Former Naval Weapons Station Seal Beach
Detachment Concord, Inland Area
Concord, California

FINAL

HISTORICAL RADIOLOGICAL ASSESSMENT

Use of General Radioactive Materials
1945 to 2009

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NAVSEA YORKTOWN

TABLE OF CONTENTS

ABBREVIATIONS, ACRONYMS, AND SYMBOLS ix

GLOSSARY xiii

1.0 EXECUTIVE SUMMARY 1-1
- 1.1 PURPOSE 1-1
- 1.2 SITE BACKGROUND 1-1
- 1.3 HRA METHODOLOGY 1-2
- 1.4 REGULATORY INVOLVEMENT 1-3
- 1.5 ASSESSMENT SUMMARY 1-3
- 1.6 CONCLUSIONS 1-4

2.0 INTRODUCTION 2-1
- 2.1 SCOPE 2-1
- 2.2 HRA METHODOLOGY 2-1
- 2.3 HISTORY 2-2
- 2.4 REGULATORY BACKGROUND 2-3
- 2.5 REPORT ORGANIZATION 2-4

3.0 SITE IDENTIFICATION AND DESCRIPTION 3-1
- 3.1 SITE DESCRIPTION 3-1
- 3.2 GEOLOGY 3-2
- 3.3 HYDROLOGY 3-3
- 3.4 CURRENT AND FUTURE USE 3-4
- 3.5 ADJACENT POPULATION AND LAND USE 3-4
- 3.6 ENVIRONMENTALLY SENSITIVE AREAS 3-5

4.0 HRA METHODOLOGY 4-1
- 4.1 HRA OVERVIEW 4-1
- 4.2 PURPOSE 4-1
- 4.3 HRA PREPARATION GUIDELINES 4-3
  - 4.3.1 Historical Research 4-4
  - 4.3.2 Nonimpacted and Impacted Sites 4-4
  - 4.3.3 Potentially Contaminated Media 4-5
  - 4.3.4 Survey Classifications 4-5
  - 4.3.5 Survey Types 4-7
- 4.4 PREPARATION OF THIS HRA 4-8
  - 4.4.1 Physical Boundaries 4-8
  - 4.4.2 Time Covered by the HRA 4-8
  - 4.4.3 Research 4-8
  - 4.4.4 Internet Search 4-9
  - 4.4.5 Radiological Assessments 4-10
  - 4.4.6 HRA Site Reconnaissance 4-10
  - 4.4.7 Public Outreach 4-11
  - 4.4.8 Site Designation 4-13

5.0 REGULATORY BACKGROUND 5-1
5.1 FEDERAL REGULATORY AGENCIES 5-1
5.1.1 AEC/NRC 5-1
5.2 DON RADIOACTIVE MATERIALS CONTROLS 5-3
5.2.1 General Control of Radioactive Materials 5-3
5.2.2 AEC Licensing of DON Headquarters Commands 5-3
5.2.3 Naval Radioactive Materials Permit Program 5-4
5.3 NONLICENSED ACTIVITIES INVOLVING RADIOACTIVE MATERIALS OR MACHINES THAT PRODUCE IONIZING RADIATION 5-5
5.4 FEDERAL REGULATORY AUTHORITY AND OVERSIGHT 5-6
5.4.1 NRC 5-6
5.4.2 EPA 5-6
5.5 STATE OF CALIFORNIA 5-9
5.5.1 CDPH 5-9
5.5.2 Water Board 5-9
5.6 LOCAL COMMUNITY 5-9

6.0 HISTORY 6-1
6.1 OVERVIEW 6-1
6.2 LICENSING 6-2
6.3 PRIMARY TOOLS FOR NONDESTRUCTIVE EXAMINATION 6-2
6.3.1 Van de Graaff, X-ray Machines and Particle Accelerators 6-3
6.3.2 Sealed Source Gamma Radiography 6-5
6.4 OTHER (NOT PRIMARY) TOOLS FOR NONDESTRUCTIVE EXAMINATION 6-6
6.4.1 Scanning Electron Microscope 6-6
6.4.2 Gas Chromatograph 6-7
6.4.3 Energy Dispersive X-Ray Spectrometer 6-7
6.4.4 X-Ray Nondispersive/Spectroscopy System 6-8
6.5 DEPLETED URANIUM 6-9
6.6 URANIUM-235 (^{235}U) 6-12
6.7 RADIUM-226 (^{226}Ra) 6-12
6.8 RADIACS, CALIBRATORS, AND CHECK SOURCES 6-13
6.9 G-RAM STORAGE AND DISPOSAL 6-14
6.10 BLACK PIT AT RED ROCK 6-15
6.11 SPECIAL WEAPONS 6-16
6.12 HISTORICAL RADIOLOGICAL INVESTIGATIONS, SURVEYS, AND STUDIES 6-19

