston Island would continue to modify their behavior when disturbed by noise.

4.7.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regard to noise. The JACADS mission closure and the D&D action would have a short-term negative impact, as noise levels would increase during these actions because of the increased use of construction equipment and demolition-related activities. Both personnel and birds utilizing Johnston Atoll would be affected. The *Environmental Assessment for Building Demolition*,

Decommissioning, and Debris Disposal evaluated the potential noise impacts from D&D activities and determined that the D&D activities would include the following (Earth Tech 2002b):

- Personnel – use of administrative, engineering, and personal protective equipment controls such as working in phases, keeping personnel at a distance from noise sources, and use of earmuffs and earplugs.
- Birds – removing habitat in work areas prior to activities, clearing the area of birds, inspecting the area during work, and working outside of peak migration/nesting times.

4.7.4 Mitigation Measures

Because no significant noise impacts would occur from implementation of the Proposed Action or the No-Action Alternative, no mitigation measures would be required.

4.8 Safety and Health

4.8.1 The Proposed Action

4.8.1.1 Airport and Aircraft Operations

Under the Proposed Action, the airfield would be restricted then closed (including removal of air-to-ground communications, non-directional beacon, fire protection services, aviation weather support), would no longer be maintained, and would be removed from certification and ETOPS use. The Oakland ARTCC would still direct air traffic in the area. A negative impact is that the airfield would no longer support (to an FAA-certified level) navigation and landing of aircraft near Johnston Atoll. Aircraft using Johnston Atoll for ETOPS and/or emergency landing purposes would no longer have navigational aids, air-to-ground communications, weather information, emergency services, or a maintained runway; this results in a negative impact. No bird strike avoidance, harassment, or mitigation measures would be in place; however, no unauthorized aircraft would be using the airfield. Bird strikes due to aircraft use would not occur, resulting in a positive impact.

4.8.1.2 Facilities

Under the Proposed Action, there would be no significant change to safety and health issues posed by facilities at Johnston Atoll.

4.8.1.3 Wildlife Hazards

Under the Proposed Action, 32 previously identified hazards (Earth Tech 2002b) would be removed or mitigated by the termination of the Air Force mission. Removal of wildlife hazards would result in a positive impact to Atoll wildlife.

4.8.2 No-Action Alternative (Current Management Practices Continue)

Under the No-Action Alternative (Current Management Practices Continue), the Air Force would continue host-management operations at Johnston Atoll. Potential safety and health impacts at Johnston Atoll associated with the No-Action Alternative are presented below.

4.8.2.1 Airport and Aircraft Operations

The airfield would remain open and regular flight service to Johnston Atoll would continue. The Johnston Atoll Airfield would continue to be available for ETOPS use. The number of monthly flights (both military and commercial) to Johnston Atoll would not change. Because no change would occur in airfield usage or in flights to Johnston Atoll, the annual average of bird strikes would

remain consistent. No change to safety and health impacts from airport and aircraft operations would occur.

4.8.2.2 Facilities

Under the No-Action Alternative, Current Management Practices Continue, the Air Force would continue host-management at Johnston Atoll. The Air Force would continue to maintain and/or address facilities at Johnston Atoll. No change to safety and health impacts from facilities would occur.

4.8.2.3 Wildlife Hazards

The 32 previously identified hazards (Earth Tech 2002d) would remain at Johnston Atoll. Remaining wildlife hazards would pose a negative impact to wildlife at Johnston Atoll.

4.8.3 Cumulative Impacts

The Proposed Action would have a cumulative impact on the D&D action and other environmental cleanup activities by removing the airfield from service before these actions are complete.

The JACADS mission closure and D&D activities of Johnston Atoll facilities would have a cumulative safety and health impact on the Proposed Action and the No-Action Alternative. These impacts are mainly associated with construction-related activities, such as personnel working around heavy equipment, slips, trips, and falls. The *Environmental Assessment for Demolition, Decommissioning, and Debris Disposal at Johnston Atoll* evaluated the potential safety and health impacts from D&D activities and determined that D&D activities would include the use of safety equipment, implementation of safety and health plans, and regular safety briefings with personnel (Earth Tech 2002b).

A positive cumulative impact would also occur with the JACADS mission closure and D&D actions. As a result of the termination of the Air Force mission, the D&D action would have demolished approximately 230 of the 569 real property listings and the remaining structures would have been decommissioned. This would result in a positive (cumulative) impact by reducing Johnston Atoll user exposure to non-maintained facilities.

Because the airfield would be closed, the FAA would issue an Advisory Circular to users of the area, so that they can modify their aircraft and flight plans. Contractors supporting D&D activities would utilize chartered air transportation while the airfield is restricted to their use only. Contractors supporting ongoing environmental activities would utilize other transportation such as chartered boats or military sealifts (NOAA/USCG).

4.8.4 Mitigation Measures

No significant safety and health impacts would occur from implementation of the Proposed Action or the No-Action Alternative; therefore, no mitigation measures would be required.

4.9 Transportation

4.9.1 Proposed Action

Under the Proposed Action, the transportation-associated facilities would be restricted, taken out-of-service, decommissioned, removed from certification, and removed from ETOPS use. The USFWS would be notified of the elimination of air transportation services and would utilize alternate transportation services to Johnston Atoll (i.e., boat transportation) or other modes of transportation similar to the way they access other islands and atolls in the Pacific/Remote Islands NWR Complex.

4.9.1.1 Roadways

Motor vehicles and golf carts would be removed from Johnston Atoll. Road maintenance activities would no longer occur. Because only small-scale use of Johnston Atoll by the USFWS would occur, no adverse impacts to roadways and vehicle operation are anticipated.

4.9.1.2 Airspace/Air Traffic

Under the Proposed Action, EO 8682 (which created Johnston Atoll as an NDSA and Airspace Reservation) would remain in effect, restricting public access to Johnston Atoll. During the period of 27 December 2003 through 30 June 2004, the airfield at Johnston Atoll would be closed to all aircraft except those for direct D&D support. Complete airfield closure would occur by 30 June 2004. This would include removal of the non-directional beacon and removal from ETOPS certification, which would cease on 26 December 2003. Oakland ARTCC would continue to direct traffic in the area (although not for landings and take-offs at Johnston Atoll). The airspace classification would not change. Regional air transportation carriers would be required to utilize larger aircraft or re-direct their routes.

4.9.1.3 Air Transportation

Because the airfield would be restricted, then closed, regular flight service to Johnston Atoll would no longer occur, and no ETOPS capability would exist. Aloha Airlines, which currently services Johnston Atoll (less than 20 flights per month), would no longer maintain regular flights to the installation. The number of regular, monthly flights (both military and commercial) to Johnston Atoll would decrease from approximately 36 to 0. Any authorized visitors (e.g., USFWS, Air Force) to Johnston Atoll after airfield closure in June 2004 would be required to utilize alternate non-aircraft transportation services such as chartered boats or military sealift (NOAA/USCG). Removal of regular air transportation would result in a negative impact to the users of Johnston Atoll. A negative impact may also occur to Aloha Airlines in terms of income, routing, and types of aircraft used.

4.9.1.4 Sea Transportation

Regular barge service to Johnston Atoll would no longer occur. Chartered boat services would be required to access Johnston Atoll. The navigational aids (i.e., channel markers, buoys) would remain in place and be maintained by the USCG through calendar year 2006. No adverse sea transportation impacts are anticipated from implementation of the Proposed Action.

4.9.2 No-Action Alternative (Current Management Practices Continue)

Under the No-Action Alternative (Current Management Practices Continue), installation conditions would remain *status quo*. The transportation-associated facilities would remain in-service, and the Johnston Atoll Airfield would be available for regular flights and ETOPS use.

4.9.2.1 Roadways

The existing motor vehicles and golf carts would continue to be used on Johnston Island. Because no change would occur in vehicle traffic on Johnston Island, no adverse impacts to roadways and vehicle operation are anticipated.

4.9.2.2 Airspace/Air Traffic

EO 8682, which created Johnston Atoll as an NDSA and Airspace Reservation, would remain in effect, restricting public access to Johnston Atoll. Oakland ARTCC would continue to monitor Johnston Atoll airspace usage. Support services would continue at their current level. Because no

change would occur in airspace control procedures or in the number of flights to Johnston Atoll, no adverse airspace or air traffic impacts are anticipated from implementation of this alternative.

4.9.2.3 Air Transportation

The airfield would remain open and regular flight service to Johnston Atoll would continue. The Johnston Atoll Airfield would continue to be available for ETOPS use. The number of regular, monthly flights (both military and commercial) to Johnston Atoll would not change. Because no change would occur in airfield usage or flights to Johnston Atoll, no adverse air transportation impacts are anticipated from implementation of this alternative.

4.9.2.4 Sea Transportation

Regular barge service to Johnston Atoll would continue. Because no change would occur in barge traffic to Johnston Atoll, no adverse sea transportation impacts are anticipated from implementation of this alternative.

4.9.3 Cumulative Impacts

The Proposed Action would have a cumulative impact on the D&D action and on other environmental activities when the airfield is restricted and regular air service and barge service is terminated before these actions are complete.

Ongoing JACADS mission closure and D&D activities of Johnston Atoll facilities are expected to increase vehicle traffic on Johnston Island. The *Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll* evaluated the D&D impacts and determined that short-term impacts of increased traffic during the transport of debris for disposal and general movement of heavy equipment would occur (Earth Tech 2002b). However, the D&D activities include phased planning and traffic routing to reduce the impacts of congestion.

In addition, under FAA regulations, an ETOPS-capable airstrip is required to be maintained at all times for aircraft traveling from Hawaii to major Pacific destinations, and Johnston Atoll Airfield satisfied this requirement (FAR, 14 CFR Part 121.161). With the closure of the Johnston Atoll Airfield, an ETOPS-capable airstrip for those aircraft traveling between Hawaii and major Pacific destinations should be established. It should be noted that commercial airlines have reached an agreement with the Government of Kiribati, under which a small airstrip on Christmas Island will be upgraded to ETOPS use by January 2004. While the D&D activities are still occurring, transportation services for the D&D contractors include chartered flights and boat/barge services. Contractors for ongoing environmental activities would utilize alternate modes of transportation to Johnston Atoll, such as chartered boats or military sealifts (NOAA/USCG).

4.9.4 Mitigation Measures

No significant impacts to transportation would occur from implementation of the Proposed Action or the No-Action Alternative; therefore, no mitigation measures would be required.

4.10 Utilities and Infrastructure

4.10.1 The Proposed Action

Under the Proposed Action, Air Force operations and maintenance activities on utilities and infrastructure would cease, military activities and operations would no longer continue, and approximately 900 military and contractor personnel would vacate Johnston Atoll.

After the termination of the Air Force mission, the USFWS would continue to manage the NWR.

Potential impacts regarding utilities and infrastructure related to the Proposed Action are described below.

4.10.1.1 Infrastructure

Under the Proposed Action, military operations would be discontinued, and approximately 900 personnel would vacate Johnston Atoll, resulting in almost no demand for facility infrastructure such as roads, the airfield, housing, dining areas, warehouses, and recreation facilities.

Positive impacts would occur from a reduced demand; however, negative impacts would occur from having a surplus of facilities.

4.10.1.2 Telecommunications

Once personnel vacate Johnston Atoll and military operations cease, the demand for telecommunication capability would be negligible. Positive impacts would occur by having a reduced demand (e.g., upgrading technology and capacity are no longer required). A negative impact may occur in not having regular telecommunications available at Johnston Atoll; however, because no significant demand for it would exist, this impact would be negligible.

4.10.1.3 Drinking Water Supply

Under the Proposed Action, no demand would exist for potable (drinking) water for the Air Force mission. Therefore, the current demand of approximately 255,000 gpd would decrease. Positive impacts would occur in having a reduced demand (e.g., upgrading systems and capacity and fuel are no longer required, and water resources would no longer be removed from the water supply). A negative impact may occur in not having readily available potable (drinking) water service at Johnston Atoll; however, because no significant demand for it would exist, this impact would be negligible.

4.10.1.4 Electrical Power

Under the Proposed Action, no future demand for electrical power for the Air Force mission would exist. Therefore, the current production rate of 4,750 kW with a peak usage of 5,102 kW and minimum usage of 4,477 kW would no longer be required.

A positive impact of decreased electrical demand is reduced generation of noise and air-particulate emissions from fuel-powered generators required to produce electricity. A negative impact may occur in not having regular electrical service available at Johnston Atoll; however, because no significant demand for it would exist, this impact would be negligible.

4.10.1.5 Wastewater

Upon the termination of the Air Force mission, the Air Force would have no requirement for wastewater treatment. As a result, the current level of treatment of approximately 165,000 gpd of wastewater would not be required.

A positive impact of decreased wastewater generation would be the elimination of approximately 165,000 gpd of treated effluent discharge to the ocean and land application of the treated sludge on Johnston Island. A negative impact may occur in not having wastewater treatment service available at Johnston Atoll; however, because no significant demand for it would exist, this impact would be negligible.

4.10.1.6 Solid Waste

Under the Proposed Action, the Air Force would no longer generate solid wastes after the termination of the Air Force mission; therefore, no solid waste management would be required. As a result, approximately 14 tons of waste that are incinerated in the air curtain burners, the dumpster of segregated food waste, and the 4.5 tons of ash per week from the burners as well as 14,000 pounds of recyclable wastes would no longer be generated.

Positive impacts would include cessation of disposing of the food waste, discontinued operation of the air curtain burners, and discontinued transport of ash and recyclables to the mainland for processing and disposal. A negative impact may occur in not having waste disposal service available at Johnston Atoll; however, because no significant demand for it would exist, this impact would be negligible.

4.10.1.7 Industrial Discharges

Upon the termination of the Air Force mission, Air Force industrial operations would cease to generate, treat, and monitor industrial wastewater (i.e., non-contact cooling water). This water would no longer be discharged to the ocean through NPDES permitted Outfalls 003, 004, 007, and 008.

Positive impacts would occur because potential contaminants would no longer reach the ocean via the wastewater collection and outfall system. Under the Proposed Action, the Air Force would pursue termination of the NPDES Permit in accordance with 40 CFR Part 122.64.

4.10.1.8 Storm Water

After the termination of the Air Force mission, the Air Force would no longer require storm water controls to conduct its operations. No adverse impacts are anticipated.

4.10.2 No-Action Alternative (Current Management Practices Continue)

Under the No-Action Alternative, demands for utilities and infrastructure to support activities would remain the same as presented in Section 3.2.9, Utilities and Infrastructure. Demands for resources required to operate these utilities (such as fuel and groundwater) and resultant emissions and effluents would remain the same. No changes to utilities and infrastructure are anticipated.

4.10.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts in regards to utilities and infrastructure. The D&D action may cause cumulative impacts with regard to the Proposed Action and No-Action Alternative. During JACADS mission closure and the D&D action, facilities would be taken out-of-service, and housing, dining, and other support facilities would not be available for use to contractors and on-island personnel (Earth Tech 2002b). The facilities at Johnston Atoll would undergo D&D actions. Additionally, the D&D action would result in the establishment of CRDAs to hold inert construction rubble and debris.

The *Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal at Johnston Atoll* evaluated the impacts of D&D actions and determined that the D&D contractors would provide temporary infrastructure support and facilities to the remaining personnel to support continued use of Johnston Atoll during the D&D actions (Earth Tech 2002b). In addition, the CRDAs would include proper construction and revegetation for stabilization, habitat support, and improved visual appearance.

Positive cumulative impacts would occur, as approximately 230 of 569 facilities (i.e., real property listings) on Johnston Atoll would be demolished, reducing surplus facilities and eliminating short-term exposure to facilities that were structurally unstable. The remaining facilities would be decommissioned (including removing windows, doors, closing vents, and lock-out/tag-out) to reduce hazards.

Although D&D actions will have reduced a possible surplus of facilities at Johnston Atoll, possible impacts could include the remaining facilities still being considered as surplus or the need to rehabilitate decommissioned utilities and infrastructure in the future.

4.10.4 Mitigation Measures

Because no significant impacts would occur to utilities and infrastructure from the implementation of the Proposed Action or No-Action Alternative, no mitigation measures would be required.

4.11 Visual Resources

4.11.1 The Proposed Action

Upon the termination of the Air Force mission, the appearance of Johnston Atoll would be changed from an active installation. Positive impacts in the visual setting would occur from the reduction of personnel (approximately 900 personnel), activities (no military missions would be operating), and the military-industrial setting of Johnston Atoll after termination of the Air Force mission. A more natural environmental setting with bird habitat would have a higher visual sensitivity than a view of an operating installation, resulting in a positive impact. Protected view planes have not been identified, and as such, none would be affected.

4.11.2 No-Action Alternative (Current Management Practices Continue)

With implementation of the No-Action Alternative (Current Management Practices Continue), the Air Force would continue host-management operations of Johnston Atoll. The visual setting, in terms of a military operation being present, would experience no changes.

4.11.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to visual resources. However, a positive cumulative impact may be observed from JACADS mission closure and the D&D action. The visual quality of Johnston Atoll would be changed by the end of industrial-related activities (JACADS operations), the demolition activities (approximately 230 of the 569 real property listings would be demolished), and the decommissioning activities (the remaining facilities would have been decommissioned, e.g., windows and doors would be removed). Resulting CRDAs would be constructed in the area north of the runway, and possibly in between the runway and taxiway (see Figure 4-1). The locations of the CRDAs on the outer islands that were established during the D&D activities on the outer islands are shown in Figure 4-2. The *Environmental Assessment for Building Demolition, Decommissioning, and Debris Disposal* evaluated D&D impacts and determined that the D&D activities include revegetation (especially of the CRDAs) with appropriate plants (Earth Tech 2002b). The shoreline protection structures, pavement, and airfield would remain.

4.11.4 Mitigation Measures

Because no significant impacts would occur to visual resources from the Proposed Action or No-Action Alternative, no mitigation measures would be required.

4.12 Water Resources

4.12.1 The Proposed Action

Under the Proposed Action, positive impacts would occur to water resources with the reduction of personnel and activities that currently utilize these resources. Changes to water resources resulting from discontinued maintenance of the seawalls by the Air Force are presented in Section 4.4.1.

4.12.1.1 Quality

Because personnel would be reduced and military (industrial) use of Johnston Atoll would be discontinued, possible impacts from the storage, use, and disposal of chemicals and wastes would be reduced. Potential impacts from discharges to surface waters would also be discontinued because NPDES-permitted storm water and industrial discharges (such as approximately 165,000 gpd of wastewater from the treatment plant) would be discontinued. With no sources, releases, or discharges, the quality of water resources should improve.

4.12.1.2 Supply and Use

Positive impacts would occur to the use and supply of water resources because large-scale use of water resources would be discontinued. Brackish groundwater at Johnston Atoll would no longer be used on a large scale for drinking water purposes. The groundwater would no longer be pumped and desalinated on a large scale (approximately 245,000 gpd). Use of the nearshore ocean waters of Johnston Atoll would be decreased in terms of boat and recreational use. Pumping of nearshore waters on a large-scale for non-potable purposes (e.g., fire suppression, sanitary systems) would be discontinued. Surface water would continue to infiltrate into the soil and runoff. Storm drains would be left open, continuing to provide drainage.

4.12.2 No-Action Alternative (Current Management Practices Continue)

With implementation of the No-Action Alternative (Current Management Practices Continue), no changes would occur to the water resources of Johnston Atoll.

4.12.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts with regards to water resources. However, during the JACADS mission closure and D&D action, positive impacts may be seen from a reduction in personnel and activities, resulting in a reduction of water resource use.

Proper completion of environmental actions associated with the RCRA Part B Permits and other environmental actions (as described in Section 4.14) should improve the quality of water resources.

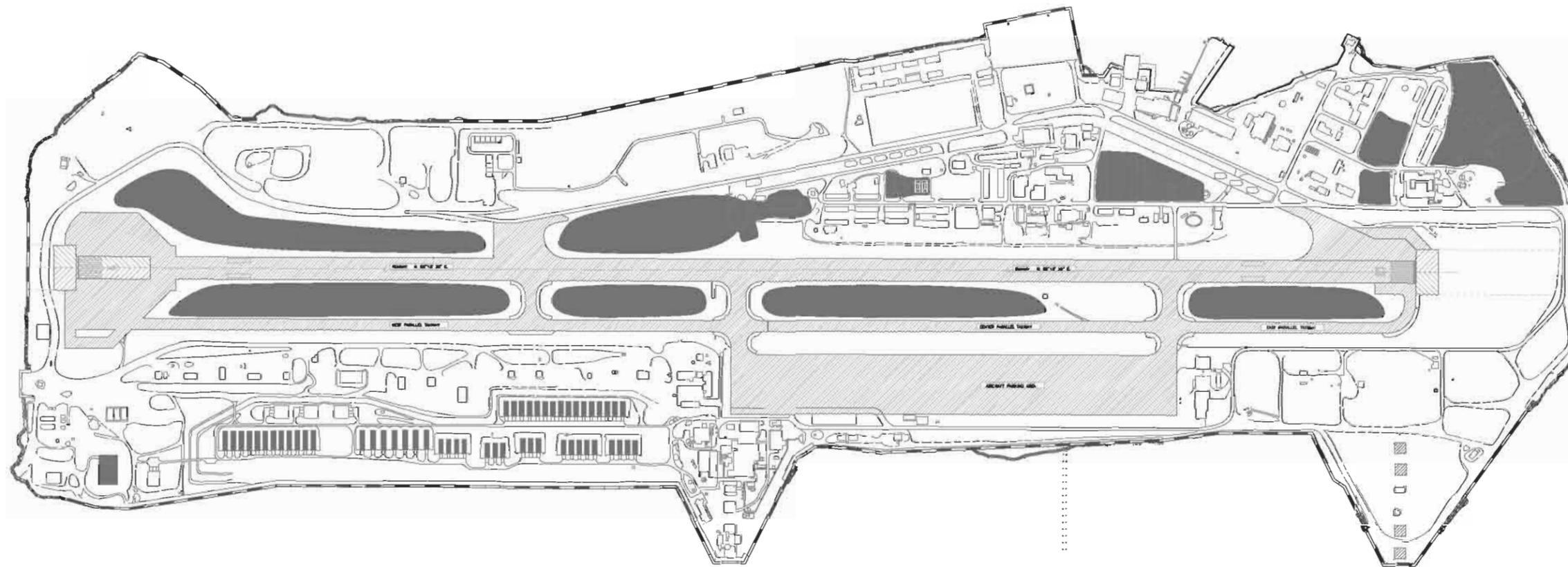
4.12.4 Mitigation Measures

Because no significant impacts to water resources would occur from implementation of the Proposed Action or the No-Action Alternative, no mitigation measures would be required.

4.13 Cultural Resources

4.13.1 The Proposed Action

Because no historic properties, traditional properties, or archaeological resources as defined by the NHPA exist on Johnston Atoll, implementation of the Proposed Action would not affect cultural resources.



LEGEND

-  Permanent Structure
-  Seawall
-  Location of Potential Construction Rubble Debris Areas

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane, Feet, Clarke 1866
Elevation Datum: MLLW-0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000
- Final Environmental Assessment, Building Demolition, Decommissioning, and Debris Disposal, Johnston Atoll, 2002
- Draft Demolition, Decommissioning, and Wildlife Hazard Mitigation Work Plan, Johnston Atoll, 2003

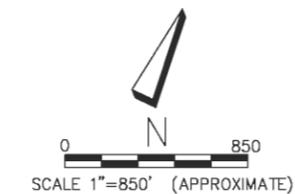
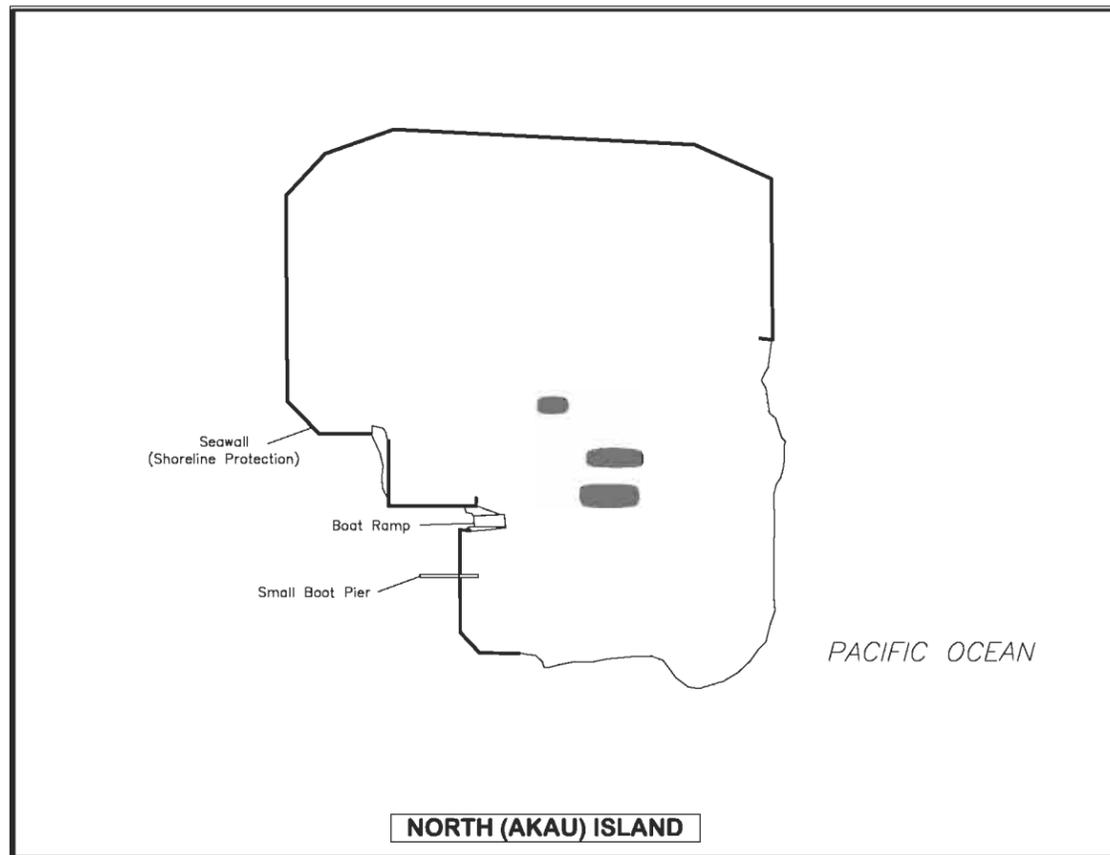
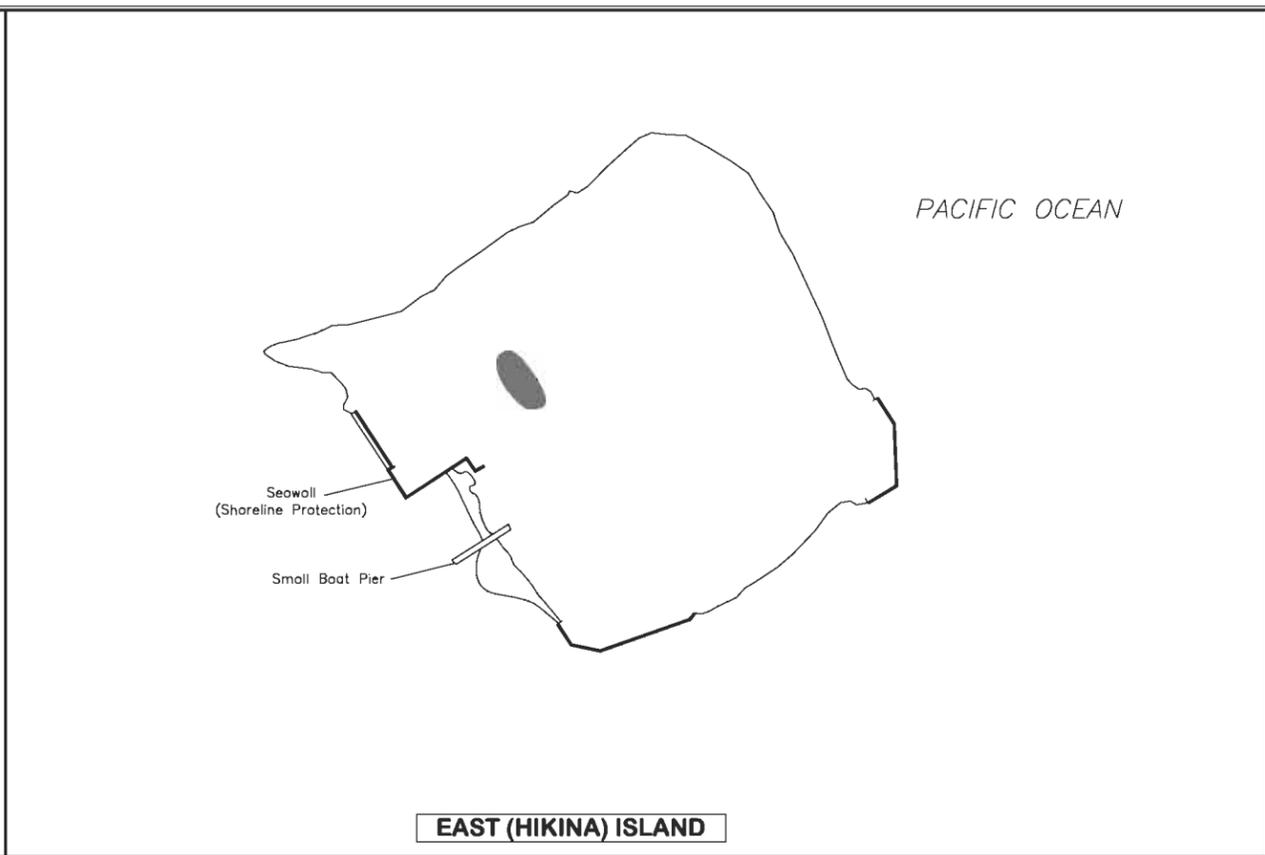


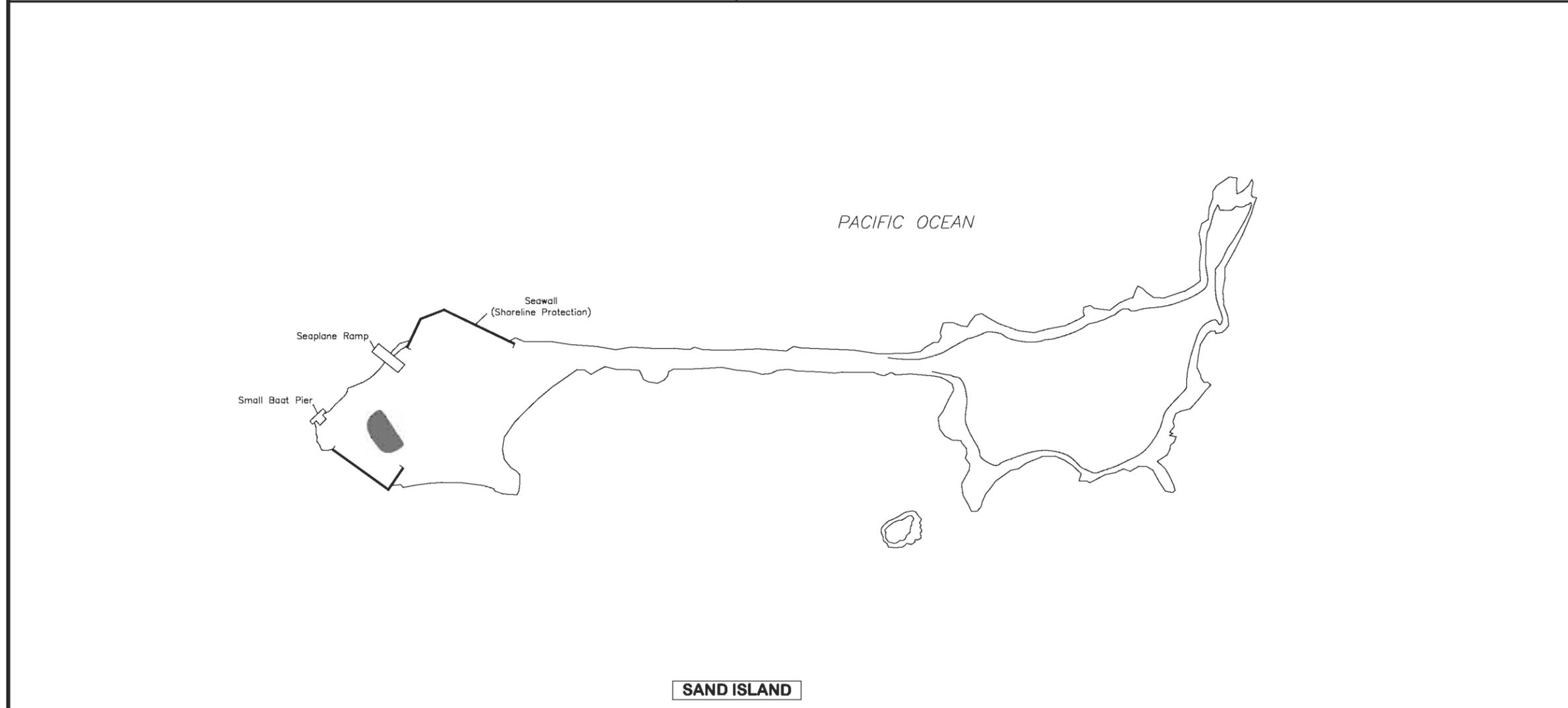
Figure 4-1
Location of Potential Construction
Rubble Debris Areas
Johnston Island
Johnston Atoll



NORTH (AKAU) ISLAND



EAST (HIKINA) ISLAND



SAND ISLAND

LEGEND

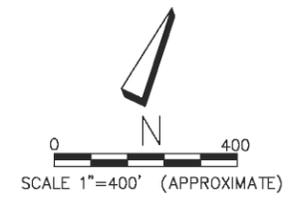
-  Seawall
-  Location of Construction Rubble Debris Areas

NOTES

1. The accuracy of this document is limited to the quality and scale of the source documents. This document is not a legal representation of an engineered survey.
2. Projection: Hawaii State Plane Coordinate System Units in feet, Elevation Datum: MLLW=0.0
3. Project: 3P-AE, Contract No. F41624-00-D-8023, DO 50

SOURCES

- Aerial Photography, 12/18/1969
- Development Plan, Defense Atomic Support Agency, 1970
- Base Plan, Johnston Atoll, Defense Nuclear Agency, c1, 1994
- Final Environmental Baseline/Property Transfer Survey, 1999
- Final Environmental Management Plan, Johnston Atoll, 2000
- Final Environmental Assessment, Building Demolition, Decommissioning, and Debris Disposal, Johnston Atoll, 2002
- Draft Demolition, Decommissioning, and Wildlife Hazard Mitigation Work Plan, Johnston Atoll, 2003



**Figure 4-2
Location of
Construction Rubble Debris Areas
North, East, and Sand Islands
Johnston Atoll**

4.13.2 No-Action Alternative (Current Management Practices Continue)

Because no historic properties, traditional properties, or archaeological resources as defined by the NHPA exist on Johnston Atoll, implementation of the No-Action Alternative (Current Management Practices Continue) would not affect cultural resources.

4.13.3 Cumulative Impacts

Because no historic properties, traditional properties, or archaeological resources as defined by the NHPA exist on Johnston Atoll, implementation of the Proposed Action or the No-Action Alternative would not contribute to cumulative impacts to cultural resources.

4.13.4 Mitigation Measures

No impacts to cultural resources would occur from implementation of the Proposed Action or the No-Action Alternative; therefore, no mitigation measures would be required.

4.14 Hazardous Materials and Hazardous Waste Management

Sites and activities associated with hazardous materials and hazardous waste, although addressed under laws, regulations, and rules separate from NEPA, are discussed here in terms of impacts to or from the Proposed Action and alternatives.

4.14.1 The Proposed Action

The termination of the Air Force mission involves the cessation of all Air Force activities on Johnston Atoll that were necessary to conduct the prior mission there. No hazardous material impacts would occur as a result of the Proposed Action, because no hazardous materials would be used by the Air Force when the Air Force mission terminates. Hazardous waste impacts and relevant impacts due to possible LUCs are discussed, as appropriate, below.

4.14.1.1 RCRA Permits

The closure of JACADS-associated facilities is anticipated to be complete in mid to late 2003. Air Force sites are in various states of investigation and remediation as well. Closure of Johnston Atoll would occur in mid 2004. Although closure would be completed, both the Air Force and Army's RCRA Part B Permits would remain in effect past the closure date unless administratively closed. A description of the SWMUs and AOCs associated with the Air Force RCRA Part B Permit and the Army RCRA Part B Permit is presented in Appendix F. Any required monitoring or follow-on work at remedial sites would be completed under the respective permits. Specific LUCs would be identified for the sites, as appropriate, to ensure that potential health effects to users or visitors are minimized. Land use restrictions reduce possible negative health effects to users by restricting the type of land use that may occur on a property (i.e., residential or industrial), resulting in a positive impact.

Because the sites covered under these permits may require further action and monitoring past the mid-2004 closure date, these sites and potential LUC areas may be impacted by the lack of 1) infrastructure to support field crews performing the work, 2) adequate utilities to support the work itself (e.g., electrical power, water), and 3) adequate transportation resources to transport equipment, materials, and/or generated waste. However, contractors supporting ongoing efforts at environmental sites would provide their own utilities, infrastructure, and transportation.

4.14.1.2 *Radiological Contamination*

According to the CMS/FS prepared for the RCA, “After site remediation, the DTRA will monitor the remediation site for construction faults for five years or until routine, normal airline service to Johnston is terminated, whichever is first” (DTRA 2002). Risk calculations indicate that in the event of seawall failure or erosion (see Section 4.4.1) and the RCA is impacted, there would be an inconsequential increase to an already negligible risk to the marine biota and humans who might consume fish from the addition of the landfill’s contents to the lagoon (DTRA 2002). Land use restrictions would be specified in the transfer documents (i.e., no digging or construction within the RCA landfill boundaries). Land use restrictions reduce possible negative health impacts to users by restricting the type of land use that may occur on a property (i.e., industrial), resulting in a positive impact.

4.14.1.3 *Hazardous Materials*

Under the Proposed Action, positive impacts would occur because hazardous materials would be removed from Johnston Atoll and their management would be unnecessary because their usage by the Air Force would cease. The USFWS may continue to use small quantities (i.e., less than 5 gallons) of some chemicals (e.g., solvent, cleaning supplies) in their management of the NWR. Proper management of these materials would preclude any unacceptable impacts.

4.14.1.4 *Hazardous Waste*

Under the Proposed Action, the Air Force would no longer generate or store hazardous waste on Johnston Atoll. Any hazardous materials used by the USFWS would be their sole responsibility and they would be responsible for proper management and disposal. Proper management of hazardous materials used by the USFWS would preclude the generation of hazardous wastes and any unacceptable impacts.

4.14.1.5 *Storage Tanks*

Under the Proposed Action, ASTs and POL system components would be taken out-of-service. These components would be emptied, vapor-freed, cleaned, and either removed or sealed in-place to minimize fire hazards. No Air Force ASTs or POL system components would remain in-use. In their continued management of the NWR, USFWS may use petroleum as a fuel source. Proper storage of petroleum in accordance with laws and regulations would preclude any unacceptable impacts.

4.14.1.6 *Asbestos*

Because ACM would be managed in accordance with applicable laws and regulations, no significant impacts would be expected. Any remaining ACM would be disclosed in the Final EBS for Johnston Atoll.

4.14.1.7 *Pesticide Usage*

Under the Proposed Action, pesticides would be removed from Johnston Atoll and would no longer be applied, resulting in a positive impact.

4.14.1.8 *Polychlorinated Biphenyls*

Under the Proposed Action, no PCB-containing equipment or contaminated equipment would remain on Johnston Atoll. Information to this effect would be disclosed in the Final EBS for Johnston Atoll. No adverse impacts are anticipated.

4.14.1.9 *Radon*

Because no high-priority facilities (e.g., schools) are present on Johnston Atoll, no radon studies are planned. No adverse impacts are anticipated.

4.14.1.10 *Medical/Biohazardous Waste*

Under the Proposed Action, the Health Clinic would be inactivated and medical wastes would no longer be generated, transported, or disposed of.

4.14.1.11 *Ordnance*

Under the Proposed Action, no ordnance (small arms ammunition) would remain at Johnston Atoll.

4.14.1.12 *Lead*

LBP would be abated beyond HUD and RCRA requirements. The LBP status would be disclosed in the Final EIS for Johnston Atoll.

4.14.2 **No-Action Alternative (Current Management Practices Continue)**

4.14.2.1 *RCRA Permits*

Under the No-Action Alternative (Current Management Practices Continue), the RCRA Part B Permits would remain in effect. Any required monitoring or follow-on work at remedial sites would be completed under the permits. A description of the SWMUs and AOCs associated with the Air Force RCRA Part B Permit and the Army RCRA Part B Permit is presented in Appendix F. Specific land use restrictions would be identified for the sites as appropriate to ensure potential impacts to human health would be minimized. Based on current land uses continuing, no adverse impacts are anticipated.

4.14.2.2 *Radiological Contamination*

According to the CMS/FS prepared for the RCA, "After site remediation, the DTRA will monitor the remediation site for construction faults for five years or until routine, normal airline service to Johnston is terminated, whichever is first" (DTRA 2002). Land use restrictions would be specified in the transfer documents (i.e., no digging or construction within the RCA landfill boundaries). Based on current land uses continuing, no adverse impacts are anticipated.

4.14.2.3 *Hazardous Materials*

Under this alternative, hazardous materials would continue to be managed in accordance with applicable regulations and plans. No changes are anticipated, and proper management of these materials would preclude any unacceptable impacts.

4.14.2.4 *Hazardous Waste*

Under this alternative, hazardous waste would continue to be managed in accordance with applicable regulations and plans. No changes are anticipated, and proper management of hazardous waste would preclude any unacceptable impacts.

4.14.2.5 *Storage Tanks*

Under this alternative, storage tanks would continue to be managed in accordance with applicable regulations and plans. No changes are anticipated, and proper management of storage tanks would preclude any unacceptable impacts.

4.14.2.6 *Asbestos*

ACM would continue to be managed in accordance with the installation asbestos management and operating plan. No changes are anticipated, and no adverse impacts are anticipated.

4.14.2.7 *Pesticide Usage*

Under this alternative, pesticides would continue to be managed and applied in accordance with applicable regulations and plans. No changes are anticipated, and no adverse impacts are anticipated.

4.14.2.8 *Polychlorinated Biphenyls*

No PCB-containing equipment or contaminated equipment remains on Johnston Atoll. As light ballasts containing PCB components are replaced, they would be managed and disposed of in accordance with applicable regulations. No changes are anticipated, and no adverse impacts are anticipated.

4.14.2.9 *Radon*

Because no high priority facilities (e.g., schools) are applicable to Johnston Atoll, no radon concerns are expected. No adverse impacts are anticipated.

4.14.2.10 *Medical/Biohazardous Waste*

Under this alternative, medical/biohazardous wastes would continue to be managed in accordance with applicable regulations and procedures. No changes are anticipated, and no adverse impacts are anticipated.

4.14.2.11 *Ordnance*

Under this alternative, the small amount of small arms ammunition would continue to be managed in accordance with installation policies. No changes are anticipated, and no adverse impacts are anticipated.

4.14.2.12 *Lead*

Under this alternative, LBP would continue to be managed in accordance with applicable regulations. No changes are anticipated, and no impacts from LBP are anticipated.

4.14.3 Cumulative Impacts

The Proposed Action and No-Action Alternative would not result in significant cumulative impacts in regards to hazardous materials and hazardous waste management. The Air Force and the Army would be responsible for completion of their ongoing environmental activities associated with their respective RCRA Part B Permits. Positive impacts would result from the removal of hazardous materials and hazardous waste that may occur in association with facilities that are demolished or decommissioned during the D&D action (e.g., light ballasts that may contain PCBs). In addition, contractors supporting ongoing efforts at environmental sites would provide their own utilities, infrastructure, and transportation.