7.0 ASSESSMENT OF IMPACTED SITES 7-1
7.1 IMPACTED SITES 7-1
7.2 NONIMPACTED SITES 7-1
7.3 IMPACTED SITE ASSESSMENTS 7-1
7.3.1 Contamination Potential 7-1
7.3.2 Contaminated Media 7-2
7.3.3 Contaminated Media Assessment 7-3

7.4 RECOMMENDED ACTIONS 7-3
7.5 MARSSIM SURVEY CLASSIFICATIONS 7-4
7.6 IMPACTED SITE EXAMPLE 7-5

8.0 FINDINGS AND RECOMMENDATIONS 8-1
8.1 IMPACTED VERSUS NONIMPACTED 8-1
8.2 IMPACTED SITES 8-1
8.2.1 Building IA-20 – WQEC Chemical Laboratory 8-2
8.2.2 Building IA-21 – WQEC Material Test Laboratory 8-5
8.2.3 Building IA-21A – WQEC Evaluation Laboratory 8-9
8.2.4 Building IA-22 – WQEC Photography Laboratory 8-12
8.2.5 Building IA-58 – WQEC X-ray Building 8-15
8.2.6 Building 81 – Ordnance Maintenance and Test Building 8-18
8.2.7 Building 87 – Storage Building 8-22
8.2.8 Depleted Uranium Munitions Magazines 6LC87, 6LC88, 6LC96, 6PC44, 6PCZ65, and 6PCZ58 8-25
8.2.9 Special Weapons – Bulk Magazines 2AC61, 2AT5, 2AT6, 2AT7, 2AT8, 2AT9, 2AT10, 2AT11, 2AT12, 2AT13, 2AT14, 2AT15, 2AT16, 2AT17, 2AT18, 2AT19, and 2AT20 8-28
8.2.10 Special Weapons – RI Magazines 2AC62, 2AC63, 2AC64, 2AC65, 2AC66, 2AC67, 2AC68, 2AC69, 2AC70, 2AC71, 2AC72, 2AC73, 2AC74, 2AC75, 2AC76, 2AC77, and 2AC78 8-30
8.2.11 Special Weapons Magazine 2HT14 8-33

9.0 CONCLUSIONS 9-1
9.1 HISTORICAL RESEARCH 9-1
9.2 IMPACTED SITE ASSESSMENTS 9-1
9.3 SUMMARY OF FINDINGS 9-2

10.0 REFERENCES 10-1

PHOTOGRAPHS

4-1 Example of a RADIAC (Model AN/PDR 43) 4-2
4-2 Example of Remaining Posting in Building IA-58 4-11
6-1 Building IA-58, the Weapons Quality Engineering Center 6-4
6-2 Empty Housing for Van de Graaff X-ray Machine in Building IA-58 6-4
6-3 PHALANX CIWS Firing from a Ship 6-10
6-4 CIWS Ammunition Aboard a Vessel 6-10
6-5 Black Pit at Red Rock 6-15
6-6 View of the Alpha Area Magazines 6-17
6-7 Overhead View of Entrance to Alpha Area (the fortified guard house, Building 79, is near the center of the photograph) 6-18

6-8 Building 79 (the fortified guard house) looking north 6-18
8-1 Building IA-20 looking north 8-2
8-2 Building IA-20 looking northwest 8-2
8-3 Building IA-21 looking southeast 8-5
8-4 Building IA-21 looking northeast 8-5
8-5 Building IA-21 rear looking west 8-6
8-6 Interconnecting Corridor between Building IA-21 and Building IA-22 8-6
8-7 Building IA-21A looking east 8-9
8-8 Building IA-21A looking northeast 8-9
8-9 Building IA-22 looking southeast 8-12
8-10 Building IA-22 looking northeast 8-12
8-11 Rear of Building IA-22 looking west 8-13
8-12 Building IA-58 looking north/northeast 8-15
8-13 Building 81 looking north 8-18
8-14 Building 81 looking northwest 8-18
8-15 Building 81 looking northeast 8-19
8-16 Secured man door on Building 81 8-19
8-17 Building 87 looking northwest 8-22
8-18 Building 87 looking northeast 8-22
8-19 Overview of the DU Munitions Magazines looking west 8-25
8-20 Example of a Single DU Munitions Magazine 8-25
8-21 Example of a Special Weapons Bulk Magazine 8-28
8-22a Special Weapons RI Magazine 8-30
8-22b Interior of a Special Weapons Magazine 8-30
8-22c Special Weapons RI Magazine 8-31
8-23 Special Weapons Magazine 2HT14 8-33