4.14.4 Mitigation Measures

Because no significant impacts would occur from hazardous materials and hazardous wastes due to the implementation of the Proposed Action or No-Action Alternative, no mitigation measures are required.

4.15 Socioeconomic

4.15.1 The Proposed Action

4.15.1.1 *Economic Activity*

Under the Proposed Action, no funds for military operations or host-management would be expended. USFWS would continue to manage the NWR after the termination of the Air Force mission, however, the implementation of their management (e.g., remote management, small field station) as well as their funding have not been determined at this time. Although funding (i.e., the one BOS contract) expended on Johnston Atoll would end, negative economic impacts would be nominal because funds were expended on a finite contract basis. Additionally, Johnston Atoll is generally not part of a wider economic area. No adverse impacts are anticipated.

4.15.1.2 *Population*

Under the Proposed Action, the military would have no permanent presence at Johnston Atoll after June 2004. However, the USFWS, in supporting their mission of managing the NWR, may have a small amount of permanent or temporary staff at Johnston Atoll. Because Johnston Atoll is not part of a wider economic area, negative impacts on population changes are not expected. No adverse impacts are anticipated.

4.15.1.3 *Employment*

Under the Proposed Action, all contractor personnel would depart Johnston Atoll by 27 December 2003, with the exception of those employed by the D&D contractor. The Air Force plans to also maintain a presence on Johnston Atoll until June 2004. After June 2004, all D&D contractor personnel and remaining Air Force personnel would depart Johnston Atoll. The USFWS may have a small field staff at Johnston Atoll on a temporary or permanent basis. Although employment through the BOS contract on Johnston Atoll would end, negative economic impacts would be nominal because employment through the contractors was conditional on a finite contract basis. BOS contract employees also have potential opportunities to work elsewhere in their respective companies. Additionally, Johnston Atoll is generally not part of a wider economic area. No adverse impacts are anticipated.

4.15.1.4 *Housing*

Under the Proposed Action, approximately 900 personnel would leave Johnston Atoll. Demands for housing would be greatly reduced. Because Johnston Atoll is not part of a wider economic area, this change would not negatively impact regional housing demands. No adverse impacts are anticipated.

4.15.1.5 *Public Services*

Under the Proposed Action, approximately 900 personnel would leave Johnston Atoll. Demands for services would be greatly reduced. Because Johnston Atoll is not part of a wider economic area, this change would not negatively impact regional public service supply or demands. No adverse impacts are anticipated.

4.15.1.6 *Public Finance*

Under the Proposed Action, approximately 900 personnel would leave Johnston Atoll. Demands for finance services would be greatly reduced. Because Johnston Atoll is not part of a wider economic area, this change would not negatively impact regional public finance supply or demands. No adverse impacts are anticipated.

4.15.1.7 *Transportation*

Under the Proposed Action, approximately 900 personnel would leave Johnston Atoll. Demands for transportation services would be greatly reduced. There would be virtually no road traffic, no regular barge traffic, insufficient demand to warrant weekly stops on a commercial air route, or from military flights. Because Johnston Atoll is not part of a wider economic area, this change would not negatively impact regional transportation supply or demands. However, negative impacts may be seen regionally, when the airport is removed from ETOPS certification; the airlines in the area may not have adequate aircraft to continue extended range flights in the same routes.

4.15.1.8 *Utilities and Infrastructure*

Under the Proposed Action, approximately 900 personnel would leave Johnston Atoll. Demands for utility and infrastructure would be greatly reduced. Because Johnston Atoll is not part of a wider economic area, this change would not negatively impact regional utility and infrastructure supply or demands. USFWS would continue to manage the NWR. No adverse impacts are anticipated.

4.15.2 No-Action Alternative (Current Management Practices Continue)

With implementation of the No-Action Alternative (Current Management Practices Continue), the Air Force would continue host-management operations of Johnston Atoll. No changes would occur to the socioeconomic activities of Johnston Atoll, as described in Section 3.2.14. No adverse impacts are anticipated.

4.15.3 Cumulative Impacts

No other actions have been identified that would contribute to cumulative impacts to socioeconomic activities such that adverse impacts would result.

4.15.4 Mitigation Measures

Because no significant socioeconomic impacts would occur from implementation of the Proposed Action or the No-Action Alternative, no mitigation measures would be required.

5.0 CONSULTATION AND COORDINATION

The following persons were contacted during preparation of the EIS.

Name	Organization	Title
CW3 Doug Winquist	DTRA AO/ALHK	Former Deputy Plutonium Project Officer
Mr. Harry Stumpf	HQ DTRA/ALH (now DTRA/BDS)	Former Environmental Engineer
Dr. John Esterl	DTRA/BDS	Environmental Scientist
Mr. Gary McCloskey	Chemical Material Agency (Provisional)	JACADS Site Project Manager
Mr. Rob Malone	Science Applications International Corporation	Senior Environmental Scientist
Mr. Benton Ching	USACE – Honolulu District	Hydraulic Engineer
Mr. Ray Saracino	EPA Region 9	Environmental Engineer, RCRA Corrective Action Office
Dr. Lee Ann Woodward	USFWS – Hawaii	Ecotoxicologist
Mr. Paul Henson	USFWS – Hawaii	Field Supervisor
Mr. Lindsey Hayes	USFWS – Johnston Atoll	Refuge Manager
Mr. Joe Wiggins	USFWS – Johnston Atoll	Wildlife Biologist
PO Chris Bearden	USCG – Honolulu	Petty Officer, Aids of Navigation Division
LT CDR Lane Johnson	USCG – Honolulu	Lieutenant Commander, Marine Safety Division
Dr. Phillip Lobel	Boston University Marine Program	Professor of Biology
Mr. Jared Makaiau	WPRFMC	Habitat Coordinator
Mr. Ben Bradley	FEMA	National Call Center
Ms. Margaret Akamine Dupree	NMFS	Protected Species Program
Mr. Jack Burrows	GSA	Property Disposal Division
Mr. Mike Spencer	FAA	Flight Standards
Ms. Lee Keating	Council	Senior Program Analyst

Section 7 Consultation Letters were sent to USFWS and NMFS requesting information regarding sensitive species and habitats considered to be of concern at Johnston Atoll. Section 106 consultation regarding cultural resources of Johnston Atoll has been addressed with the Council because Johnston Atoll does not fall under the jurisdiction of a State Historic Preservation Officer.

6.0 LIST OF PREPARERS

This EIS was prepared for HQ AFCEE and Det. 1, 15 AW by Earth Tech, Inc. Individuals contributing to the preparation of the EIS are listed below.

Det. 1, 15 AW

Ms. Fran Saunders, Chief, Johnston Atoll Program Office, OL-A, Det 1, 15 AW, Supervisory Environmental Engineer

HQ AFCEE

Ms. Carol Gaudette, Johnston Atoll Team Chief and Contracting Officer's Representative (COR), Hawaii Office, Chemical Engineer

Earth Tech, Inc.

Ms. Betsy Alspaugh, Senior Environmental Engineer, Program/Project Manager
BS, Biology and Chemistry, Western Kentucky University, Bowling Green, 1979
BS, Environmental Science, Western Kentucky University, Bowling Green, 1981
Years of Experience: 19

Mr. Jack Bennett, Environmental Engineer
BS, Electrical Engineering, University of Hawaii, Manoa, 2001
JD, Law (Environmental Law Certificate), William S. Richardson School of Law, University of Hawaii, Manoa, 1997
BS, Mechanical Engineering, University of Hawaii, Manoa, 1989
Years of Experience: 11

Dr. Derrick Coleman, Senior Hydrologist
Ph.D., Geography (Geomorphology), The John Hopkins University, Baltimore, Maryland, 1982
BA, Physical Geography, University of California, Berkeley, 1975
Years of Experience: 21

Mr. Kenneth Forman, Project Biologist
BA, Environmental Studies and Resource Management, University of Nevada, Las Vegas, 1995
Years of Experience: 10

Mr. Dan Frerich, Environmental Scientist
BS, Environmental Science, Oregon State University, Corvallis, 2000
Years of Experience: 3

Ms. Nicole Griffin, Project Professional Geologist
BS, Geological Sciences, University of Illinois, Chicago, 1991
Years of Experience: 11

Mr. Dave Jury, Senior Environmental Professional
BA, Geography (Certificate in Cartography), California State University, Long Beach, 1988
Years of Experience: 15

Mr. Matthew Malle, Staff Biologist

BS, Environmental Biology, California State University, Humboldt, 1999

AA, Liberal Arts, Fullerton College, 1996

Years of Experience: 3

Ms. Michelle Mason, Delivery Order Manager

BS, Urban Studies, Stanford University, 1987

Years of Experience: 14

Mr. Mathew McNeff, Environmental Engineer

MS, Environmental Engineering, University of California, Berkeley, 1997

BS, Civil Engineering, Rose Hulman Institute of Technology, Indiana, 1996

Years of Experience: 6

Mr. Carl Rykaczewski, Project Environmental Scientist

BS, Environmental Resource Management, Pennsylvania State University, University Park, 1981

Years of Experience: 15

7.0 DISTRIBUTION LIST

Name	Organization/Title
The Honorable Daniel Akaka	United States Senate
The Honorable Daniel Inouye	United States Senate
Mr. Neil Ambercrombie	United States Congress
Mr. Ed Case	United States Congress
USEPA	U.S. Environmental Protection Agency, Office of Federal Activities EIS Filing Section
Ms. Patricia Vokoun	AF/ILEPB
Ms. Fran Saunders	15 CES/CEVJ
Ms. Carol Gaudette	AFCEE/Contracting Officer's Representative
Lt Col Mark Hostetter	Formerly Det 1, 15 AW/CC
Capt Eric Sassi	15 CES/CCJ
Capt Yvonne Spencer	HQ PACAF/CEVA
Mr. Mark Ingoglia	HQ PACAF/CEVR
Lt Col David Kendrick	HQ PACAF/JAV
Mr. Ted Vactor	HQ PACAF/CEPRE
Capt Michelle Artolachipe	HQ PACAF/XPP
Mr. Jeff Klein	15 CES/CEVR
Mr. Gary O'Donnell	15 CES/CEVP
Mr. Theodore Vestal	15 AW/JAV
Ms. Jan Goo	15 CES/CERR
Maj Almarah Belk	15 AW/PA
Dr. John Esterl	DTRA
Ms. Teresa Gepner	DTRA
Mr. Steve Bushman	Program Manager for Chemical Material Agency, Aberdeen Proving Ground
Mr. George Takamiya	HQ USARPAC
Mr. Rob Malone	SAIC
Ms. Laurie Sullivan	NOAA, Pacific Division, Coastal Resource Coordinator
Mr. Edward Young	National Weather Service, Pacific Region Headquarters
Mr. Jerry Leinecke	U.S. Department of Interior Fish and Wildlife Service - Hawaiian and Pacific Islands National Wildlife Refuge Complex
Ms. Patricia Port	U.S. Department of the Interior Office of Environmental Policy and Compliance, Regional Environmental Office
Mr. Ray Saracino	EPA Region 9, Environmental Engineer, RCRA Corrective Action Office
Ms. Betty Ann Schreiber	Smithsonian Institution, Seabird Authority
Dr. Phil Lobel	Boston University, Marine Biologist
Ms. Margaret Dupree	NMFS - Pacific Island Area Office/Endangered Species Program, Marine Mammal Coordinator
Mr. Gordon Wong	FAA
Mr. David Acfalle	DESC

Name	Organization/Title
Librarian	Hawaii State Library
Librarian	University of Hawaii Hamilton Library
Librarian	Pacific Islands Contact Office U.S. EPA Region 9 Federal Library

AFCEE	Air Force Center for Environmental Excellence
CES	Civil Engineer Squadron
CEVJ	Johnston Atoll Program Element
CEVP	Conservation Resources Element
CEVR	Environmental Restoration Branch
CEVQ	Environmental Quality Branch
JAV	Judge Advocate Office

8.0 STATUTES; EXECUTIVE ORDERS; RULES AND REGULATIONS; AND INSTRUCTIONS AND GUIDANCE

8.1 Statutes

Asbestos Hazard Emergency Response Act of 1986, Pub. L. No. 99 - 519, 100 Stat. 2970 (1986) (codified as amended at 15 U.S.C. §§ 2641-2656 (2000)).

Civil Aeronautics Act of 1938, Pub. L. No. 706, 52 Stat. 980 (1938) (codified as amended at 49 U.S.C. §§ 401 et seq. (2000)).

Clean Air Act of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (1990) (codified as amended at 42 U.S.C. §§ 7401–7671q (2000)).

Clean Water Act of 1992, Pub. L. No. 107-303 (codified as amended at 33 U.S.C. §§ 1251 et seq. (2002)).

Community Environmental Response Facilitation Act of 1992, Pub. L. No. 102-426, 106 Stat. 2174 (1992), 42 U.S.C. § 9620(h) (2000).

Defense Authorization Amendments and Base Realignment and Closure Act of 1988, Title II, Pub. L. No. 100-526, 102 Stat. 2623 (1988) (codified as amended at 10 U.S.C. § 2687 (2000)).

Department of Defense Authorization Act of 1986, Demilitarization of Chemical Weapons, Pub. L. No. 99-145, Title XIV, Sec. 1412, 99 Stat. 747 (1985), 50 U.S.C. § 1521 (2000).

Emergency Planning and Community Right-to-Know Act (also known as Title III of the Superfund Amendments and Reauthorization Act of 1986), Pub. L. No. 99-499, 100 Stat. 1729 (1986), 42 U.S.C. §§ 11001–11050 (2000).

Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (1973) (codified as amended at 16 U.S.C. §§ 1531–1544 (2000)).

Federal Aviation Act of 1958, Pub. L. No. 85-726, 72 Stat. 749 (1958) (recodified as amended at 49 U.S.C. §§ 40101 et seq. (2000)).

Federal Insecticide, Fungicide, and Rodenticide Act of 1988, Pub. L. No. 100-532, 102 Stat. 2655 (1988) (codified as amended at 7 U.S.C. §§ 136–136y (2000)).

Federal Property and Administration Services Act of 1949, as amended (“Federal Property Act”), Pub. L. No. 81-152, 63 Stat. 377 (1949) (codified as amended at scattered sections of 40 U.S.C. and 41 U.S.C.).

Federal Water Pollution Control Act (also known as the "Clean Water Act") Pub. L. No. 80-845, 62 Stat. 1155 (1948) (codified as amended at 33 U.S.C. §§ et seq. (2000)).

Fish and Wildlife Coordination Act, Pub. L. No. 85-624, 48 Stat. 401 (1934) (codified as amended at 16 U.S.C. § 667-b-d (2000)).

Guano Islands Act of August 18, 1856, 11 Stat. 119 (1856), 48 U.S.C. §§ 1411–1419 (2000)).

Indian Self-Determination and Education Assistance Act, Pub. L. No. 93-638, 88 Stat. 2203 (1975) (codified as amended at 25 U.S.C. § 450 (2000)).

Migratory Bird Treaty Act of 1918, Chap. 128, 40 Stat. 755 (1918) (codified as amended at 16 U.S.C. §§ 703-712 (2000)).

Magnuson-Stevens Fishery Conservation and Management Act of 1976, Pub. L. No. 94-265, 90 Stat. 331 (1976) (codified as amended at 16 U.S.C. §§ 1801 et seq. (2000)).

Marine Mammal Protection Act of 1972, Pub. L. No. 92-522, 86 Stat. 1027 (1972), Pub. L. 92-522 (codified as amended at 16 U.S.C. §§ 1361–1407 (2002)).

Marine Protection, Research, and Sanctuaries Act of 1972, Pub. L. No. 92-532, 86 Stat. 1052 (1972), (codified as amended at 16 U.S.C. §§ 1431 et seq., 1447 et seq., 33 U.S.C. §§ 1401 et seq., 2801 et seq. (2000)).

National Wildlife Refuge System Administration Act of 1966, Sections 4 and 5 of Pub. L. No. 89-669, 80 Stat. 927 (1966) (codified as amended at 16 U.S.C. §§ 668dd-668ee (2000)).

National Wildlife System Improvement Act of 1997, Pub. L. No. 105-57, 111 Stat. 1252 (1997) (codified at 16 U.S.C. §§ 668dd et seq.).

National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. §§ 4321–4374 (2000)).

National Historic Preservation Act of 1966, Pub. L. No. 89-665, 80 Stat. 915 (1966) (codified as amended at 16 U.S.C. §§ 470 et seq. (2000)).

Occupational Safety and Health Act of 1970, Pub. L. No. 91-596, 84 Stat. 1590 (1970) (codified as amended at 29 U.S.C. § 1A651 (2000)).

Resource Conservation and Recovery Act (RCRA) of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (1976) (codified as amended at 42 U.S.C. §§ 6901–6992 (2000)).

Rivers and Harbors Appropriation Act of 1899 Chap. 425, 30 Stat. (33 U.S.C. 403).

Stewart B. McKinney Homeless Assistance Act (1987), Pub. L. No. 100-77, 101 Stat. 482 (1987) (codified as amended at 42 U.S.C. §§ 11301 et seq. (2000)).

Toxic Substances Control Act of 1976, Pub. L. No. 94-469, 90 Stat. 2003 (1976), (codified as amended at 15 U.S.C. §§ 2601–2671 (2000)).

8.2 Executive Orders

Coral Reef Protection, Exec. Order No. 13089, 63 Fed. Reg. 32,701 (1998), 3 CFR p. 193 (1998).

Establishing Johnston Atoll as a Refuge and Breeding Ground for Native Birds, under the Department of Agriculture, Exec. Order No. 4467 (1926).

Establishing Naval Defensive Sea Areas Around and Naval Airspace Reservations Over The Islands Of Palmyra, Johnston, Midway, Wake, And Kingman Reef, Pacific Ocean, Exec. Order No. 8682, 6 Fed. Reg. 1015 (1941), 3 CFR p. 894 (1938–1943 Comp).

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Exec. Order No. 12898, 59 Fed. Reg. 7629 (1994), 3 CFR p. 859 (1994).

Placing Certain Islands in the Pacific Ocean Under the Control and Jurisdiction of the Secretary of the Navy, Wake Island, Kingman Reef, and Johnston and Sand Islands, Exec. Order No. 6935, (1934).

Preparation, Presentation, Filing, and Publication of Executive Orders and Proclamations, Exec. Order No. 11030, 27 Fed. Reg. 5847 (1962), 3 CFR p. 610 (1959-1963 Comp.).

Responsibilities of Federal Agencies to Protect Migratory Birds, Exec. Order No. 13,186, 66 Fed. Reg. 3853 (2001), 3 CFR p. 719 (2001).

8.3 Rules and Regulations

Council on Environmental Quality, 40 CFR Parts 1500–1508 (1992).

Department of the Air Force, Environmental Impact Analysis Process, 32 CFR Part 989 (2002).

Emergency Planning and Community Right-To-Know Act Regulations, 40 CFR Parts 302, 350, 355, 370, 372, and 374 (2002).

Federal Hazardous Materials Transportation Regulations, 49 CFR Parts 171–180 (2002).

Hazardous Waste Management Regulations, 40 CFR Parts 260–270 (2002).

National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 61 (2002).

National Register of Historic Places, 36 CFR Part 60 (2002).

Notice of Intent To Prepare an Environmental Impact Statement for Department of Defense Mission Closure at Johnston Atoll Airfield, Department of Defense, Department of the Air Force, 67 Fed. Reg. 67606 (2002).

Occupational Safety and Health Standards and Regulations, 29 CFR Parts 1910 and 1926 (2002).

Protection of Historic Properties, 36 CFR Part 800 (2002).

Secretary of the Interior, Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act, 53 Fed. Reg. 4727–4746 (1988).

8.4 Instructions and Guidance

Air Force Instruction 11-202, Volume 3, *General Flight Rules*. 06 June 2003.

Air Force Instruction 13-201, (Attachment 5), *Air Force Airspace Management*. 20 September 2001.

Air Force Instruction 13-213, *Airfield Management*. 09 September 2002.

- Air Force Instruction 32-1042, *Standards for Marking Airfields*. 16 March 1994.
- Air Force Instruction 32-1053, *Pest Management Program*. 01 April 1999.
- Air Force Instruction 32-7042, *Solid and Hazardous Waste Compliance*. 12 May 1994.
- Air Force Instruction 32-7061, *The Environmental Impact Analysis Process*. 12 March 2003.
- Air Force Instruction 32-7064, *Integrated Natural Resources Management*. 01 August 1997.
- Air Force Instruction 32-7086, *Hazardous Materials Management*. 01 October 1999.
- Air Force Instruction 32-9003, *Granting Temporary Use of Air Force Real Property*. 19 August 1997.
- Air Force Instruction 32-9004, *Disposal of Real Property*. 21 July 1994.
- Air Force Instruction 91-202 (Chapter 7.11), *The US Air Force Mishap Prevention Program*. 01 August 1998.
- Air Force Instruction 91-204 (Chapter 7.4.7), *Safety Investigations And Reports (Bird Strike Reporting)*. 11 December 2001.
- Air Force Handbook 32-9007, *Managing Air Force Real Property*. 01 May 1999.
- Bird/Wildlife Aircraft Strike Hazard, *Management Techniques*. 01 April 1997.
- Department of Housing and Urban Development, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*. June 1995.
- Engineering Technical Letter 94-1, *Standard Airfield Pavement Marking Schemes*. 05 April 1994.
- Federal Aviation Administration, *Advisory Circular 150/5200-33, Hazardous Wildlife Attractants On Or Near Airports*. 01 May 1997.
- Federal Aviation Administration, *Advisory Circular 70/7460-1, Obstruction Marking and Lighting*. 01 August 2000.
- Federal Aviation Regulations Part 139, *Certification and Operations: Land Airports Serving Certain Air Carriers (see Sec. 139.337)*. 18 November 1987 (unless otherwise noted in publication).
- Memorandum of Understanding Between the Department of Defense and Department of the Interior, Relating to Johnston Atoll, dated May 1976 (defines Johnston Atoll and Responsibilities of the Department of Defense and Department of the Interior 1976).
- Operations Plan 91-2, *Johnston Island Bird Aircraft Hazard Operations Plan*. Det 1, 15 AW, Johnston Island. 01 December 2002.

9.0 REFERENCES

- Amerson, A. Binion, Jr., and Philip C. Shelton. 1976. *The Natural History of Johnston Atoll, Central Pacific Ocean*. Atoll Research Bulletin No. 192. Issued by the Smithsonian Institute with the assistance of the USFWS/DOI, Washington, D.C. December.
- Ainardi, Dean. 2003. TSgt, Det 1, 15 AW, Transportation. E-mail correspondence with Major Murphy and Fran Saunders. 20 August.
- Army Program Manager For Chemical Demilitarization (APMCD). 1990. *Johnston Atoll Chemical Agent Disposal System (JACADS), Final Second Supplemental Environmental Impact Statement For The Storage and Ultimate Disposal of The European Chemical Munition Stockpile*. June.
- Balazs, George H. 1985. *Status and Ecology of Marine Turtles at Johnston Atoll*. Atoll Research Bulletin No. 285. Smithsonian Institute.
- Barclay, Tom. 2003. Air Traffic Manager, Oakland ARTCC. E-mail correspondence with Kevin Joseph and Fran Saunders. 29 August.
- Bearden, C. 2003. Petty Officer, USCG, Aids of Navigation Department. Telephone conversation with Dan Frerich. 27 May.
- Bradley, B. 2003. FEMA National Call Center. Telephone conversation with Nicole Griffin. 25 June.
- Bryan, Edwin H. 1923. Johnston Island – Unpublished typed manuscript from the Tanager Expedition to Johnston Island in 1923. Copy courtesy of the Bernice P. Bishop Museum, Honolulu, Hawaii.
- CH2M HILL. 2002a. *Draft Work Plan, Demolition and Mitigation of Hazards on Sand, North, and East Islands, Johnston Atoll*. October.
- . 2002b. *Draft Corrective Measures Implementation Work Plan for Thermal Treatment of Contaminated Soil, Johnston Atoll*. November.
- . 2002c. *Draft Data Gap Biomonitoring Work Plan for SWMU No. 1, 2, and 16 and AOC No. 1, Johnston Atoll*. November.
- . 2002d. *Data Gap Investigation Work Plan for Solid Waste Management Units No. 5, 19, 21, and 22, Johnston Atoll*. December.
- . 2003a. *Groundwater Monitoring Report, Solid Waste Management Units No.6, 15, 16, and Areas of Concern No. 1, 2, 3, Johnston Atoll*. February.
- . 2003b. *Draft Demolition, Decommissioning, and Wildlife Hazard Mitigation Work Plan, Johnston Island*. April.
- . 2003c. *Technical Memorandum 1, Groundwater Monitoring Plan for SWMUs No. 6, 15, 16, and AOCs 1, 2, 3, Johnston Island*. April.
- . 2003d. *Draft Data Gap Investigation Report for SWMU No. 5, 19, 21, and 22, Johnston Atoll*. May.

- . 2003e. *Draft POL Investigation Work Plan for SWMU No. 15, and 16 and AOC No. 1, 2, and 3, Johnston Atoll.* June.
- . 2003f. *Draft UST Removal and POL Pipeline Closure Work Plan, Johnston Atoll.* July.
- . 2003g. *Draft Comprehensive Performance Test Report and Petition for Full Scale Operating Conditions for Thermal Treatment of Contaminated Soil, Johnston Atoll.* August.
- . 2003h. *Draft Recommended No Further Action Report For SWMU No. 6, Appendix A, An Estimate of Island Erosion and Return to Natural Conditions, Johnston Atoll.* December.
- Coles, S., R. DeFelice, and D. Minton. 2001. *Marine Species Survey of Johnston Atoll, Central Pacific Ocean, June 2000.* Bishop Museum Technical Report No. 19. January.
- Computer Sciences Corporation (CSC). 1984. *Study of 100 Year Flood Plain at JACADS Facility Site on Johnston Island.* September.
- Defense Nuclear Agency (DNA). 1988. *Johnston Atoll Comprehensive Plan.* Prepared for DNA by Helbert, Hastert, VanHorn & Kimura Planners, Honolulu, Hawaii. September.
- . 1990. *RCRA Part B Permit Application for Hazardous Waste Storage, Johnston Atoll: Interim Status Permit No. TT0570090002.* Prepared by Holmes and Narver, Inc. August.
- . 1994. *Master Plan, Johnston Atoll, North Pacific Ocean.* July.
- Defense Threat Reduction Agency (DTRA). 2002. *Corrective Measures Study/Feasibility Study for the Disposition of Metal/Concrete Debris and Radioactive Coral (above 13.5 pCi/g) Situated in the Radiological Control Area on Johnston Island, Johnston Atoll.* June.
- Department of the Army (Army). 2003. *U.S. Army Chemical Materials Agency (Provisional), Johnston Atoll Chemical Agent Disposal System SFAE-CD-CO-J Memorandum to Detachment 1, 15 Air Base Wing/CC dated 18 July 2003, Subject: JACDS Outfall 008 NPDES Quarterly Discharge Monitoring Report.* July.
- Department of Commerce, United States (DOC). 2001. *Johnston Atoll and Range of the Hawaiian Monk Seal.* NMFS. May.
- Department of the Interior, United States (DOI). 1999. *Johnston Atoll National Wildlife Refuge.* (Brochure). USFWS. October.
- . 2001. Record of conversation and e-mail correspondence with Johnston Atoll and Honolulu USFWS personnel.
- Detachment 1, 15 Airlift Wing. 2003. Record of conversation and e-mail correspondence with Det 1, 15 AW personnel in Honolulu, Hawaii and on Johnston Atoll.
- Earth Tech, Inc. 2001. *Lead-Based Paint Assessment Report, Johnston Atoll.* September.
- . 2002a. *Asbestos Survey Report, Johnston Atoll.* October.
- . 2002b. *Environmental Assessment, Building Demolition, Decommissioning, and Debris Disposal, Johnston Atoll.* March.

- . 2002c. *Investigation, Remedial Action, and Closure Report, DTRA Sites, Johnston Atoll*. October.
- . 2002d. *Wildlife Hazard Assessment and Abatement Plan, Johnston Atoll*. January.
- . 2002e. *Work Plan, Demolition and Decommissioning, Johnston Atoll*. February.
- . 2003. *Final Historic Building Inventory and Evaluation, Johnston Atoll*. January.
- Environmental Protection Agency Region 9. 1998. *Johnston Atoll Chemical Agent Disposal System (JACADS) Resource Conservation and Recovery Act (RCRA) Permit, EPA ID# TT0-570-090-001, Volume I, Modules I Through VIII*. July.
- . 2001. *National Pollution Discharge Elimination System (NPDES) Permit for Johnston Atoll*. Issued to the U.S. Air Force. San Francisco. 27 December.
- . 2002. *Hazardous Waste Corrective Action Permit, Johnston Atoll, EPA I.D. No. TT9 570 090 002*. Issued to the U.S. Air Force, 15th Air Base Wing. San Francisco. 30 April.
- Federal Aviation Administration. 1988. *Advisory Circular: Extended Range Operation With Two-Engine Airplanes (ETOPS)*. December.
- . 2002. *Aeronautical Information Manual (AIM): Official Guide to Basic Flight Information and ATC Procedures*. 21 February.
- Field Command Defense Nuclear Agency. 1994. *Master Plan, Johnston Atoll*. July.
- Hayes, L. 2003. Refuge Manager, USFWS, Johnston Atoll. E-mail correspondence with Betsy Alspaugh. 18 April.
- Holland, G.J. 1993. "Ready Reckoner" - Chapter 9, Global Guide to Tropical Cyclone Forecasting, WMO/TC-No. 560, Report No. TCP-31, World Meteorological Organization; Geneva, Switzerland.
- Johnson, L. 2003. Lieutenant Commander, USCG, Marine Safety Division. Telephone conversation with Dan Frerich. 27 May.
- Johnston D., King, A., Monterey Bay National Marine Sanctuary Research Activity Pane. 1994. *Report on the Use of Attractants in the Fishing Industry*.
- Jokiel, P. L. 1976. *Stony Corals Reported From Johnston Atoll. Preliminary Species List*. (unpublished).
- Keating, B. 1985. *Submersible Observations on the Flanks of Johnston Atoll (Pacific Ocean)*. Proceedings of the Fifth International Coral Reef Congress, Tahiti, 1985, Vol. 6.
- Knudsen. 1994. Letter from Terri Knudsen, Balloffet & Associates, Inc. to Walter Chun, Deputy Director ES&H, Raytheon Services Nevada dated 11 July 1004 regarding Archaeological Survey conducted 06 April 1994 at Johnston Atoll.
- Lobel, P. 2003. Professor of Biology, Boston University Marine Program. Telephone conversation with Karl Bromwell. 16 May.

- Makaiau, J. 2003. Habitat Coordinator, WPRFMC. Telephone conversations with Dan Frerich. May.
- Motta, P. J. and C. D. Wilga. 2001. "The Behavior and Sensory Biology of Elasmobranch Fishes. An Anthology in Memory of Donald Richard Nelson". *Developments in Environmental Biology of Fishes*, 20:131–156. S. Gruber and T. Tricas editors.
- National Marine Fisheries Service. 1983. *Recovery Plan for the Hawaiian Monk Seal (Monachus schauinslandi)*. Prepared by William G. Gilmartin and the Hawaiian Monk Seal Recovery Team for the National Marine Fisheries Service, Terminal Island, California. 48 pp.
- . 1991. *Recovery Plan for the Humpback Whale (Megaptera novaeangliae)*. Prepared by the Humpback Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 105 pp.
- National Oceanic and Atmospheric Administration. 2003a. *Most Recent Tsunamis*. Web site URL: <http://wcatwc.arh.noaa.gov/tsunami.htm>. PTWC.
- . 2003b. *West Coast and Tsunamis Warning Center, Physics of Tsunamis*. Web site URL: <http://wcatwc.arh.noaa.gov/physics.htm>. PTWC.
- O'Daniel, D. n.d. *Draft Johnston Atoll National Wildlife Refuge: Status Report of the Wildlife of Johnston Atoll: Historical Perspectives and the Decade of the 1990s*. Prepared for UFWS.
- Ogden Environmental and Energy Services Company, Inc. 1999. *Environmental Baseline/Property Transfer Survey Report for Johnston Atoll*. January.
- Schreiber, E. A., Ph.D. 1997. *Breeding Biology and Ecology of the Seabirds of Johnston Atoll, Central Pacific Ocean, 1997. Long-Term Monitoring for Effects of Johnston Atoll Chemical Demil. Project 1984-1997*. Seabird Research, Inc.
- . 2000. *Johnston Atoll Closure: Suggestions for Bird and Bird Habitat Management*. Smithsonian Institute National Museum of Natural History. June.
- Spencer, M. 2003. FAA, Flight Standards. Telephone conversation with Nicole Griffin. 14 June.
- United States Army Center for Health Promotion and Preventive Medicine and Raytheon Demilitarization Company (USACHPPM and Raytheon). 2000. *Johnston Atoll Chemical Agent Disposal System (JACADS), Facility Closure Campaign, RCRA Facility Assessment (EPA ID #TT0 570 090 001)*. December.
- United States Army Corps of Engineers (USACE). 1978. *MicroNOISE, A User's Manual*. Technical Report N-86/12. Construction Engineering Research Labs. June.
- . 1984. *Flood Hazard Analysis for JACADS Johnston Atoll*. Prepared by the Pacific Ocean Division. September.
- . 1985. *Flood Hazard Analysis for JACADS Johnston Atoll*. Prepared by the Pacific Ocean Division. February.
- . 1987. *Johnston Atoll Shore Protection Survey*. Prepared for the DNA. July.

- . 1988. *Johnston Atoll Chemical Agent Disposal System (JACADS) Final Supplemental Environmental Impact Statement*. December.
- . 2002. *Johnston Atoll Wetland Survey*. Final. August.
- Western Pacific Regional Fishery Management Council (WPRFMC). 2000. *Draft Fishery Management Plan for Coral Reef Ecosystems of the Western Pacific Region (Including Regulations) and Regulatory Impact Review/Initial Regulatory Flexibility Analysis*. December.
- . 2001. *Final Fishery Management Plan For Coral Reef Ecosystems of The Western Pacific Region*. October.
- United States Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetland Delineation Manual*. Wetlands Research Program Technical Report Y-87-1. Vicksburg, Miss.: Environmental Laboratory, USACE Waterways Experiment Station. January.
- United States Geological Survey (USGS). 1994. *Effects of Major Storms on Pacific Islands, USGS Fact Sheet, Marine and Coastal Geology Program*.

10.0 PUBLIC COMMENTS AND RESPONSES

To be completed after the public review period of the Draft EIS.

Appendix A
Notice of Intent Published in the *Federal Register*

these meetings will be closed to the public.

Dated: October 30, 2002.

L.M. Bynum,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 02-28106 Filed 11-5-02; 8:45 am]

BILLING CODE 5001-08-M

DEPARTMENT OF DEFENSE

Office of the Secretary

Defense Science Board

AGENCY: Department of Defense.

ACTION: Notice of Advisory Committee meeting.

SUMMARY: The Defense Science Board Task Force on the Smallpox Vaccine Down Select Process will meet in closed session on December 9, 2002, and February 6, 2003, at SAIC, 4001 N. Fairfax Drive, Arlington, VA. The Task Force will perform an independent evaluation of the Department of Defense and Department of Health and Human Services smallpox vaccine candidates.

The mission of the Defense Science Board is to advise the Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology & Logistics on scientific and technical matters as they affect the perceived needs of the Department of Defense. At these meetings, the Task Force will evaluate each of the three smallpox vaccine candidates to include the following type of issues: Choice of cell line and viral strain used; preclinical data in appropriate animal models; review of vaccine production methodology to include rates of production and surge capacity; review of protocols for clinical trials to include adverse reaction rates; review of cost issues as they relate to production of the vaccine; review of critical regulatory, legal, and ethical issues associated with the use of the vaccine; and any other issues that the Task Force feels, based on its experience, are relevant.

In accordance with section 10(d) of the Federal Advisory Committee Act, Pub. L. 92-463, as amended (5 U.S.C. App. II), it has been determined that these Defense Science Board Task Force meetings concern matters listed in 5 U.S.C. 552b(c)(4) and that, accordingly, these meetings will be closed to the public.

Dated: October 30, 2002.

L.M. Bynum,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 02-28107 Filed 11-5-02; 8:45 am]

BILLING CODE 5001-08-M

DEPARTMENT OF DEFENSE

Department of the Air Force

Notice of Intent To Prepare an Environmental Impact Statement for Department of Defense Mission Closure at Johnston Atoll Airfield

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code 4321, *et seq.*), the Council on Environmental Quality (CEQ) Regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508), and Air Force policy and procedures (32 CFR 989), Detachment 1 of the 15 Air Base Wing (ABW) intends to prepare an Environmental Impact Statement (EIS) for the DoD mission closure of Johnston Atoll Airfield. Johnston Atoll (JA) is an unincorporated territory (*i.e.*, possession) of the United States located approximately 717 nautical miles southwest of Honolulu, Hawaii, in the central Pacific Ocean. The Air Force and its implementing agent, Detachment 1, 15 ABW currently serves as the host-management agency for JA military missions. After December 31, 2003, no further military mission requirements have been identified for JA.

Detachment 1, 15 ABW will be the lead agency for the EIS. Since Honolulu is the closest population center to this remote Pacific atoll, Detachment 1, 15 ABW will conduct a Public Scoping Meeting, scheduled for November 6, 2002, in Honolulu, Hawaii at Washington Intermediate School, located at 1633 South King Street. The meeting's purpose is to determine the environmental issues and concerns to be analyzed, to solicit comments on the Proposed Action and alternatives, and to solicit input for other alternatives to be considered in the EIS.

The current proposal evaluates four alternatives—(1) No Action; (2) mission closure with declaration of excess to General Services Administration (GSA); (3) mission closure, but retain ownership of JA (do not excess property to GSA); and (4) caretaker status (mothball JA and retain for future missions). The Proposed Action is alternative (2); however, all comments received during the Scoping Meeting will be considered prior to the Air Force making a decision.

For further information concerning the DoD mission closure at JA or alternatives to the proposed action, please contact Ms. Fran Saunders, Chief, Johnston Atoll Program Office, OL-A, Detachment 1, 15 ABW, 200 Vickers

Avenue, Bldg 1055, Hickam AFB, HI 96853-5271.

Pamela D. Fitzgerald,

Air Force Federal Register Liaison Officer.

[FR Doc. 02-28208 Filed 11-5-02; 8:45 am]

BILLING CODE 5001-5-P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Availability of Government-Owned Invention; Available for Licensing

AGENCY: Department of the Navy, DOD.

ACTION: Notice.

SUMMARY: The invention listed below is assigned to the United States Government as represented by the Secretary of the Navy and is available for licensing by the Department of the Navy. Navy Case No. 83,326, entitled "Use of Selective Electrodes for Illicit Drugs Analysis in Saliva and Surface Wipes".

ADDRESSES: Requests for information about the invention cited should be directed to the Naval Research Laboratory, Code 1004, 4555 Overlook Avenue, SW., Washington, DC 20375-5320, and must include the Navy Case number.

FOR FURTHER INFORMATION CONTACT: Catherine M. Cotell, Ph.D., Head, Technology Transfer Office, NRL Code 1004, 4555 Overlook Avenue, SW., Washington, DC 20375-5320, telephone (202) 767-7230. Due to temporary U.S. Postal Service delays, please fax (202) 404-7920, *E-Mail:* cotell@nrl.navy.mil or use courier delivery to expedite response.

(Authority: 35 U.S.C. 207, 37 CFR Part 404)

Dated: October 29, 2002.

R.E. Vincent II,

Lieutenant Commander, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. 02-28112 Filed 11-5-02; 8:45 am]

BILLING CODE 3810-FF-P

DEPARTMENT OF EDUCATION

Submission for OMB Review; Comment Request

AGENCY: Department of Education

SUMMARY: The Leader, Regulatory Management Group, Office of the Chief Information Officer invites comments on the submission for OMB review as required by the Paperwork Reduction Act of 1995.

Appendix B
Johnston Atoll Closure Notification Letter



**DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES**

15 NOV 2007

**MEMORANDUM FOR PMCS (SFAE-CD-CO-J)
U.S. FWS (JAA Refuge Manager)
NWS (NOAA)
USGS (GSN)
DTRA (ALHK)
RTSC
SDV Telecommunications, INC.
JAA AAFES
Aloha Airlines
USCG Air Station Barbers Point/CO
154 WG/CC
624 RSG/CC
735 AMS/CC**

FROM: 15 ABW/CC

SUBJECT: Johnston Atoll Airfield (JAA) Mission Termination Actions

1. With reference to 15 ABW/CC 28 Jan 00 memo, JAA Mission Reduction Actions (atch), and recent direction from PACAF, the Air Force hereby formally notifies all tenants of the discontinuance of Air Force base operating support (BOS) to occur not later than 31 Dec 03. This is an extension from Oct 03 per the Army's Program Manager for Chemical Demilitarization's (PMCD) request earlier this year. All parties should understand that the Air Force will grant no further extensions. All Air Force support activities to tenants on JAA will cease and the installation will be closed by 31 Dec 03.

2. All tenant activities requiring Air Force support must be complete prior to final closure on 31 Dec 03. This specifically includes those actions identified in the 15 Air Base Wing Action Plan, Closing JAA (Apr 02) as well as those actions identified in your organizational closure and action plans. Demolition and decommissioning of facilities has begun and will continue after 31 Dec 03. The current scope and schedule of these activities are predicated on facilities and utility systems being available for removal from service. The fact that demolition will continue past 31 Dec 03 is not an indication that support will continue beyond that date.

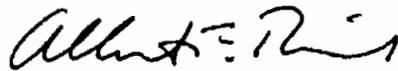
3. PMCS, USFWS, NWS, and USGS have indicated a need to continue some activity beyond 31 Dec 03. Separate use agreements need to be put into place for these organizations to continue to operate on a closed Air Force installation. Continued use will not be allowed without such an agreement. The vehicle for providing use of Air Force property by other Federal agencies is a real estate permit. The Air Force will use its standard permit for this purpose. Users should understand that the Air Force will not agree to indefinite use by other agencies; any use that is long-term in

nature will require assumption of real property accountability by the using agency. In helping us fill in these permits, we will need specific input NLT 15 Dec 02 to allow timely issuance. This information includes but is not limited to:

- a. Official name of your organization that will remain on JAA.
- b. Name, address, and phone number of POC within your organization having authority to execute the real estate permit. This person will be the main point of contact that will be working with the Hickam Air Force Base real estate office to ensure the permit is executed in a timely manner.
- c. Specific buildings required (if removed from the demolition list for this purpose, the user will have to commit to demolish the facility upon termination of use)
- d. Description of facility usage (should include mission, processes, etc.)
- e. Projected population and nature of occupants (DoD or other government agency, contractors, etc.,)
- f. Nature of self-support/sustainment to be used (potable water, waste removal and/or treatment, electrical service, facility maintenance, transportation, medical support, access control, etc.)

4. Tenants planning to remain on JAA beyond the 31 Dec 03 closure must plan for their own self-sustainment on the atoll. Since the Air Force presence on JAA will cease on that date, support functions are the sole financial responsibility of the permittee. The AF will cease to provide any transportation, water, food, utilities, medical, security or any other form of support. In addition, the permittee will be responsible for disposition of the facilities they use prior to leaving JAA. For further direction regarding the permitting process, please review Air Force Instruction 32-9003, *Granting Temporary Use of Air Force Real Property*. This instruction is available on the AF publications website, located at <http://www.e-publishing.af.mil>.

5. My Det 1 point of contact is Maj Tom Williams at (808) 421-0011 x3035, or Lt Paul Edwards x3229.



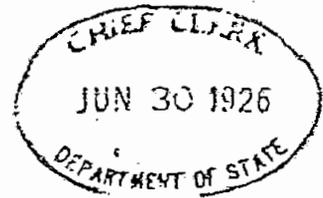
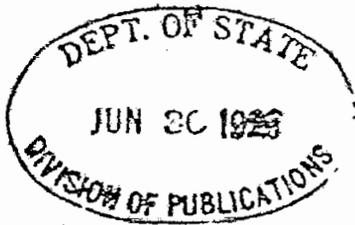
ALBERT F. RIGGLE, Col, USAF
Commander

Attachment:
15 ABW/CC memo, 28 Jan 00

cc
Det 1, 15 ABW/CC
15 CES/CERR
HQ PACAF/CE/DO/JA/LG/XP

Appendix C
Executive Orders and other Documents of Conveyance
Related to Johnston Atoll

Appendix C-1
Executive Order 4467



EXECUTIVE ORDER

7467

.....