TABLES

3-1 Facilities at the Former NAVWPNSTA Concord by Building Number
3-2 Population of Counties all or Partially Within a 50-Mile Radius of the Former NAVWPNSTA Concord
3-3 Population of Cities Within a 10-Mile Radius of the Former NAVWPNSTA Concord
3-4 Schools Located Within a 1-Mile Radius of the Former NAVWPNSTA Concord
4-1 Archives and Other Research Locations
4-2 Public Notice in Newspapers
4-3 Outreach Activities – Centers That Displayed the Fact Sheet
4-4 Radionuclides Identified in the Historical Record for Former NAVWPNSTA Concord
4-5 Radionuclides of Concern at Former NAVWPNSTA Concord
5-1 Atomic Energy Commission Licenses Associated With Former NAVWPNSTA Concord Sorted by Licensee
6-1 Special Weapons Facilities at the Former NAVWPNSTA Concord
8-1 Impacted Facilities at the Former NAVWPNSTA Concord by Building Number
8-2 Inspected Site Assessment and Classification

FIGURES

2-1 Regional Location Map
2-2 Site Location Map
3-1 Concord Aerial Image 1946
3-2 Concord Aerial Image 1973
3-3 Concord Aerial Image 1991
3-4 Concord Aerial Image 2006
3-5 Geologic Cross Section Showing Major Formations
3-6 Contra Costa County Geologic Map
3-7 Contra Costa County Elevation Map
3-8 Former NAVWPNSTA Concord Topographic Map
4-1 Historical Radiological Assessment – Physical Boundary
6-1 Black Pit at Red Rock
8-1 Impacted Sites

8-2	Buildings IA-20, IA-21, IA-21A, and IA-22
8-2FP Bldg IA-20a	Building IA-20
8-2FP Bldg IA-20b	Building IA-20
8-2FP Bldg IA-20c	Building IA-20
8-2FP Bldg IA-21a	Building IA-21
8-2FP Bldg IA-21b	Building IA-21
8-2FP Bldg IA-21c	Building IA-21
8-2FP Bldg IA-21Aa	Building IA-21A
8-2FP Bldg IA-21Ab	Building IA-21A
8-2FP Bldg IA-21Ac	Building IA-21A
8-2FP Bldg IA-21Ad	Building IA-21A
8-2FP Bldg IA-21Ae	Building IA-21A
8-2FP Bldg IA-22a	Building IA-22
8-2FP Bldg IA-22b	Building IA-22
8-2FP Bldg IA-22c	Building IA-22
8-2FP Bldg IA-22d	Building IA-22
8-3	Building IA-58
8-3FP Bldg IA-58a	Building IA-58
8-3FP Bldg IA-58b	Building IA-58
8-3FP Bldg IA-58c	Building IA-58
8-4	Building 81
8-4FP Bldg 81a	Building 81
8-4FP Bldg 81b	Building 81
8-4FP Bldg 81c	Building 81
8-4FP Bldg 81d	Building 81
8-4FP Bldg 81e	Building 81
8-4FP Bldg 81f	Building 81
8-4FP Bldg 81g	Building 81
8-5	Building 87
8-5FP Bldg 87a	Building 87
8-5FP Bldg 87b	Building 87
8-5FP Bldg 87c	Building 87
8-5FP Bldg 87d	Building 87

8-5FP Bldg 87e	Building 87
8-5FP Bldg 87f	Building 87
8-6	Depleted Uranium Munitions Magazines 6LC87, 6LC88, 6LC96, 6PC44, 6PCZ65, 6PCZ58
8-6FP DU Magazines a	Depleted Uranium Magazines
8-6FP DU Magazines b	Depleted Uranium Magazines
8-7	Special Weapons Magazine
8-7FP Special Weapons Magazine a	Special Weapons Magazine
8-7FP Special Weapons Magazine b	Special Weapons Magazine