It is hereby ordered that two small islands known as Johnston Island and Sand Island, located in the Pacific Ocean, approximately in latitude 16° 44' 45" North and longitude 169° 30' 30" West from Greenwich, as segregated by the broken line upon the diagram hereto attached and made a part of this order, be and the same are hereby reserved and set apart for the use of the Department of Agriculture as a refuge and breeding ground for native birds.

It is unlawful for any person to hunt, trap, capture, willfully disturb or kill any bird of any kind whatever, or take the eggs of such bird within the limits of this reserve, except under such rules and regulations as may be prescribed by the Secretary of Agriculture.

Warning is expressly given to all persons not to commit any of the acts herein enumerated, under the penalties prescribed by Section 84 of the U.S. Penal Code, approved March 4, 1909 (35 Stat., 1088), as amended by the Act approved April 15, 1924 (43 Stat., 98).

This reservation to be known as Johnston Island Reservation.

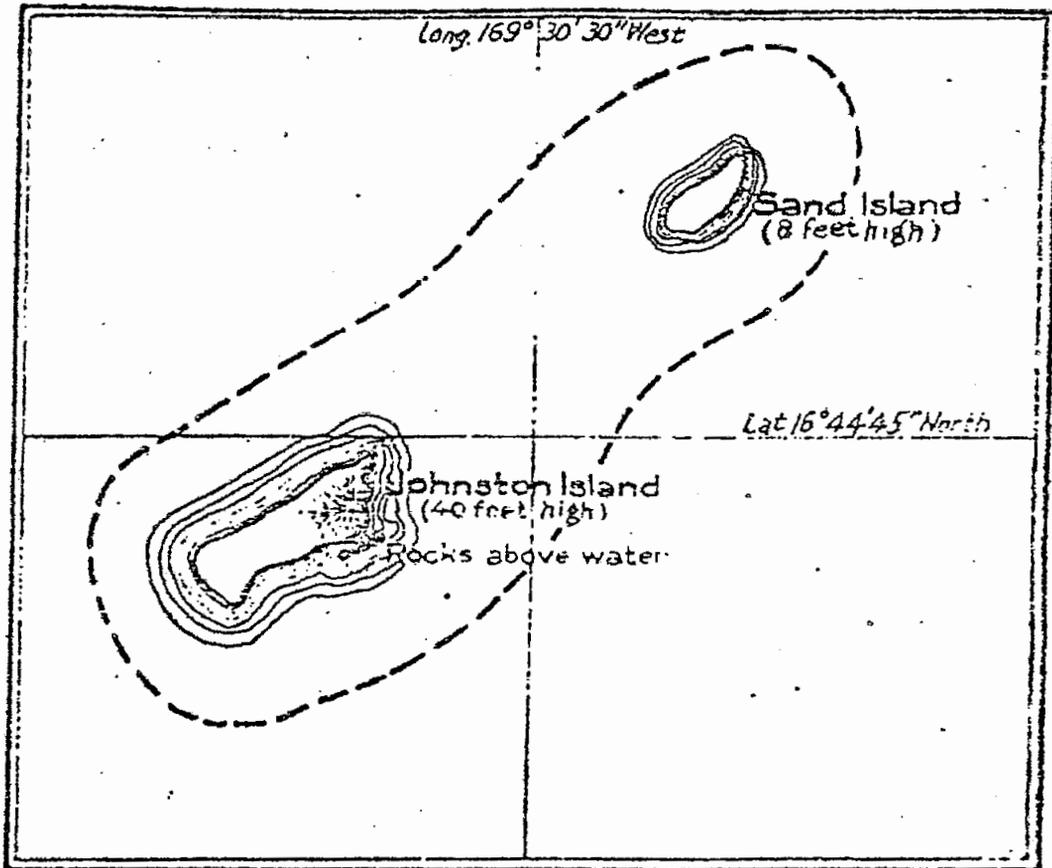
The White House,

June 24, 1926.

JOHNSTON ISLAND RESERVATION

For the Protection of Native Birds

Embracing two small islands known as Johnston Island and Sand Island located in the Pacific Ocean approximately in Latitude 16° 44' 45" North, Longitude 169° 30' 30" West



DEPARTMENT OF THE INTERIOR

Hubert Work, Secretary

GENERAL LAND OFFICE

William Spry, Commissioner

Appendix C-2
Executive Order 6935

EXECUTIVE ORDER

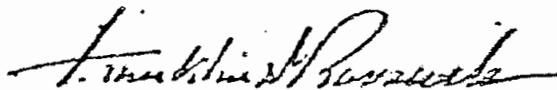
PLACING CERTAIN ISLANDS IN THE PACIFIC OCEAN UNDER THE
CONTROL AND JURISDICTION OF THE SECRETARY OF THE NAVY
WAKE ISLAND, KINGMAN REEF, AND JOHNSTON AND SAND ISLANDS

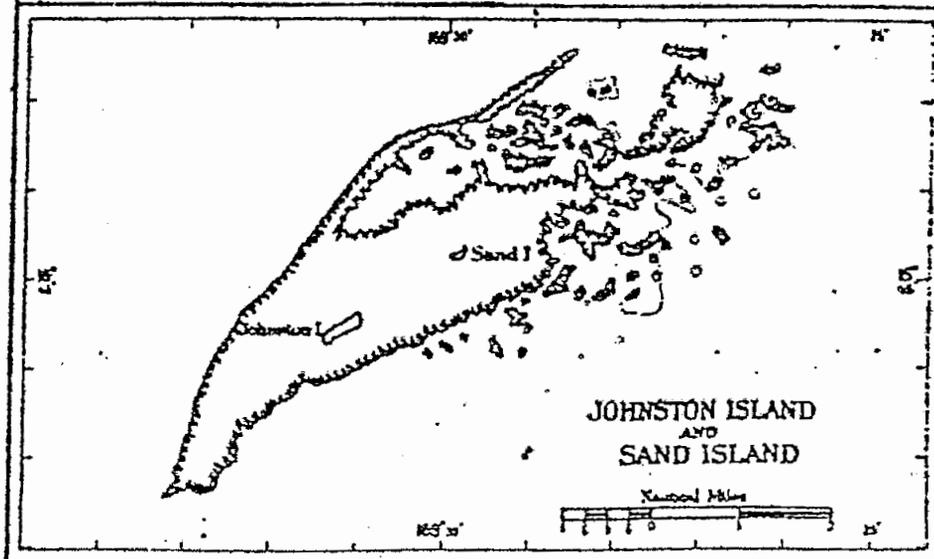
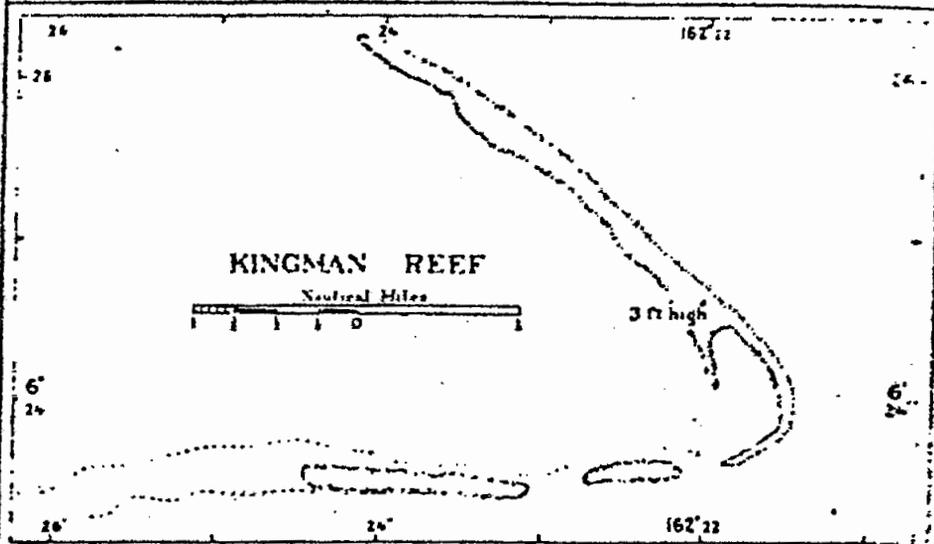
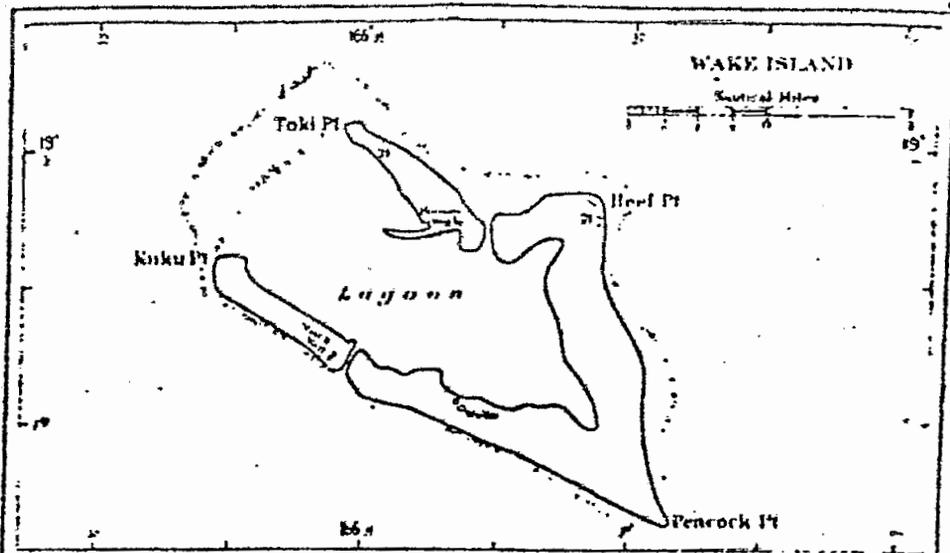
By virtue of and pursuant to the authority vested in me by the act of June 25, 1910, ch. 421, 36 Stat. 847, as amended by the act of August 24, 1912, ch. 389, 37 Stat. 497, and as President of the United States, it is ordered that Wake Island located in the Pacific Ocean approximately in latitude $19^{\circ}17'29''$ N. and longitude $166^{\circ}34'42''$ E. from Greenwich, Kingman Reef located in the Pacific Ocean approximately in latitude $6^{\circ}24'37''$ N. and longitude $162^{\circ}20'$ W. from Greenwich, and Johnston and Sand Islands located in the Pacific Ocean approximately in latitude $16^{\circ}44'32''$ N. and longitude $169^{\circ}30'59''$ W. from Greenwich, together with the reefs surrounding all the aforesaid islands, as indicated upon the diagram hereto attached and made a part of this order, be, and they are hereby, reserved, set aside, and placed under the control and jurisdiction of the Secretary of the Navy for administrative purposes, subject, however, to the use of the said Johnston and Sand Islands by the Department of Agriculture as a refuge and breeding ground for native birds as provided by Executive Order No. 4467 of June 22, 1925.

This order shall continue in full force and effect unless and until revoked by the President or by act of Congress.

THE WHITE HOUSE,

December 29, 1934.





Appendix C-3
Executive Order 8682

EXECUTIVE ORDER

ESTABLISHING NAVAL DEFENSIVE SEA AREAS AROUND AND
NAVAL AIRSPACE RESERVATIONS OVER THE ISLANDS OF
PALMYRA, JOHNSTON, MIDWAY, WAKE, AND KINGMAN
REEF

PACIFIC OCEAN

By virtue of the authority vested in us by the provisions of section 44 of the Criminal Code, as amended (U.S.C., title 18, sec. 96), and section 4 of the Air Commerce Act approved May 20, 1926 (44 Stat. 570, U.S.C., title 49, sec. 174), the territorial waters between the extreme high-water marks in the three-mile marine boundaries surrounding the islands of Palmyra, Johnston, Midway, Wake, and Kingman Reef, in the Pacific Ocean, are hereby established and reserved as naval defensive sea areas for purposes of national defense, such areas to be known, respectively, as "Palmyra Island Naval Defensive Sea Area", "Johnston Island Naval Defensive Sea Area", "Midway Island Naval Defensive Sea Area", "Wake Island Naval Defensive Sea Area", and "Kingman Reef Naval Defensive Sea Area"; and the airspaces over the said territorial waters and islands are hereby set apart and reserved as naval airspace reservations for purposes of national defense, such reservations to be known, respectively, as "Palmyra Island Naval Airspace Reservation", "Johnston Island Naval Airspace Reservation", "Midway Island Naval Airspace Reservation", "Wake Island Naval Airspace Reservation", and "Kingman Reef Naval Airspace Reservation".

At no time shall any person, other than persons on public vessels of the United States, enter any of the naval defensive sea areas herein set apart and reserved, nor shall any vessel or other craft, other than public vessels of the United States, be navigated into any of said areas, unless authorized by the Secretary of the Navy.

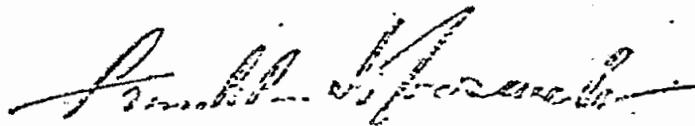
At no time shall any aircraft, other than public aircraft of the United States, be navigated into any of the naval airspace reservations herein set apart and reserved, unless authorized by the Secretary of the Navy.

The provisions of the preceding paragraphs shall be enforced by the Secretary of the Navy, with the cooperation of the local law enforcement officers of the United States and of the Territory of Hawaii; and the Secretary of the Navy is hereby authorized to prescribe such regulations as may be necessary to carry out such provisions.

Any person violating any of the provisions of this order relating to the above-named naval defensive sea areas shall be subject to the penalties provided by section 44 of the Criminal Code as amended (U.S.C., title 18, sec. 96), and any person violating any of the provisions of this order relating to the above-named naval airspace reservations shall be subject to the penalties prescribed by the Civil Aeronautics Act of 1938 (52 Stat. 973).

This order shall take effect ninety days after date hereof.

The White House,
February 14, 1941.



Appendix C-4
Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
DEPARTMENT OF DEFENSE
AND THE
DEPARTMENT OF THE INTERIOR
RELATING TO
JOHNSTON ATOLL

This Memorandum of Understanding entered into by and between the Department of Defense, as represented by the Director, Defense Nuclear Agency, acting for and on behalf of the Secretary of Defense, and the Department of the Interior, as represented by the Director of the United States Fish and Wildlife Service, acting for and on behalf of the Secretary of the Interior.

WHEREAS, Johnston Atoll, consisting of Johnston, Sand, North, and East Islands, located in the Pacific Ocean approximately at latitude 16°44'32" N. and longitude 169°30'59" W. from Greenwich, together with the surrounding reefs, is a possession of the United States; and

WHEREAS, Johnston Atoll is currently a strategic military installation under the administration of the Department of Defense (see, e.g.: E.O. No. 6935 of December 29, 1934 and E.O. No. 8682 of February 14, 1941, as corrected by E.O. No. 8729 of April 2, 1941); and

WHEREAS, Johnston Atoll has also been designated as a National Wildlife Refuge, administered for that purpose by the United States Fish and Wildlife Service of the Department of the Interior (see, e.g.: E.O. No. 4467 of June 29, 1926; E.O. No. 6935; and the National Wildlife Refuge System Administration Act of 1966, P.L. 89-669, 80 Stat. 927, 16 U.S.C. 668dd); and

WHEREAS, the Departments of Defense and Interior recognize the unique joint responsibilities of the two Departments in the administration and preservation of Johnston Atoll; and

WHEREAS, it is the desire and intent of the Departments of Defense and Interior to perform their respective functions at Johnston Atoll in cooperation with each other and in a manner which is as mutually compatible as is possible in the circumstances;

NOW, THEREFORE, it is agreed that:

1. Except as to matters pertaining to the protection and conservation of the natural resources, fish, and wildlife of Johnston Atoll, the Department of Defense, through its designated agency for administration, has responsibility and jurisdiction over the Atoll and its human residents and visitors.

2. The Department of the Interior, through the United States Fish and Wildlife Service, has primary responsibility and jurisdiction for the protection and preservation of the Atoll's natural resources, fish and wildlife.

3. To the extent possible, the parties hereto will work in unison to protect, preserve, and improve the natural resources and the fish and wildlife on the Atoll.

4. For purposes of implementing this agreement, the designated representative of the Department of the Interior is the Refuge Manager, Hawaiian and Pacific Islands National Wildlife Refuges, of the United States Fish and Wildlife Service (hereinafter referred to as the "Manager"), and the designated representative of the Department of the Defense is the Commander, Johnston Atoll (hereinafter referred to as the "Commander").

5. The Commander shall issue and enforce regulations for the purpose of protecting and conserving the natural resources and fish and wildlife of the Atoll. The regulations shall be binding upon all personnel stationed at or visiting Johnston Atoll, whether military, civilian contractors, employees, agents, or assigns thereof, or merely visitors.

6. The regulations shall also be deemed Refuge regulations for Johnston Atoll National Wildlife Refuge and may also be enforced, if necessary, by the appropriate Fish and Wildlife Service personnel or their authorized deputies or agents, as provided in the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd), as amended, in coordination with the Commander.

7. Portions of the regulations may be temporarily waived by the Commander when, in his judgment, the National defense mission assigned to Johnston Atoll so requires. In each such instance, the Commander shall notify the Manager of the waiver, the scope and duration thereof, and the reason therefor.

8. The regulations shall be subject to periodic review by the Commander and the Manager and revised as necessary to assure their responsiveness to current conditions and circumstances.

9. Should differences in the positions of the Commander and the Manager develop which cannot be resolved locally, they will be forwarded for resolution to higher levels of authority within the Departments of Defense and Interior.

10. The representatives of the parties hereto shall assist each other in carrying out their respective missions at Johnston Atoll and in achieving maximum compatibility of objectives.

11. On or about three years after the date of the signature of the last party to sign this agreement, and on a similar date each three-year period thereafter, the host-manager for the Department of Defense and the Director, United States Fish and Wildlife Service, for the Department of the Interior shall jointly review this agreement and determine the currency thereof and the need for continuing or revising the agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Memorandum of Understanding as of the day and year indicated.

DEPARTMENT OF DEFENSE

APPROVED: 17 May, 1976

By: Warren D. Johnson
Warren D. Johnson
Lieutenant General, USAF
Director
Defense Nuclear Agency

DEPARTMENT OF THE INTERIOR

APPROVED: 27 May, 1976

By: Lynn A. Greenwalt
Lynn A. Greenwalt
Director
United States Fish and
Wildlife Service

Appendix D
Plant and Animal Species Recorded on
Johnston Atoll

Appendix D-1
Vascular Plants Recorded on Johnston Atoll

Source: Amerson, A. Binion, Jr. and Philip C. Shelton. 1976. *The Natural History of Johnston Atoll, Central Pacific Ocean*. Atoll Research Bulletin No. 192. Issued by the Smithsonian Institute with the assistance of the Fish and Wildlife Service, U.S. Department of Interior, Washington, D.C. December.