APPENDICES

A	Radiation Overview
B	Public Outreach
C	Interview
D	Project Database with Reference Documents
E	Regulatory Agency Comments and Response to Comments

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ABBREVIATIONS, ACRONYMS, AND SYMBOLS

AEC	Atomic Energy Commission
AFSWP	Armed Forces Special Weapons Program
^{241}Am	americium-241
bgs	below ground surface
BRAC	Base Realignment and Closure
BUMED	DON Bureau of Medicine and Surgery
BUSHIPS	DON Bureau of Ships
CAE	Committee on Atomic Energy
CDPH	California Department of Public Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	*Code of Federal Regulations*
CIWS	close-in weapons system
^{252}Cf	californium-252
CNO	Chief of Naval Operations
CO	carbon monoxide
^{57}Co	cobalt-57
^{60}Co	cobalt-60
^{51}Cr	chromium-51
^{137}Cs	cesium-137
DOA	U.S. Department of the Army
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DON	U.S. Department of the Navy
DU	depleted uranium
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ERDA	U.S. Energy Research and Development Administration
FSS	Final Status Survey
g/cm^3	grams per cubic centimeter
GC	gas chromatography
G-RAM	general radioactive material
^{3}H	hydrogen-3 or tritium
HRA	historical radiological assessment
HSA	historical site assessment
IAS	initial assessment study
IR	Installation Restoration (Program)
^{125}I	iodine-125

^{192}Ir	iridium-192
LLRW	low-level radioactive waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MeV	megaelectron volt
MINSY	Mare Island Naval Shipyard
msl	mean sea level
NACIP	Naval Assessment and Control of Installation Pollutants
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAVWPNSTA	Naval Weapons Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
^{63}Ni	nickel-63
NNPP	Naval Nuclear Propulsion Program
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
NRMP	Naval Radioactive Materials Permit
NRSC	Naval Radiation Safety Committee
^{210}Po	polonium-210
^{239}Pu	plutonium-239
QC	quality control
QEEL	Quality Evaluation and Engineering Laboratory
QEL	Quality Engineering Laboratory
^{226}Ra	radium-226
RAB	Restoration Advisory Board
RADIAC	Radiation Detection, Indication, and Computation instrument
RASO	Radiological Affairs Support Office
RASP	Radiological Affairs Support Program
RFA	RCRA Facility Assessment
RI	receipt inspection
ROC	radionuclide of concern
RPM	Remedial Project Manager
RSO	Radiation Safety Officer
SARA	Superfund Amendments and Reauthorization Act of 1986
SEM	scanning electron microscope
^{90}Sr	strontium-90
^{234}U	uranium-234
^{235}U	uranium-235
^{238}U	uranium-238
USC	*United States Code*
USGS	U.S. Geological Survey

USS	United States Ship
Water Board	Regional Water Quality Control Board
WQEC	Weapons Quality Engineering Center
WWII	World War II

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GLOSSARY

Absorbed dose: The amount of ionizing radiation energy absorbed in matter, including human tissue.

Accelerator (or particle accelerator): A device that uses electric fields to propel electrically charged particles to high speeds and to contain them. These low-energy accelerators use a single pair of electrodes with a DC voltage of a few thousand volts between them. In an X-ray generator, the target itself is one of the electrodes.

AEC: Atomic Energy Commission. Federal agency created in 1946 to manage the development, use, and control of nuclear energy for military and civilian applications. The AEC was succeeded by the Energy Research and Development Administration (now part of the U.S. Department of Energy) and the U.S. Nuclear Regulatory Commission on January 19, 1975.

Air: Atmosphere that can be a migration pathway for resuspension and dispersal of radioactive contamination and contaminated media.

Alluvial: Related to deposits of soil or sediments (alluvium) by a river or other running water, typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel.

Alpha particle: A positively charged particle the size of a helium atom's nucleus ejected spontaneously from the nuclei of some radioactive elements. Alpha particles can be stopped by a thin sheet of paper.

Aquifer: An underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, silt, or clay) from which groundwater can be extracted using a water well.

Background radiation: Naturally occurring radiation from cosmic or terrestrial sources.

Base Closure and Realignment Act of 1990: The Defense Base Closure and Realignment Act of 1990, as amended (Public Law 101-510), was enacted by the U.S. Congress to provide a fair process that will result in timely closure and realignment of military installations in the United States.