Vascular Plants Recorded at Johnston Atoll

Latin Binomial	Common Name
<i>Polypodium scolopendria</i>	Monarch Fern
<i>Nephrolepis</i> sp.	NA (Fern)
<i>Araucaria heterophylla</i>	Norfolk Island Pine
<i>Pandanus tectorius?</i>	Screw pine, hala
<i>Cenchrus echinatus</i>	Sandbur
<i>Chloris barbata</i>	Fingergrass
<i>Cynodon dactylon</i>	Bermuda grass
<i>Dactyloctenium aegyptium</i>	Crowfoot grass
<i>Digitaria sanguinalis</i>	Crab grass
<i>Echinochloa crus-galli</i>	Barnyard grass
<i>Eleusine indica</i>	Goose grass
<i>Eragrostis tenella</i> (incl. <i>amabilis</i>)	Love grass
<i>Lepturus repens</i>	Bunch grass
<i>Paspalum dilatatum</i>	Dallas grass
<i>Saccharum officinarum</i>	Sugarcane
<i>Setaria verticillata</i>	Bristlegrass
<i>Sporobolus virginicus</i>	Dropseed
<i>Zea mays</i>	Corn
<i>Cyperus rotundus</i>	Sedge
<i>Fimbristylis cymosa?</i>	Sedge
<i>Cocos nucifera</i>	Coconut palm
<i>Anthurium andraeanum</i>	Anthurium
<i>Allium fistulosum</i>	Welsh onion
<i>Allium</i> sp.	Chives
<i>Aloe</i> sp.	Aloe
<i>Cordyline fruticosa</i>	Cordyline
<i>Sansevieria trifasciata</i>	Bowstring Hemp
<i>Crinum asiaticum</i>	Poison bulb
<i>Crinum</i> sp.	NA (Lily)
<i>Hymenocallis littoralis</i>	Spider lily
<i>Ananas comosus</i>	Pineapple

<i>Alpina</i> sp.	Ginger
<i>Heliconia humilis</i>	NA
<i>Strelitzia reginae</i>	Bird of Paradise
<i>Epidendrum</i> sp.	Orchid
<i>Vanda</i> sp.	Orchid
<i>Casuarina equisetifolia</i>	Ironwood
<i>Ficus microcarpa</i>	Banyan
<i>Pilea microphylla</i>	Artillery plant
<i>Coccoloba uvifera</i>	Sea-grape
<i>Chenopodium murale</i>	Goosefoot, Pigweed
<i>Amaranthus dubius</i>	Pigweed
<i>Amaranthus spinosus</i>	Pigweed
<i>Amaranthus viridis</i>	Pigweed
<i>Boerhavia</i> sp.	NA
<i>Bougainvillea</i> sp.	NA
<i>Tetragonia tetragonioides</i>	New Zealand spinach
<i>Sesuvium portulacastrum</i>	Sea purslane
<i>Portulaca oleracea</i>	Little hogweed
<i>Spergularia marina</i>	Satin flower
<i>Persea americana</i>	Avocado
<i>Lobularia maritima</i>	Sweet Alyssum
<i>Eriobotrya japonica</i>	Loquat
<i>Acacia farnesiana</i>	Sweet Acacia
<i>Crotalaria incana</i>	Rattlebox
<i>Leucaena latisiliqua</i>	NA
<i>Phaseolus</i> sp.	Bean
<i>Pisum sativum</i>	Pea
<i>Mucuna</i> sp.	Bean
<i>Pithecellobium dulce</i>	Manila Tamarind
<i>Prosopis pallida</i>	Algarobe, Kiawe
<i>Vigna marina</i>	Beach pea
<i>Tribulus cistoides</i>	Puncture vine
<i>Citrus aurantifolia</i>	Lime
<i>Citrus sinensis</i>	Orange
<i>Aleurites moluccana</i>	Candlenut, Kukui
<i>Codiaeum variegatum</i> var. <i>pictum</i>	Croton
<i>Euphorbia atoto?</i>	Spurge
<i>Euphorbia prostrata</i>	Spurge

<i>Euphorbia</i> prob. <i>heterophylla</i>	Spurge
<i>Euphorbia glomerifera</i>	Spurge
<i>Euphorbia hirta</i>	Spurge
<i>Euphorbia pulcherrima</i>	Poinsettia
<i>Pedilanthus tithymeloides</i>	Slipper flower
<i>Ricinus communis</i>	Castor bean
<i>Mangifera indica</i>	Mango
<i>Schinus terebinthifolius</i>	Christmas berry tree
<i>Triumfetta procumbens</i>	Burrbark
<i>Hibiscus tiliaceus</i>	Hau, Sea-rose Mallow
<i>Hibiscus</i> sp.	NA (Mallow)
<i>Thespesia populnea</i>	Milo tree, Portia tree
<i>Sida</i> sp.	NA (Mallow, Fanpetals)
<i>Waltheria indica</i>	Basora-Prieta, Florida waltheria
<i>Calophyllum inophyllum</i>	False Kamani
<i>Terminalia catappa</i>	Indian almond, Kamani
<i>Eucalyptus</i> sp.	NA
<i>Brassaia actinophylla</i>	Octopus tree
<i>Polyscias guilfoylei</i>	Wild coffee
<i>Carica papaya</i>	Papaya
<i>Plumbago auriculata</i>	Plumbago, Leadwort
<i>Catharanthus roseus</i>	Madagascar Periwinkle
<i>Nerium oleander</i>	Oleander
<i>Plumeria acuminata</i>	Frangipani
<i>Plumeria rubra</i>	Frangipani
<i>Thevetia peruviana</i> var. <i>aurantiaca</i>	Lucky nut
<i>Thevetia peruviana</i> (= <i>nereifolia</i>)	Yellow Oleander
<i>Ipomoea indica</i>	Ocean Blue Morning Glory
<i>Ipomoea pes-caprae</i>	Beach Morning Glory
<i>Ipomoea macrantha</i>	NA (Morning Glory)
<i>Merremia tuberosa</i>	Wood Rose
<i>Nama sandwicensis</i>	Hinahina Kahakai
<i>Cordia sebestena</i>	Kou, Geiger Tree
<i>Heliotropium curassavicum</i>	Seaside Heliotrope
<i>Tournefortia argentea</i>	Tree Heliotrope
<i>Stachytarpheta jamaicensis</i>	Blue flower
<i>Vitex ovata</i>	Round-leaf Chastetree
<i>Capsicum frutescens</i>	Papper

<i>Nicotiana glauca</i>	Tree Tobacco
<i>Solanum lycopersicum</i>	Tomato
<i>Solanum melogena</i>	Eggplant
<i>Tabebuia pentophylla</i>	West Indian Boxwood
<i>Gardenia</i> sp.	NA
<i>Coprosma</i> sp.	NA
<i>Citrullus lanatus</i> var. <i>vulgaris</i>	Watermelon
<i>Cucumis melo</i>	Muskmelon
<i>Scaevola taccada</i>	Beach Naupaka
<i>Bidens pilosa</i>	Burmarigold
<i>Conyza bonariensis</i>	Asthma Weed
<i>Emilia sonchifolia</i>	Lilac Tassel Flower
<i>Helianthus annuus</i>	Common Sunflower
<i>Pluchea indica</i>	Indian Camphorweed
<i>Pluchea carolinensis</i>	Cure for All
<i>Pluchea</i> x <i>Fosbergii</i>	NA (Camphorweed)
<i>Sonchus</i> sp. (<i>oleraceus</i> x <i>asper</i>)?	Sow-thistle
<i>Tagetes</i> sp.	Marigold
<i>Vernonia cinerea</i>	Ironweed
<i>Zinnia elegans</i>	Zinnia

*All Latin binomials taken from: Amerson, A. Binion, Jr., and Philip C. Shelton. Atoll Research Bulletin 192. The Natural History of Johnston Atoll, Central Pacific Ocean. December, 1976.

*Species common names taken from Amerson and Shelton (above) and www.csd.tamu.edu/FLORA/kartesz/flora2ka.htm

Appendix D-2

Historic Records of Marine Organisms Observed or Collected on Johnston Atoll

Source: Coles, S., R. DeFelice, and D. Minton. 2001. *Marine Species Survey of Johnston Atoll, Central Pacific Ocean, June 2000*. Bishop Museum Technical Report No. 19. January.

Taxa1	Taxa 2	Genus/Species	Authority	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Scorpaenidae	<i>Thunnus albacares</i>	(Bonnatere, 1788)															x							
		<i>Dendrochirus barberi</i>	(Steindachner, 1900)															x							
		<i>Neomerinthe rufescens</i>	(Gilbert)															x							
		<i>Pontinus macrocephalus</i>	(Sauvage, 1882)															x							
		<i>Scorpaena colorata</i>	(Gilbert, 1905)															x							
		<i>Scorpaena kelloggi</i>	(Jenkins, 1903)															x							
		<i>Scorpaenodes hirsutus</i>	(Smith, 1957)															x							
		<i>Scorpaenodes parvipinnis</i>	(Garrett, 1864)															x							
		<i>Scorpaenopsis diabolus</i>	(Cuvier and Valenciennes, 1829)															x							
		<i>Scorpaenopsis fowleri</i>	(Pietschmann, 1934)															x							
		<i>Sebastapistes ballieui</i>	(Sauvage, 1875)															x							
		<i>Sebastapistes conlorta</i>	(Jenkins, 1903)															x							
	Serranidae	<i>Anthias fuscinus</i>	Randall & Ralston, 1984															x							
		<i>Anthias ventralis</i>	Randall 1979															x							
		<i>Aporops bilinearis</i>	Schultz, 1943															x							
		<i>Epinephelus quernus</i>	Seale, 1901															x							
		<i>Holanthias elizabethae</i>	(Fowler, 1923)															x							
		<i>Holanthias fuscipinnis</i>	(Jenkins, 1901)															x							
		<i>Liopropoma collettei</i>	Randall & Taylor, 1988															x							
		<i>Plectranthias helena</i>	Randall, 1980															x							
		<i>Plectranthias winniensis</i>	(Tyler, 1966)															x							
		<i>Promicrops lanceolatus</i>	(Bloch, 1790)															x							
		<i>Pseudanthias bicolor</i>	(Randall, 1979)															x							
		<i>Pseudanthias fucinus</i>	(Randall & Ralston)															x							
		<i>Pseudanthias randalli</i>	(Lubbock & Allen, 1978)															x							
	Sphyraenidae	<i>Sphyraena barracuda</i>	(Walbaum, 1792)															x							
		<i>Sphyraena helleri</i>	Jenkins, 1901															x							
	Syngnathidae	<i>Doryrhamphus excisus</i>	Kaup, 1856																						
	Synodontidae	<i>Saurida flamma</i>	Waples, 1982																						
		<i>Saurida gracillius</i>	Quoy & Gaimard, 1824																						
		<i>Synodus binotatus</i>	Schultz, 1953																						
		<i>Synodus engelmani</i>	Schultz, 1953																						
	Tetraodontidae	<i>Synodus variegatus</i>	Lacepede, 1803																						
		<i>Arothron meleagris</i>	(Bloch & Schneider, 1801)																						
		<i>Canthigaster coronata</i>	(Vaillant & Sauvage, 1875)																						
		<i>Canthigaster infamacula</i>	Allan & Randall, 1977																						
		<i>Canthigaster jactator</i>	(Jenkins, 1901)																						
	Triacanthodidae	<i>Hollardia goslinei</i>	Tyler, 1968																						
	Triglidae	<i>Satyrichthys engyceros</i>	(Gunther, 1871)																						
	Xenocoegridae	<i>Kaupichthys hyporoides</i>	(Stromamm, 1896)																						
	Zanclidae	<i>Zanclus cornutus</i>	(Linnaeus, 1758)																						
Reptilia	Cheloniidae	<i>Chelonia mydas</i>	Bocourt, 1835																						

Total Reports

25 92 68 4 12 11 113 148 77 85 149 4 149 6 102 32 26 12 61 102 195 165

Appendix D-3
Historic Records of Marine Organisms Observed or Collected on Johnston Atoll
with 1-2 Listings

Source: Coles, S., R. DeFelice, and D. Minton. 2001. *Marine Species Survey of Johnston Atoll, Central Pacific Ocean, June 2000*. Bishop Museum Technical Report No. 19. January.

Reference	Taxa 1	Taxa 2	Genus, Species	Authority, Date	Cited as	Year
Baker et al. 1997	Planta	Chlorophyta	<i>Borzia elongata</i>			1995
Moul 1964	Planta	Chlorophyta	<i>Halimeda tuna</i>	Moul		1953
Cohen 1997	Anthozoa	Pocilloporidae	<i>Pocillopora meandrina</i>	(Dana, 1846)		1996
Cohen 1997	Anthozoa	Acroporidae	<i>Acropora cythera</i>	(Dana, 1846)		1996
Cairns 1984	Anthozoa	Flabellidae	<i>Javania lamproticum</i>	Mosley, 1880		
Kay 1961	Gastropoda	Cypraeidae	<i>Cypraea tigris</i>	Linn., 1758	<i>Cypraea tigris schilderiana</i>	1970
Brock 1979	Gastropoda	Cypraeidae	<i>Cypraea tigris</i>	Linn., 1758		
Economakis and Lobel 1998	Eiasmobranchii	Carcharhinidae	<i>Carcharhinus amblyrhynchos</i>	(Bleeker, 1856)		1992-95
Randall et al. 1977	Eiasmobranchii	Carcharhinidae	<i>Triaenodon obesus</i>	(Ruppel, 1837)		1968-71
McCosker and Smith 1997	Osteichthyes	Muraenidae	<i>Uropterygius fuscoguttatus</i>	McCosker & Smith, 1997		1968
Dee and Parrish 1994	Osteichthyes	Holocentridae	<i>Myripristis amaena</i>	(Castelnau, 1873)		1993
Randall 1999	Osteichthyes	Callionymidae	<i>Synchiropus rosulentus</i>	Randall, 1999		
Irons 1989	Osteichthyes	Chaetodontidae	<i>Chaetodon trifascialis</i>	(Quoy & Gaimard, 1825)		1988
Irons 1990	Osteichthyes	Chaetodontidae	<i>Chaetodon trifascialis</i>	(Quoy & Gaimard, 1825)		1988
Kosaki 1989	Osteichthyes	Pomacentridae	<i>Centropyge nahackyi</i>	Kosaki, 1989		1987-88
Kerr and Lobel 1997	Osteichthyes	Pomacentridae	<i>Abudefduf sordidus</i>	(Forsskal, 1775)		1995
Mann and Lobel 1995	Osteichthyes	Pomacentridae	<i>Dascyllus albisella</i>	Gill, 1863		1995
Mann and Lobel 1998	Osteichthyes	Pomacentridae	<i>Dascyllus albisella</i>	Gill, 1863		1995
Lobel 1997	Osteichthyes	Pomacentridae	<i>Plectroglyphidodon imparipennis</i>	(Vaillant & Sauvage, 1875)		1995
Randall 1972	Osteichthyes	Labridae	<i>Anampses cuvier</i>	Quoy & Gaimard, 1824		1970
Randall 1972	Osteichthyes	Labridae	<i>Anampses cuvier</i>	Quoy & Gaimard, 1824		1970
Gorka et al. 1997	Osteichthyes	Acanthuridae	<i>Ctenochaetus strigosus</i>	(Bennett, 1828)		1995
Ackman et al. 1992	Reptilia	Chelonidae	<i>Chelonia mydas</i>	Bocourt, 1835		1992
Balazs 1994	Reptilia	Chelonidae	<i>Chelonia mydas</i>	Bocourt, 1835		1992

Appendix D-4

Recent Records of Marine Organisms Observed or Collected on Johnston Atoll

Source: Coles, S., R. DeFelice, and D. Minton. 2001. *Marine Species Survey of Johnston Atoll, Central Pacific Ocean, June 2000*. Bishop Museum Technical Report No. 19. January.

Taxa	Genus Species	Author, Date	Station											
			1	2	3	4	5	6	7	8	9	10	11	
Macroalgae														
Cyanophyta	<i>Ulothrix pseudoflacca*</i>	Wille		X		X								
	Unidentified spp.			X					X					
Chlorophyta	<i>Acetabularia</i> sp.								X					
	<i>Bryopsis hypnoides*</i>	Lamouroux		X					X				X	X
	<i>Bryopsis pennata</i>	Lamouroux										X	X	
	<i>Bryopsis</i> sp.						X							
	<i>Caulerpa ambigua</i>	(Okamura) Prudhomme van Reine & Lockhorst						X						
	<i>Caulerpa lentillifera*</i>	J. Agardh		X										
	<i>Caulerpa racemosa</i>	(Forsskål) J. Agardh			X									X
	<i>Caulerpa serrulata*</i>	(Forsskål) J. Agardh	X	X		X	X							
	<i>Caulerpa webbiana*</i>	Montagne			X								X	
	<i>Cladophora</i> sp.			X						X			X	
	<i>Dictyosphaeria cavernosa*</i>	(Forsskål) Børgesen			X	X						X		
	<i>Dictyosphaeria versluysii</i>	Weber-van Bosse		X					X	X				
	<i>Enteromorpha clathrata*</i>	(Roth) Greville		X									X	
	<i>Halimeda discoidea</i>	Decaisne			X	X								
	<i>Halimeda opuntia*</i>	(Linnaeus) Lamouroux								X				
	<i>Trichosolen oahuensis*</i>	Egerod						X						
	<i>Trichosolen</i> sp.		X											
Phaeophyta	Unidentified sp.				X									
	<i>Dictyopteris repens*</i>	(Okamura) Børgesen	X					X						
	<i>Dictyopteris</i> sp.			X										
	<i>Dictyota acutiloba*</i>	J. Agardh											X	
	<i>Dictyota divaricata*</i>	Lamouroux		X				X						
	<i>Dictyota</i> sp.				X	X		X	X				X	
	<i>Lobophora variegata</i>	(Lamouroux) Womersley	X	X	X	X	X	X	X	X	X	X		X
	<i>Rosenvingea</i> sp.*							X	X					
	<i>Sphacelaria novae-hollandiae</i>	Sonder		X						X				
	<i>Sphacelaria tribuloides</i>	Meneghini							X					
Rhodophyta	<i>Aglaothamnion boergesenii*</i>	(Aponte & Ballantine) L'Hardy-Halos											X	
	<i>Anotrichium secundum</i>	(C. Agardh) Nageli				X								
	<i>Anotrichium tenue</i>	(C. Agardh) Nageli	X		X				X		X			
	<i>Antithamnion antillanum</i>	Børgesen		X			X			X			X	
	<i>Antithamnion</i> sp.					X								
	<i>Antithamnionella breviramosa*</i>	Dawson		X										
	<i>Botryocladia</i> sp.*								X					
	<i>Caulacanthus ustulatus*</i>	(Mertens) Kützing	X					X	X					
	<i>Centroceras clavulatum</i>	(C. Agardh) Montagne						X						
	<i>Centroceras minutum*</i>	Yamada							X					
	<i>Ceramium aduncum*</i>	Nakamura		X										
	<i>Ceramium borneense*</i>	Weber Bosse											X	
	<i>Ceramium codii</i>	(Richards) G. Mazoyer	X						X					
	<i>Ceramium flaccidum</i>	(Harvey) Mazoyer		X	X	X	X							
	<i>Ceramium macilentum*</i>	J. Agardh				X		X		X				X
	<i>Ceramium serpens*</i>	Setchell & Gardner										X		
	<i>Ceramium vagans</i>	Silva	X		X									
	<i>Champia parvula</i>	(C. Agardh) Harvey				X							X	
	<i>Chondracanthus</i> sp*.					X								
	<i>Chondria polyrhiza</i>	Collins & Hervey											X	
	<i>Chondria</i> sp.				X	X								
	<i>Corallophila apiculata*</i>	(Yamada) R.E. Norris				X								
	<i>Corallophila huysmansii</i>	(Weber Bosse) R.E. Norris			X	X				X				
	<i>Crouania</i>	Itono								X				

Appendix E
Shoreline Protection Assessment

Table E-1: Condition Rating, Johnston Island

Section/Reach	Shoreline Protection Type	Assessment	Condition Rating
East End Runway	Unprotected beach	Unprotected shoreline ^a	n/a
	Concrete rubble debris revetment	Non-designed shoreline protection feature ^b	
Softball Field to Point House	Seawall	Good condition	3
	Revetment	Good condition; pre-cast panels	3
Point House	Bulkhead	Joint separation	3
Point House to Navy Pier	Bulkhead	Good condition	3
Navy Pier	Bulkhead	Not visible, east side; good condition at end	3
Port Control Area	Bulkhead	Good condition	3
Marina Area	Bulkhead	Pile cap good condition, steel sheet piling heavy corrosion above splash line, minor rusting below splash line	2
Waikiki Area	Seawall	Good condition	3
Main (North) Wharf	Bulkhead	Vertical steel sheet piling, good condition Reinforced concrete pile cap, spalling, rusting Timber fender system, ship damage	3
Main (North) Wharf (west end)	Bulkhead	Steel sheet piling, rusting above splash zone, minor rusting below splash zone	3
West of Main (North) Wharf	Loose boulder revetment, steel sheet piling bulkhead	Concrete spalls in pile cap, heavy corrosion on piling	2
390-Series Warehouses	Seawall	Good Condition	3
Radiological Control Area	Pre-cast block revetment	Good condition	3
	Seawall	Good condition	3
Vehicle Salvage Yard	Revetment	Good condition	3
Mixed Metal Debris Area	Unprotected beach	Unprotected shoreline ^a	n/a
Former Herbicide Orange Storage Area	Seawall Revetment	Good condition	3
Solid Waste Burn Pit Area	Revetment	Good condition	3
West End of Runway	Seawall	Good condition	3
	Revetment	Good condition	3
West Wharf	Bulkhead	Concrete pile cap, fair condition; steel sheet piling, severe corrosion above splash line, fair condition below splash line	1
West End (south of wharf)	Concrete debris revetment (considered unprotected)	Non-designed shoreline protection feature ^b	n/a
Southwest Corner	Pre-cast block revetment	Good condition	3

Section/Reach	Shoreline Protection Type	Assessment	Condition Rating
Firing Range to JACADS	Seawall	Concrete wave screen, spalls, cracks, and deterioration in isolated sections	3
JACADS Area	Seawall	Good condition	3
JACADS to Air Terminal Building	Seawall	Good condition; sand run-up at pilings	3
Hama Point (west side)	50-foot breached section Revetment, pre-cast blocks randomly placed, loose ready-mix concrete	Non-designed shoreline protection feature ^b	3
Hama Point (east side)	Bulkhead Revetment	Same as south side, good condition	3
	Seawall (without wave screen)	Sporadic longitudinal cracks and spalls	3

n/a not applicable

^a Unprotected shoreline subject to natural beach processes.

^b Non-designed shoreline protection features do not meet performance standards for shoreline protection. This feature is still subject to natural beach process, and may not afford shoreline protection.

Condition Ratings indicate the estimated remaining life of systems before failure or breach:

- Condition 1 (0-5 years)
- Condition 2 (5-10 years)
- Condition 3 (longer than 10 years)

Table E-2: Condition Rating, North Island

Section/Reach	Shore Protection Type	Assessment	Condition Rating
West End (both sides of small boat pier)	Seawall	Good condition; heavy cracking spots of wave screen	3
Wharf	Bulkhead	Severe corrosion above splash line; fair below pile cap spalls	3
West End (northerly)	Seawall	Cracks, spalls in sections, not a problem; generally in good condition	3
North End	Seawall	Generally in good condition; spalls, rebar rusting	3
East End	Bulkhead (with pre-cast concrete block revetment)	Good condition	3
East End	Bulkhead	Heavy spalling and cracking throughout top section	3
East End (southerly)	Unprotected beach	Unprotected shoreline ¹	n/a
South End	Unprotected beach	Unprotected shoreline ¹	n/a

n/a not applicable

¹ Unprotected shoreline subject to natural beach processes.

Condition Ratings indicate the estimated remaining life of systems before failure or breach:

- Condition 1 (0-5 years)
- Condition 2 (5-10 years)
- Condition 3 (longer than 10 years)

Table E-3: Condition Rating, East Island

Section/Reach	Shore Protection Type	Assessment	Condition Rating
West End (wharf)	Bulkhead	Concrete pile cap, good condition; severe corrosion of steel sheet piling above splash line, fair below splash line	1
West End (both sides of small boat pier)	Seawall	Good condition; corrosion, spalling of wave screen	3
West End (north end of wharf)	Revetment	Good condition	3
North End	Unprotected beach	Unprotected shoreline ¹	n/a
East End	Unprotected beach	Unprotected shoreline ¹	n/a
Southeast Corner	Seawall (with pre-cast concrete revetment blocks at both keel ends)	Good condition	3
South End	Unprotected beach	Unprotected shoreline ¹	n/a
Southwest End	Seawall	Good condition	3

n/a not applicable

¹ Unprotected shoreline subject to natural beach processes.

Condition Ratings indicate the estimated remaining life of systems before failure or breach:

- Condition 1 (0-5 years)
- Condition 2 (5-10 years)
- Condition 3 (longer than 10 years)

Table E-4: Condition Rating, Sand Island (Western Portion and Causeway)

Section/Reach	Shore Protection Type	Assessment	Condition Rating
West End	Concrete rubble revetment	Non-designed shoreline protection feature ²	n/a
Sea Plane Ramp	Concrete slab	Good condition	3
Northwest Corner	Bulkhead steel sheet piling	Heavy corrosion	2
Causeway (north side)	Random concrete rubble revetment debris	Non-designed shoreline protection feature ²	n/a
Causeway (south side)	Unprotected beach	Unprotected shoreline ¹	n/a
	Random pre-cast concrete boulders (not designed)	Non-designed shoreline protection feature ²	n/a
Southwest Side (Former Camera Stand [Facility No. 6140]))	Bulkhead	Severe corrosion to steel sheet pilings throughout	1
West of Former Camera Stand (Facility 6140)	Unprotected beach	Unprotected shoreline ¹	n/a
Southwest Corner	Bulkhead steel sheet piling	Severe corrosion	1

n/a not applicable

¹ Unprotected shoreline subject to natural beach processes.² Non-designed shoreline protection features do not meet performance standards for shoreline protection. This feature is still subject to natural beach process, and may not afford shoreline protection.

Condition Ratings indicate the estimated remaining life of systems before failure or breach:

- Condition 1 (0-5 years)
- Condition 2 (5-10 years)
- Condition 3 (longer than 10 years)

Appendix F
SWMUs & AOCs Associated the RCRA Part B Permits

Appendix F-1
Brief Description of SWMUs and AOCs Associated with Air Force RCRA Part B
Permit (Permit No. TT9-057-090-002)

Description of SWMUs and AOCs Associated with Air Force RCRA Part B Permit (Permit No. TT9-057-090-002)

SWMU No. 1 Solid Waste Burn Pit

The Solid Waste Burn Pit, located on the northwest end of Johnston Island approximately 50 feet from the lagoon, currently comprises two air curtain burners used for the combustion of non-hazardous, domestic trash. The burn pit has been used daily since its inception (approximately 1978). Historically, noncombustible items such as lead acid batteries and various shop wastes, possibly paints and solvents, were disposed of at the Solid Waste Burn Pit. As a result, ash, coral aggregate, metal debris, and various noncombustible items had accumulated, forming a large waste pile. Currently, ash from the air curtain burners is placed in an onsite storage container, sampled, and analyzed prior to off-island shipment and disposal. Access to the site is restricted by a chain-link fence.

The Solid Waste Burn Pit has undergone several investigations, interim corrective measures, and treatability studies to determine whether environmental media contain hazardous constituents due to the ash waste pile and the feasibility of solidification/stabilization of the resultant ash. The only constituent detected in the soil and offshore sediments at concentrations exceeding its corrective action level was lead. In 1995, the lead-impacted ash pile was stabilized with hydrated lime and rendered non-hazardous. Upon completion of the stabilization process, it was placed in a cell located at the Mixed Metal Debris Area (Solid Waste Management Unit [SWMU] No. 6), covered with a permeable geotextile membrane (to prevent penetration into the stabilized ash by burrowing birds), covered with 1 foot of clean fill, and re-vegetated. The Solid Waste Burn Pit was backfilled and topped with 2–3 feet of clean native material. Signs were posted along the nearshore waters alerting Johnston Atoll users to restriction of fishing and fish consumption in this area.

In 2000, a risk assessment was conducted to determine whether significant risk to human and wildlife receptors as well as marine biota exist at the Solid Waste Burn Pit and adjacent lagoon area. The risk assessment concluded that potential risks to human receptors from the recreational ingestion of fish from the lagoon area adjacent to SWMU No. 1 as well as to wildlife receptors and marine biota did exist. It was determined that the risk to human health could be eliminated by maintaining the “no fishing” restriction. However, a biomonitoring program has been recommended to address uncertainties associated with prediction of current risk to wildlife receptors and marine biota at SWMU No. 1. In addition, elevated concentrations of dioxins were detected locations in the soil at four locations; these areas were recommended for excavation and treatment. The environmental status of the Solid Waste Burn Pit is presented in Table 3-7 of the EIS.

SWMU No. 2 Former Herbicide Orange Storage Area

The Former Herbicide Orange (HO) Storage Area, located on the northwest point of Johnston Island, was originally approximately 4 acres in size. This SWMU is bordered by the Solid Waste Burn Pit to the southwest, the closed Waste Storage Site (SWMU No. 4) to the east, and the lagoon to the northwest. The unit is unsurfaced, and the exposed soil consists of crushed coral that has been hydraulically dredged from the surrounding lagoon. The unit slopes gently toward the lagoon. The shoreline adjacent to this SWMU is protected with a seawall.

From 1972 until 1977, this site was used to store 25,266 55-gallon drums (1.37 million gallons) of the defoliant Herbicide Orange (HO; a.k.a. Agent Orange) transferred from Vietnam. During this storage period, spills and leaks frequently occurred, resulting in the release of contaminants to the underlying

soil. In 1977, during Operation PACER HO, the HO was destroyed at sea aboard the Dutch incinerator ship *Vulcanus*.

The Former HO Storage Area has undergone several investigations, interim corrective measures, and risk assessments to determine whether environmental media and wildlife (e.g., fish) had been impacted due to the releases of HO. In 1994, it was determined that soil, nearshore sediments, and fish in the nearshore lagoon waters had been impacted by dioxins. In 1995, a soil containment berm was constructed inside the seawall to eliminate the potential for surface sediment to be transported into the lagoon. Additionally, in 1995, the boundaries of the SWMU were redefined to include the New Fire Training Pit Area (SWMU No. 10) due to the presence of dioxin in the area of the pit and the outfall ditch on its southern edge. The addition of this area to the original site area results in approximately 6.3 total acres in two contiguous areas, designated as the Primary and Secondary Areas. In 1997, approximately 1,700 cubic yards of soil was excavated from the Secondary Area and stockpiled in the Former HO Storage Area; the area was secured by a fence with signs.

In 2000, a risk assessment was conducted to determine whether significant risk to human and wildlife receptors as well as marine biota exist at the Former HO Storage Area and adjacent lagoon. The risk assessment concluded that potential risks to human receptors from the recreational ingestion of fish from the lagoon area adjacent to SWMU No. 2 as well as to wildlife receptors and marine biota does exist. It was determined that the risk to human health could be eliminated by maintaining the “no fishing” restriction. However, a biomonitoring program has been recommended to address uncertainties associated with prediction of current risk to wildlife receptors and marine biota at SWMU No. 2. Under the auspices of the RCRA Part B Permit corrective action process, more than 20,000 tons of dioxin-contaminated coralline soil is being thermally treated using an onsite thermal desorption system. The environmental status of the Former HO Storage Area is presented in Table 3-7 of the EIS.

SWMU No. 5 Recycle Yard

The Recycle Yard is located in the northwest corner of Johnston Island approximately 160 feet from the lagoon. The 6.5-acre Recycle Yard is currently used as a processing and storage area for noncombustible solid waste, including scrap metal, tires, polyvinyl chloride pipe, electronics, porcelain, appliances, and glass. Wastes stored at the Recycle Yard are shipped off-island for recycling or disposal. Surface runoff drainage ditches lie along the south, east, and northwest corners of the site, draining the road and adjacent areas. No natural vegetation occurs within the unit.

This active SWMU has been in operation since 1987 and was historically used to store segregated scrap metals that were compacted at the site, salvaged metals from the Solid Waste Burn Pit (SWMU No. 1), and properly prepared lead-acid batteries, tires, containers of creosote, and adhesives. Creosote, adhesives, and other materials were previously stored at the SWMU in containers that were reportedly weathered and leaking. The containers were removed and properly disposed of; such materials are no longer stored at this SWMU.

Previous investigative efforts found that soil and groundwater beneath this SWMU were not impacted. However, the investigations did not include samples or analyses specific to areas associated with the operation of the metal compactor, can/bottle crusher, and Scrap Metal Storage Yard. Therefore, subsequent sampling was conducted which concluded that, based on the distribution of PAHs and other metals in surface soil at SWMU No. 5, an interim removal action was recommended to excavate the impacted soil for off-island disposal. The environmental status of the Recycle Yard is presented in Table 3-7 of the EIS.

SWMU No. 6 Mixed Metal Debris Area

The Mixed Metal Debris Area is located in the northwestern part of Johnston Island equidistant between the Recycle Yard (SWMU No. 5) to the west and the Vehicle Salvage Yard (SWMU No. 7) to the east. This inactive site was formerly used in the early 1970s as the island burn pit. This area was also formerly used as a storage and disposal area for asbestos. However, the asbestos was removed and shipped off-island in 1986. The area is currently used as the storage cell for the treated/stabilized ash from the Solid Waste Burn Pit (SWMU No. 1). The environmental status of the Mixed Metal Debris Area is presented in Table 3-7 of the EIS.

SWMU No. 7 Vehicle Salvage Yard

The Vehicle Salvage Yard is an open, vacant area located in the northwestern part of Johnston Island immediately to the east of the Mixed Metal Debris Area (SWMU No. 6). The site was historically used for the storage of vehicles, heavy equipment, tanks, and electrical equipment, and for preparation of such equipment for placement at an artificial reef site in accordance with reef construction permit requirements. Waste oils and materials were removed from the equipment and disposed of off-island. The vehicles were then doused with JP-5 and burned to remove nonmetallic material (i.e., floatables) before being transported to the artificial reef disposal site. Prior to restoration work in 2003, much of the surface soil at this site was discolored. This practice has been discontinued, and the Vehicle Salvage Yard is now inactive.

In August 1997, surface soil samples were collected from the Vehicle Salvage Yard. The surface soil samples contained elevated concentrations of PAHs and metals (cadmium, chromium, and lead). Due to high metals concentrations observed on the surface of the site, an interim removal action was recommended. In October and December 2001, additional investigative activities were conducted to further define the extent of PAH and metal contamination. Because the extent of contamination was more extensive than anticipated, an interim removal action was recommended to excavate the impacted soil for off-island disposal. The interim removal action, conducted in July through September 2003, excavated approximately 5,500 tons of PAH- and lead-impacted soil exceeding EPA Region 9 residential preliminary remediation goals (PRGs), and shipped it off-island for CONUS disposal. The environmental status of the Vehicle Salvage Yard is presented in Table 3-7 of the EIS.

SWMU No. 9 Building 780, Hazardous Waste Storage Area

Building 780 is located in the northwestern portion of Johnston Island immediately east of the Vehicle Salvage Yard (SWMU No. 7) and within the fenced and gated surveillance and inspection (S&I) area. SWMU No. 9 is an active 270-day collection facility for hazardous materials and hazardous wastes prior to their off-island shipment and disposal. The environmental status of the Hazardous Waste Storage Area is presented in Table 3-7 of the EIS.

SWMU No. 15 Aboveground JP-5 Storage Tanks

The Petroleum, Oil, and Lubricants (POL) Tank Farm, located on the southeastern side of Johnston Island near the airport terminal, is surrounded by berms. Historically, the POL Tank Farm consisted of four aboveground tanks used for the storage of AVGAS and JP-4. Existing Tanks 260 and 261 each have a 567,000-gallon storage capacity and currently are used for JP-5 storage. Former Tanks 263 and 264, removed in July 1995, each had a storage capacity of 52,000 gallons.

In 1993, as part of the AFCEE Bioventing Initiative, this site underwent several assessments including a soil gas survey, soil gas permeability tests, in situ respiration tests, and degradation tests

to determine if bioventing would be effective at this SWMU. Subsequent groundwater investigations were conducted to determine if groundwater beneath the SWMU had been impacted by releases from the JP-5 storage tanks. The environmental status of this SWMU is presented in Table 3-7 of the EIS.

SWMU No. 16 Power Plant Spill Site

The Power Plant Spill Site is located in the northeast quadrant of Johnston Atoll. This SWMU includes the power generating plant and the 567,000-gallon aboveground storage tank (AST) (Tank No. 49). Tank No. 49 was constructed in 1964 and provides fuel for the Power Plant. The tank contained Diesel No. 2 until November 1991, when the contents were changed to JP-5. Tank No. 49 is a conic stationary roof tank 50 feet in diameter and 40 feet high. It is surrounded by a three-sided berm constructed of crushed coral and covered with an asphalt coating. An 8-inch fuel line runs from the Main Pier, reducing to a 6-inch line as it ties into Tank No. 49.

Historically, spills and leaks have occurred from Tank No. 49. In September 1993, Tank 49 developed a leak in a 2-inch delivery line. Free-phase petroleum product was observed leaking from the seawall in proximity to the site area. Interim corrective actions were undertaken to intercept and recover free-phase petroleum product from the groundwater surface. By August 1994, 21 product recovery wells had been installed and pumping, skimming, and using oil-absorbent pads had removed approximately 5,200 gallons of product. A pilot study using Bioslurper technology was initiated in June 1995; by May 1996, an additional 10,000 gallons of product had been recovered. To date, more than 20,000 gallons of product have been recovered. In 1998, during waste characterization of recovered petroleum product, it was noted that polychlorinated biphenyls (PCBs) were present in the recovered product. The Bioslurper system was removed in early January–February 2003 to support excavation associated with PCB- and petroleum-impacted soil remediation. more than 12,000 tons of PCB- and petroleum-impacted soil are to be thermally treated using an onsite thermal desorption system. The environmental status of this SWMU is presented in Table 3-7.

SWMU No. 18 Temporary Drum Storage Area

SWMU No. 18 is located along the central, northwestern side of Johnston Island. The site, located within the Outdoor Storage Yard, is paved with a 3-inch-thick asphalt cover and is used to store mechanical equipment, construction equipment, and construction materials. Historically, the site area was used to stage 55-gallon drums containing wastes such as used oil, solvents and thinners, oil-solvent mixtures, and asphaltic compounds pending receipt of analytical results. Upon receipt of analytical results, the drums were packaged appropriately and shipped off-island for disposal. There is no documented evidence of releases at this unit.

One investigation has been conducted at this unit, as documented in the *Investigation, Remedial Action, and Closure Report, DTRA Sites, Johnston Atoll* (Earth Tech 2002). The investigation was conducted to determine whether concentrations of chemicals of potential concern in the near-surface soil underlying the SWMU exceeded screening levels, determine the horizontal extent of any contamination, and make recommendations for No Further Action or the conduct of an interim measure. The investigation identified the SWMU boundaries. PAHs were detected at concentrations exceeding screening levels. Comparison of the PAH data to the risk-based action levels developed specifically for Johnston Atoll found no exceedances of these levels. The environmental status of the Temporary Drum Storage Area is presented in Table 3-7.

SWMU No. 19 Motor Pool

The Motor Pool is located in several buildings in the northeast portion of Johnston Island. These buildings have been used for vehicle maintenance and repair since about 1960. All work in the buildings is performed on concrete floors. Vegetation is sparse to nonexistent in the area. The site is located approximately 700 feet south of the lagoon. Wastes generated from vehicle maintenance activities have included waste oil and grease, hydraulic fluid, contaminated diesel fuel and gasoline, Solvent 140, and other solvent/oil mixtures. The wastes are stored in 55-gallon drums and 5-gallon cans that are placed on secondary containment pallets at a satellite accumulation site within the SWMU. The wastes are periodically shipped to the U.S. mainland for disposal.

No documented spills occurred at the unit; however, evidence of spills to the soil was visible in the past.

Soil and groundwater conditions in the Motor Pool area were evaluated in three investigations between 1990 and 1993. These investigations found that with the exception of total petroleum hydrocarbons (TPH)-gasoline in subsurface soil, soil and groundwater beneath the SWMU were not impacted. However, the investigations did not include samples or analyses specific to conditions in the vicinity of the Grease Pit, Vehicle Maintenance Area drain, or a drainage swale located within the SWMU boundaries. An investigation that included visual inspections of the sump and drain and collection of soil samples was conducted in December 2002 to fill these data gaps. The results of the investigation were reported in the *Data Gap Investigation Report for SWMU No. 5, 19, 21, and 22, Johnston Atoll* (CH2M HILL 2003b). The data gap investigation found that concentrations of several PAHs in soil samples collected near the drain line exceeded the Region 9 residential PRG screening levels. Comparison of the PAH data to the risk-based action levels developed for Johnston Atoll found a single exceedance. A risk assessment was conducted and concluded that SWMU No. 19 does not appear to pose an unacceptable risk to human health or the environment under current or projected future land use. The environmental status of the Motor Pool is presented in Table 3-7 of the EIS.

SWMU No. 21 Maintenance Shops

SWMU No. 21 is located south of the inactive east taxiway, about 600 feet south of the lagoon. The unit contains three buildings (Buildings 316, 317, and 318, constructed in 1965, 1968, and 1974, respectively), which house offices and welding, sheet metal, machine, and plumbing shops. Vegetation is sparse to nonexistent on the north-facing side of the buildings due to traffic; trees and shrubs are present on the south-facing side.

According to the RCRA Facility Investigation (RFI), no records exist of any waste or materials being stored at the unit, and there are no records of any past releases or spills at the site. Soil and groundwater conditions at SWMU No. 21 were evaluated in three investigations in association with the RCRA Facility Assessment (RFA) and the RFI between 1990 and 1993. These investigations found that with the exception of concentrations of naphthalene in groundwater (possibly related to releases at a nearby AOC (AOC No. 1, Motor Gasoline [MOGAS] Area), soil and groundwater beneath the SWMU were not impacted. However, as indicated during EPA Region 9's visual site inspection on 05 June 2002, the historical investigations did not include soil samples or analyses specific to PCBs or metals, which were identified as chemicals of potential concern at the SWMU. Soil samples were collected to fill these data gaps at three SWMU No. 21 locations during the December 2002 Data Gap Investigation. Results for all COCs were below the screening level used in the data gap evaluation. The environmental status of the Maintenance Shops is presented in Table 3-7 of the EIS.

SWMU No. 22 Paint Shop

The Paint Shop is located in Buildings 32 and 33, north of the Motor Pool. Activities at SWMU No. 22 include removing corrosion from equipment and painting the equipment to prevent corrosion. Wastes generated in the Paint Shop in Building 33 were stored temporarily at a satellite accumulation point. Paint, thinners, and solvents were accumulated at the site in 55-gallon drums located either inside flammable storage lockers or on covered spill pallets. When stored quantities warranted removal, the waste drums were transferred to the Hazardous Waste Storage Facility (SWMU No. 9) and ultimately to a treatment, storage, and disposal facility on the U.S. mainland.

Soil and groundwater conditions in the Paint Shop area were evaluated in three investigations associated with the RFA and RFI between 1990 and 1993. These investigations found that with the exception of TPH-gasoline in soil (possibly related to releases at AOC No. 1), soil and groundwater beneath the SWMU were not impacted. However, the investigations did not include samples or analyses specific to metals, which were identified as chemicals of potential concern in the vicinity of the corrosion control shop and paint storage shed. EPA Region 9's visual site inspection at the unit on 05 June 2002 concluded that soil samples should be collected for metals analysis at the edges of pavement outside these two buildings. A Data Gap Investigation was conducted in December 2002 to collect soil samples for metals analysis in these locations. A concentration of lead exceeding the risk-based action level was reported in one of the soil samples. However, the average concentration of lead in surface soil at SWMU No. 22 was less than the action level. The investigation concluded that it is unlikely that human or ecological receptors would be exposed to concentrations of lead in excess of EPA's target risk range for noncarcinogens at the SWMU. Therefore, the presence of lead does not appear to pose an unacceptable level of risk to human health or the environment under current or projected future land use. The environmental status of the Paint Shop is presented in Table 3-7 of the EIS.

AOC No. 1 MOGAS Site

The MOGAS Site, located east of the Power Plant and Tank No. 49, has been an active refueling area since 1958. Six 25,000-gallon ASTs (Tank Farm 50) store MOGAS (three tanks) and JP-5 (three tanks) in support of vehicle refueling. Four delivery pumps are present at the site, two for MOGAS and two for JP-5.

Subsequent investigations have determined that it is difficult to geographically distinguish between possible groundwater contamination associated with the Power Plant Spill Site (SWMU No. 16) and this AOC. These two units are grouped together for corrective action in the RCRA Part B Permit (refer to the overview of SWMU No 16 for detail of this grouped unit). The environmental status of the MOGAS Site is presented in Table 3-7 of the EIS.

AOC No. 2 Swimming Pool Site

The Swimming Pool Site is located near the center of Johnston Island, approximately 850 feet south of the lagoon. The present day Swimming Pool is located where two 420,000-gallon aviation gasoline (AVGAS) ASTs were located in 1955. From historical drawings, the tanks appear to have been surrounded on the north, east, and south by a berm. Two 18-inch fuel pipelines ran from the 420,000-gallon tanks to an aircraft parking apron. Three, 22-inch pipelines ran from the two large ASTs to the Navy Pier along the road to the north. It is not known when these tanks were taken out of service, but the Swimming Pool was constructed approximately 1966–1967. Historical drawings indicate the potential presence of USTs and associated pipelines used for storing and transporting AVGAS in the vicinity of these AOCs.

Recent investigations have assessed whether these AVGAS USTs are still present and evaluated requirements for closure of inactive UST and POL systems. A geophysical UST and POL system investigation (Earth Tech 2001) and limited UST and POL system assessment have indicated that there are five existing and two potential 25,000-gallon AVGAS USTs located west of the Swimming Pool. Additionally, a potential portion of a UST or residual UST material was detected about 750 feet southwest of the Swimming Pool. During the limited UST and POL system assessment, excavations were conducted along POL pipelines to inspect the pipelines and to note evidence of potential POL releases. Evidence of hydrocarbon contamination was observed in three excavations located in the vicinity of the Swimming Pool. One location was immediately north of the Swimming Pool, a second further north of the Swimming Pool across Perimeter Road, and the third west of the Concrete Batch Plant.