Beta particle: A charged particle emitted from a nucleus during radioactive decay with a mass equal to 1/1,837 that of a proton. Negatively charged beta particles are electrons, and positively charged particles are positrons. Beta particles can be stopped by a thin sheet of plastic.

BUMED: The DON Bureau of Medicine and Surgery. BUMED is responsible for the Navy's Radiation Health Program.

BUSHIPS: DON Bureau of Ships. BUSHIPS is a former DON bureau that was responsible for ships.

CDPH: California Department of Public Health is the recognized California public health authority.

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980: legislation that established the federal Superfund program for response to uncontrolled releases of hazardous substances to the environment.

Characterization survey: Site assessments generally performed after radioactive contamination has been confirmed in an impacted site by a scoping survey. The survey determines the extent of contamination and identifies and defines the extent of radionuclides of concern. These surveys include in-depth surveys, sampling, monitoring, and analyses necessary to develop, analyze, and select appropriate cleanup techniques.

Class 1 area (based on the Multi-Agency Radiation Survey and Site Investigation Manual [MARSSIM]): An area having the highest potential for general radioactive material (G-RAM) contamination. Examples of Class 1 areas include: 1) areas previously subject to remedial actions, 2) locations where leaks or spills are known to have occurred, 3) former burial or disposal sites, 4) waste storage sites, and 5) areas containing contaminants in discrete solid pieces of material with high specific activity.

Class 2 area (based on MARSSIM): An area having a moderate potential for G-RAM contamination. Examples of areas that might be reclassified as Class 2 include: 1) locations where radioactive materials were present in an unsealed form, 2) potential contaminated transport routes, 3) areas downwind from stack release points, 4) upper walls and ceilings of buildings or rooms subjected to airborne radioactivity, 5) areas handling low concentrations of radioactive materials, and 6) areas on the perimeter of former contamination control areas.

Class 3 area (based on MARSSIM): An area having slight or no potential for G-RAM contamination. Examples of areas that might be classified as Class 3 include buffer zones around Class 1 and Class 2 areas and areas with very low potential for residual contamination but insufficient information to justify a nonimpacted classification.

Class 1 survey: Surveys of an impacted site that has a high potential for radioactive contamination, is known to be contaminated, or had a prior remediation to remove

radioactive contamination. This includes areas with contamination in excess of release limits based on a scoping or characterization survey and areas where previous Class 2 or 3 surveys found contamination above the release limits. Class 1 surveys cover 100 percent of the site.

Class 2 survey: Surveys of an impacted site recognized as having a potential for radioactive contamination but the contamination is not expected to exceed release limits. This includes areas known to contain minor isolated areas of contamination with low potential for exposure, buffer zones around Class 1 areas, and areas where previous Class 3 surveys found contamination. Class 2 surveys can cover 10 to 100 percent of the site.

Class 3 survey: Surveys of an impacted site that is not expected to contain residual contamination exceeding the release limit. This includes buffer zones around Class 1 or 2 areas and previously decontaminated and surveyed areas. The percentage of the site covered by Class 3 surveys is not standardized, and surveys may be conducted randomly.

CNO: Chief of Naval Operations, the highest ranking officer in the DON, reports directly to the Secretary of the Navy.

Contaminated media: Materials at an impacted site that contain, or are suspected to contain, radioactive contamination or to which radioactive contamination may have migrated.

Contaminated media assessment: A rating of the potentially contaminated media or migration at an impacted site.

Contamination potential: The possibility for residual radioactive contamination at an impacted site that has been determined through a professional evaluation of historical information, previous survey results, and site reconnaissance.

Decontamination: The reduction or removal of radioactive material from a structure, object, or person. Accomplished by treating the surface to remove or decrease the contamination or by letting the material decrease as a result of radioactive decay.

Depleted uranium (DU): Uranium (U) having a percentage of uranium-235 (^{235}U) smaller than the 0.7 percent found in natural U. It is obtained from spent (used) fuel elements or as by-product tails, or residues, from U isotope separation.

Drainage system: Sanitary drains, facility storm drains, or septic systems and leach fields.

Electron: Negatively charged particle. Electrons surround the nucleus of an atom.

Emergency action: Immediate remediation or containment is required because the levels of radioactive contamination or radiation exposure are such that there is a high potential for significant exposure or release of radioactive materials to the public or the environment.