A historical UST and POL system closure project commenced in early 2003. In June–July 2003, as part of this UST/POL system closure project, additional investigation and site characterization was conducted to delineate the extent of petroleum hydrocarbons in site soils. In addition, new monitoring wells were installed to determine the nature and extent of petroleum-impacted groundwater. Results of the UST and POL system closure project indicated the need for additional site characterization. The environmental status of the Swimming Pool Site is presented in Table 3-7 of the EIS.

AOC No. 3 Taxiway Site

The Taxiway Site is located adjacent to the Swimming Pool Site, near the center of Johnston Island. Five ASTs were located to the south of the Swimming Pool and south of the runway. These tanks consisted of two 735,000-gallon AVGAS tanks, two 567,000-gallon diesel fuel tanks, and one 420,000-gallon AVGAS tank. An Island Historical Report indicates that these tanks were in place by 1944. No records are available to document the removal of the ASTs; however, a 1965 photograph shows that the four larger tanks had been removed, leaving only the 420,000-gallon AVGAS AST. The Taxiway Site is being investigated in conjunction with the Swimming Pool Site. The environmental status of the Taxiway Site is presented in Table 3-7 of the EIS.

Historical UST and POL System Closure

The inactive, historical UST and POL system described above for the Swimming Pool Site (AOC No. 2) and the Taxiway Site (AOC No. 3) comprises the inactive system (located near the center of Johnston Island) being addressed as part of the Historical UST and POL System Closure Action (see above for an overview of the system). It should be noted that this action is not associated with the Air Force RCRA Part B Permit; it is being conducted as part of the termination of the Air Force mission. During September–October 2003, approximately 31,250 linear feet of pipeline associated with the inactive system was cleaned and grouted, to the extent possible, for in-place pipeline closure. During the pipeline closure activities, no USTs were encountered. The environmental status of the Historical UST and POL System Closure is presented in Table 3-7 of the EIS.

References utilized for this Appendix are as follows:

CH2M HILL. 2002a. *Draft Data Gap Biomonitoring Work Plan for SWMU No. 1, 2, and 16 and AOC No. 1, Johnston Atoll*. November.

———. 2002b. *Data Gap Investigation Work Plan for Solid Waste Management Units No. 5, 19, 21, and 22, Johnston Atoll*. December.

- . 2003a. *Draft Comprehensive Performance Test Report and Petition for Full Scale Operating Conditions for Thermal Treatment of Contaminated Soil, Johnston Atoll*. August.
- . 2003b. *Draft Data Gap Investigation Report for SWMU No. 5, 19, 21, and 22, Johnston Atoll*. May.
- . 2003c. *Draft POL Investigation Work Plan for SWMU No. 15, and 16 and AOC No. 1, 2, and 3, Johnston Atoll*. June.
- . 2003d. *Draft UST Removal and POL Pipeline Closure Work Plan, Johnston Atoll*. July.
- . 2003e. *Groundwater Monitoring Report, Solid Waste Management Units No. 6, 15, 16, and Areas of Concern No. 1, 2, 3, Johnston Atoll*. February.
- . 2003f. *Technical Memorandum 1, Groundwater Monitoring Plan for SWMUs No. 6, 15, 16, and AOCs 1, 2, 3, Johnston Island*. April.
- Earth Tech, Inc. 2002. *Investigation, Remedial Action, and Closure Report, DTRA Sites, Johnston Atoll*. October.
- Ogden Environmental and Energy Services Company, Inc. 1999. *Environmental Baseline/Property Transfer Survey Report for Johnston Atoll*. January.

Appendix F-2
List of SWMUs and AOCs Associated with Army RCRA Part B Permit (Permit No. TT0-570-090-001)

**Listing of SWMUs and AOCs Associated with Army RCRA Part B Permit
(Permit No. TT0-570-090-001)**

SWMU/AOC No.	Description	Current Closure Status	Anticipated LUCs
11	Ton Container Storage Area (Facility 990)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
13	Red Hat Facility 850	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
14	MSB Bunkers (Facilities 746-761, 763, 767-769, 775-778, and 893-897)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{JACADS/USACAP}	To be determined
23	JACADS Pad 736 (includes Facilities 101, 102, 103, and 104 located on pad)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
24	JACADS Laboratory Accumulation Point	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
25	Hazardous Waste Accumulation Point (Facility 727)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
26	BRA and BRA PAS	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J1	Waste Accumulation Shed 101	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J2	Waste Accumulation Shed 102	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J3	Waste Accumulation Shed 103	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J4	Waste Accumulation Shed 104	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J5	Waste Accumulation Shed 105	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J6	PAS Accumulation Point	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J7	MDB Unloading Dock	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J8	MDB Filters Accumulation Point, West	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J9	MDB Filters Accumulation Point, East	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J10	MDB Filters Accumulation Point, North	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J11	MPF Cooling Pad Area	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
J12	RHA	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined

SWMU/AOC No.	Description	Current Closure Status	Anticipated LUCs
J13	Laboratory Filters Accumulation Point, South	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J14	Area 973 Accumulation And Storage	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J15	Facility 716	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J16	Facility 714	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J17	CONEX Accumulation Point (Hama Point)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J18	HDC Discharge Chute	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J19	Scrap Metal Storage Area (Hama Point)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J20	Sand Blasting Area (Hama Point)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J21	Xxx CONEXES	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J22	Pad 736 South	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J23	Empty Paint Container Bin Area	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J24	PAS Accumulation Point II	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J25	Scrap Yard at Pad 279 (Hama Point)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J26	Scrap Yard at Pad 278 (Hama Point)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J27	Hotline and Sump	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J29	Facility 737, West End	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
J30	BCS, South (Facility 735)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
U15	Laboratory Sumps (Facility 727)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
U16	Propellant Open Burn Area (Facility 997)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U17	Former Ton Container Storage Area (Facility 852e)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined

SWMU/AOC No.	Description	Current Closure Status	Anticipated LUCs
U18	Small Xxx Storage Yard (Facilities 974 and 976)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U19	Large Xxx Storage Yard (Facility 997)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U20	Small Arms Firing Range (Facility 981)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U21	RHSA Hazardous Waste Storage Warehouse (Facilities 851 and 852)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined	To be determined
U22	RHSA Hazardous Waste Satellite Accumulation Point (Facility 778)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U23	Storage Bunkers (Facilities 977-979)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U24	RHA Decontamination Hotline (Facility 712)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U25	Hazardous Waste Storage Area (Facility 523)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U26A	Former Hazardous Waste Accumulation Point (Facility 725E)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U26B	New Hazardous Waste Accumulation Point (Facility 725W)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U27	Motor Pool (Facility 725)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U28	Hazardous Materials Storage Building (Facility 975)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U29	Hazardous Materials Storage Area (Facility 982)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U30	Tank Fill/Corrosion Protection (Facility 730)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U31	Indole Solution Disposal Site (outside Facilities 776-778)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U32	Material Storage Sites (Facilities 979 and 990)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U33	Hd/Brine Release Site (Facilities 990a)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U34	Decontamination Sump and AST (Facility 706)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U35	Decontamination Sump and AST (Facility 20) – removed	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U37	Xxx Solid Lab Waste Agent Monitoring Area (Facility 713)	Army closure/corrective action sampling on-going through October 2003; corrective measures to be determined ^{USACAP}	To be determined

SWMU/AOC No.	Description	Current Closure Status	Anticipated LUCs
U38	UST (Facility 773) – removed	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U39	UST (Facility 853) – removed	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U40	Munitions Bunkers In S&I Area (Facilities 781-785)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U41	Former Munitions Bunkers (Facilities 970 and 972)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U42	Munitions Storage Bunkers (Facilities 722 and 723)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
U43	Demolished Pasco Buildings (Facilities 854-856 and 999)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-01	Gb/Vx Rocket Decontamination Area (Facilities 976, 982, and 975)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-02	Hazardous Materials Storage (Facility 730)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-03	Suspected Landfill	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-04	Former Ton Container Storage Area (Facility 821w)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-05	Waste Accumulation (Facility 401)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-06	Radar Tower (Facility 402)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-97-07	Hazardous Waste Accumulation (Facility 782)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-98-100	Wharf Area	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-100	JACADS Laboratory (Facility 772)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-101	Laboratory Filters	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-103	PAS-LIC, DFS, and MPF	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-104	MDB Filter Units	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-105	MDB Filter Unit Exhaust Stack	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-106	Forklift Charging Area	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined

SWMU/AOC No.	Description	Current Closure Status	Anticipated LUCs
AOC-99-107	Chlorine Container Storage Area	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-108	Bulk Chemical Storage Area	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-109	PAS-DUN	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-110	Emergency Generator	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-111	Filter Control Room	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-112	LPG	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-113	JP-5 Fuel Tank	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-114	PSC	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-115	Bulk Chemical Unloading Station	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-122	MDB Roof	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-125	Lab Pipe Trench & Lab Tank Vault	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-126	MPF Chiller/Exchanger	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-129	LPG Vaporizer	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-130	Control Room (Con) Chiller	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-131	Decontamination Hotline	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-132	Sea Water Cooling Pad	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-133	PRW Storage Tank	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-99-D	Maintenance Sheds	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-A	CWA Munitions Bunkers (Facilities 762, 764-766, 821-839, and 898-899)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-A-99	Extended Storage Area (Facility 990)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined

SWMU/AOC No.	Description	Current Closure Status	Anticipated LUCs
AOC-B	Air Monitoring Building (Facility 711)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined ^{USACAP}	To be determined
AOC-B-99	CONEX Storage Area (Facility 727)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-720	Hydraulic Fluids and Warehouse (Facility 720)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-724	Rubber Goods Storage Warehouse (Facility 724)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-728	CSF (Facility 728)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-868	Oils and Lubricants Warehouse (Facility 868)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-876	Electrical and Bulk Consumables Warehouse (Facility 876)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-878	Motors and Large Mechanical Parts Warehouse (Facility 878)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-881	Main Warehouse and Offices (Facility 881)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-884	Plumbing, Hydraulics, and Gen-Bolts Warehouse (Facility 884)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-886	Receiving and General Consumables (Facility 886)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-888	Cylinder Yard and Chemical Storage (Facility 888)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-960	Paint Shop (Facility 960)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-B-962	DPE Suits, Paper, and Miscellaneous Warehouse (Facility 962)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-C	Aeration Shack (Facility 731)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-C-99	Wharf Area Road	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-E-99	Waste accumulation Area on Pads 271 and 273 (Hama Point)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-F-99	Non-Hazardous Isotainer Storage Area (Facility 990)	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-G	Facility 706 Annex	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined
AOC-H-99	Perimeter Area Agent Monitoring Station #100	Army closure/corrective action sampling ongoing through October 2003; corrective measures to be determined	To be determined

Note: All work being conducted by JACADS with the exception of those designated^{USACAP} AST Aboveground Storage Tank

BCS	Bulk Chemical Storage
BRA	Brine Reduction Area
CONEX	Container (Sea-Land Shipping Container)
CSF	Chemical Support Facility
CWA	Chemical Warfare Agent
DFS	Deactivation Furnace System
DPE	Demilitarization Protective Ensemble
HDG	Heated Discharge Conveyor
LIC	Liquid Incinerator
LPG	Liquefied Petroleum Gas
MDB	Munitions Demilitarization Building
MPF	Metal Parts Furnace
MSB	Munitions Storage Bunker
PAS	Pollution Abatement System
PRW	Process Water
PSC	Personnel Support Complex
RHA	Residue Handling Area
RHSA	Red Hat Storage Area
S&I	Surveillance & Inspection
USACAP	U.S. Army Chemical Activity, Pacific (Red Hat Storage Area)
UST	Underground Storage Tank

Appendix G
Methods of Analysis

METHODS OF ANALYSIS

Introduction

This appendix describes the methods used in preparing the environmental impact statement (EIS) and performing the analysis for environmental consequences. These methods were designed and implemented to evaluate the potential environmental impacts of the Proposed Action (termination of the Air Force mission at Johnston Atoll) and the No-Action Alternative (Current Management Practices Continue). The various methods used for analysis in this EIS are summarized by resource.

There are several restrictions in the impacts analyses that are noted here:

- Johnston Atoll is a small landmass with services and infrastructure provided solely for the personnel required in support of the respective missions. There is no indigenous population nor socioeconomic system developed or based at Johnston Atoll, other than what has been supplied by the military (i.e., Air Force, Army, etc.) for mission support.
- The final recipient and complete future re-use of Johnston Atoll has not been determined. As such, the analysis can only address generalized types of impacts, such as land use by a Federal agency or non-Federal entity. The future recipient will likely be required to address the impacts of their proposed land use at the time of transfer or conveyance.
- It should be noted that the management of the Johnston Atoll National Wildlife Refuge (NWR) by the U.S. Fish and Wildlife Service (USFWS) would continue.

Air Quality

The air quality resource is defined as the condition of the atmosphere, expressed in terms of air pollutants occurring in an area as the result of emissions from natural and/or man-made sources. Air quality can be affected depending upon the net changes in the release of both gaseous and particulate matter emissions.

The Region of Influence (ROI) for air quality was determined by emissions from sources associated with operation of Johnston Atoll facilities, equipment, and the termination of the Air Force mission. The ROI is Johnston Atoll and its adjacent, downwind nearshore areas.

The air quality analysis drew from climatological data, qualitative air quality information, and the alternatives being considered. Qualitative emissions predicted to result from the proposed alternatives were compared to existing qualitative emissions to determine the potential for adverse air quality impacts.

Biological Resources

Biological resources addressed in relation to the termination of the Air Force mission at Johnston Atoll include vegetation, wildlife, threatened and endangered species, and sensitive habitats (i.e., wetlands). Primary data sources for this information included published reports, data and field observations, as well as data from the USFWS. Wetlands were evaluated by mapping and field assessments performed by the U.S. Army Corps of Engineers (USACE). The *Johnston Atoll Wetland Survey Report* (August 2002) prepared by the USACE was used for wetland information.

The ROI for the biological resources assessment comprised the islands and reef of Johnston Atoll.

The approach to the impact analysis includes comparing the resource prior to the termination of the Air Force mission to changes in habitat or resource brought on by the Proposed Action or alternative.

Geology and Soils

Evaluation of potential impacts to geology and soils address such issues as erosion, construction-related dust generation, other problems (low soil strength, expansive soils, etc.), and disturbance of unique soil types. Information regarding this resource has been provided by the Air Force, Detachment 1 (Det 1), 15 Airlift Wing (AW) and various Johnston Atoll-specific reports and plans.

The ROI for geology and soils include all the islands and supporting platform (submerged land) of Johnston Atoll.

Assessment of the potential impacts to geology from the alternatives included evaluation of certain geologic or soil conditions. Soil information derived from historical data (including soil borings), were then evaluated for: 1) availability of resource potential; 2) erosion potential (mostly related to shoreline protection structure); 3) soil strength; 4) permeability; 5) expansive soil characteristics (as they relate to construction and erosion problems); and 6) geologic hazards (seismicity, liquefaction, subsidence).

Land Use

Land use at Johnston Atoll includes the types of uses that are present at the active installation. These land uses also take into account the fact that the Johnston Atoll NWR utilizes all of the land and reef associated with Johnston Atoll. Land use information was provided by Det 1, 15 AW.

The ROI for land use includes the four islands and reef waters of Johnston Atoll.

The assessment for land use includes comparing the land use information of the active installation with estimated land use changes of the Proposed Action and alternative. Potential land use impacts cannot be fully assessed in this EIS since the final recipient and land use has not yet been determined.

Natural Hazards

Effects posed by natural hazards are evaluated by determining if the Proposed Action or alternative involves an irrevocable commitment to, loss, or destruction of features associated with Johnston Atoll as a result of naturally occurring phenomena. Natural hazard information was derived from published data for the Johnston Atoll area, and information from Det 1, 15 AW and various Johnston Atoll-specific reports and plans.

The ROI for natural hazards includes all the islands and near-shore submerged land of Johnston Atoll.

Assessment of the potential impacts posed by natural hazards includes evaluation of damage from natural hazards, (damage to structures, operations and evacuations, etc.). The data were evaluated to determine the potential for natural hazards to impact or increase damage as a result of the Proposed Action and alternative.

Noise

The noise analysis addressed potential impacts from changes in noise-sources as a result of the Proposed Action and alternative. Noise data for Johnston Atoll were provided by Det 1, 15 AW and was also taken from published sources.

The ROI for noise assessments includes the four islands of Johnston Atoll.

Safety and Health

The safety and health analysis addresses conditions that have the potential to affect the safety and health of users of Johnston Atoll as a result of the Proposed Action and alternative. Data regarding safety and health were provided by Det 1, 15 AW and various Johnston Atoll-specific reports and data.

The ROI for safety and health assessments is Johnston Atoll and its airspace.

Effects on safety and health are evaluated by reviewing the Proposed Action and alternative to determine if there are substantial increases in the risk to safety and health. The analysis does not take into account safety and health issues of demolition, decommissioning and disposal activities; that analysis was addressed in the *Environmental Assessment for Building Demolition, Decommissioning and Debris Disposal* (Earth Tech 2002b). The analysis for potential safety and health impacts associated with the termination of the Air Force mission focuses on airport and aircraft operations, facilities, and wildlife hazards that may present a hazard to users of the Atoll. The analysis compares the number of hazards present prior to the termination of the Air Force mission, with the estimated amount after the termination of the Air Force mission (i.e., While Johnston Atoll was an active installation, there were 10 facilities that were structurally unstable and required demolition. After the termination of the Air Force mission, these facilities will have been demolished.).

Transportation

The transportation analysis assessment evaluates the effects of the Proposed Action and alternative on the local traffic, air traffic, and sea traffic that involve Johnston Atoll. Data regarding transportation was provided by Det 1, 15 AW, 502 Air Operation Squadron (Hickam Air Force Base), the Federal Aviation Administration (FAA), U.S. Coast Guard, and published sources.

The ROI for transportation includes the roadways and airfield of Johnston Island, airspace over Johnston Atoll, as well as the channels and harbors of Johnston Atoll.

The analysis of effects are based on estimated changes from the Proposed Action and alternative in the type and number of vehicle, air, or sea traffic, and any anticipated changes in supporting transportation infrastructure (e.g., modifications to structures, restrictions, delays or limits, encroachment on other areas or uses).

Utilities and Infrastructure

Utility systems addressed in this analysis include infrastructure, telecommunications, drinking water (collection, pumping, treatment, storage, distribution), wastewater (collection, treatment, and discharge), solid waste (collection and disposition), energy generation and distribution (electricity

and fuel), and industrial and stormwater discharges. Historic capacity, storage, and distribution capabilities were provided by Det 1, 15 AW and various Johnston Atoll-specific reports and plans.

The ROI for this analysis is the service area of Johnston Atoll.

Potential impacts were assessed by estimating the degree of change to the utility systems and infrastructure resulting from the Proposed Action and alternative.

Visual Resources

Effects on visual resources are evaluated by determining if the Proposed Action involves significant changes to the visual characteristics of Johnston Atoll. Information regarding the visual characteristics of Johnston Atoll was collected during subsequent field trips to the Atoll.

The ROI for visual characteristics is the four islands and reef of Johnston Atoll.

The visual qualities, settings, and any irreplaceable visual resources at Johnston Atoll are evaluated. Impacts are assessed by estimating the degree and types of change from the Proposed Action and alternative. In particular, the type of visual characteristics will be estimated, as well as any changes to view planes.

Water Resources

Analysis of impacts of the Proposed Action and alternative on water resources considered surface water, groundwater and nearshore ocean water quality, and supply and use. Impacts to the quality of water resources associated with environmental actions are being addressed under hazardous materials and hazardous wastes.

The ROI for water resources includes: surface and groundwater on Johnston Atoll, and nearshore ocean water resources of the Atoll.

The evaluation considered quality, supply, and use of water resources. The quality of water resources was evaluated by estimating the change in potential contamination from sources, releases or discharges. The effects on supply and use of water resources were evaluated by estimating the change in use of the resources.

Cultural Resources

Evaluation of cultural resources can include three categories, prehistoric resources, historic structures, and resources and traditional resources. These include resources of particular concern, such as properties listed on the National Register of Historic places (National Register), properties potentially eligible for the National Register, and sacred or ceremonial sites or areas. Data used for assessing cultural resources was provided by Det 1, 15 AW, in the *Historic Building Inventory and Evaluation, Johnston Atoll* (Earth Tech 2003), and an archaeological survey (Knudson 1994).

The ROI for cultural resources includes Johnston Atoll.

The assessment of cultural resources on JA is based upon national Register of Historic Places (National Register) criteria that identifies the quality of significance present in districts, sites, buildings and structures.

Hazardous Materials and Hazardous Wastes

The analysis of hazardous materials and hazardous waste management considers the potential impacts of hazardous materials and hazardous wastes and the potential impacts associated with environmental investigation, restoration, and permitted sites. Information was provided by Det 1, 15 AW and other published sources. The ROI for hazardous materials and hazardous waste management is Johnston Atoll.

Baseline conditions as defined for this study include current hazardous materials/waste management practices, Resource Conservation and Recovery Act (RCRA) Permits, radiological contamination, storage tanks, asbestos, pesticides, polychlorinated biphenyls (PCBs), radon, medical/biohazardous waste, ordnance, and lead. The impact analysis considers: 1) amount and type of hazardous materials/hazardous wastes associated with the Proposed Action and alternative; 2) regulatory requirements and/or potential land use restrictions stemming from environmental restoration, remediation, and permitted sites with Proposed Action and alternative; and 3) potential impacts to ongoing environmental, restoration, and permitted sites (including remediation and long-term monitoring schedules) from the Proposed Action and alternative (e.g., several sites will require ongoing monitoring; however, there will be no transportation or support facilities for Johnston Atoll after the termination of the Air Force mission).

Socioeconomic

The scope of this study includes economic activity, population, housing, public services, public finance, transportation, and utilities and infrastructure. The ROI for the purpose of describing and qualitatively analyzing socioeconomic effects is Johnston Atoll, and any connecting points that are economically tied to the Atoll.

Baseline conditions as defined for this study include current economic activity, population, employment, housing, public services, public finance, transportation, utilities and infrastructure. The impact analysis considers the changes to supply and demand of these resources to and/or from the Proposed Action and alternative.