Energy dispersive X-ray spectroscopy: (EDS, EDX, or EDXRF) is an analytical technique used for the elemental analysis or chemical characterization of a sample. As a type of spectroscopy, it relies on the investigation of a sample through interactions between electromagnetic radiation and matter, analyzing X-rays emitted by the matter in response to being hit with charged particles. Its characterization capabilities are due in large part to the fundamental principle that each element has a unique atomic structure that allows X-rays characteristic of that element's atomic structure to be identified.

EPA: U.S. Environmental Protection Agency. The lead federal regulatory agency under CERCLA for cleanup of hazardous waste sites on the National Priorities List (NPL).

Exempt quantity: As defined in Title 10 *Code of Federal Regulations* (CFR) Section 30.18, a quantity of a radioactive by-product material that does not exceed the microcurie limits set forth in 10 CFR Section 30.71, Schedule B. Possession of material that does not exceed the 10 CFR Section 30.71, Schedule B limits is exempt from NRC licensing requirements.

Final Status Survey (FSS): Assessment taken after historical documentation or previous investigations or remediations indicate radioactive contamination has been removed from an impacted site. The survey verifies that an impacted site complies with applicable release criteria by taking the appropriate measurements and conducting sampling that will define the radiological condition of a site.

Free release: A recommendation made after historical documentation and previous and current investigations and surveys indicate all applicable release criteria have been met and the site is ready for review by DON and regulatory agencies for future nonradiological use.

Gamma radiation: High-energy, short-wave length electromagnetic radiation emitted from the nucleus of an atom. Gamma radiation frequently accompanies the emission of alpha and beta particles and always accompanies fission. Gamma rays are attenuated by shielding with dense materials such as lead.

G-RAM: All radioactive materials used by the DON or DON contractors that are not associated with the Naval Nuclear Propulsion Program (NNPP).

Groundwater: Waters contained in subsurface materials and aquifers.

Half-life: The time in which half the atoms of a particular radioactive substance disintegrate to another nuclear form. Measured half-lives vary from millionths of a second to billions of years.

Hazardous material: Material that possesses properties of radioactivity, chemical toxicity, or other potential nuisance to cause human illness or injury.

Hazardous substance: Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive.

High (contaminated media category): Evidence of contamination in the media or migration pathway has been identified.

HRA: Historical Radiological Assessment. A detailed investigation to collect historical radiological information and data derived from environmental monitoring for a particular site and its surroundings where radioactive materials were used. The HRA is comparable to the Historical Site Assessment as defined in MARSSIM.

HSA: Historical Site Assessment: MARSSIM terminology for a historical radiological assessment. See HRA above.

Impacted site: A site that has or historically had a potential for G-RAM contamination based on the site operating history or known contamination detected during previous radiation surveys. Impacted sites include sites where radioactive materials were used or stored; sites where known spills, discharges, or other instances involving radioactive materials have occurred; or sites where radioactive materials might have been disposed of or buried. Impacted sites are ranked as Class 1, 2, or 3 based on MARSSIM guidelines.

Inland Area: The southeast portion of the former Naval Weapons Station Seal Beach Detachment Concord separated from the Tidal Area by the town of Clyde and the Los Medanos Hills, and consisting of approximately 5,205 acres of land.

Known-Continued Access (contamination potential): Low levels of contamination exist, but the contamination is contained in system, fixed on building surfaces, or is in generally inaccessible areas and personnel access is not restricted.

Known-Restricted Access (contamination potential): Radioactive contamination is known to exist at levels that could be hazardous without protective clothing, respiratory protection, or radiation monitoring.

Low (contaminated media category): The potential for contamination in the type of media or migration pathway is remote.

Media: Types of materials at an impacted site that may contain or are suspected of containing radioactive contamination or to which radioactive contamination may migrate.

Migration pathway: Media or transport mechanisms that allow radioactive contamination to spread in the immediate vicinity of the contaminated media.

Moderate (contaminated media category): The potential for contamination in the media or migration pathway exists, although the extent has not been fully assessed.

Naval Radiological Defense Laboratory: A DON Radiation Laboratory, based at San Francisco's Hunters Point Shipyard from 1948 until 1969. The mission of Naval Radiological Defense Laboratory was the study of nuclear weapons effects and the development of countermeasures to these effects.

Neutron density gauge: A gauge that uses a neutron source, such as ^{235}U with californium-252 (^{252}Cf), to produce neutron radiation that interacts with hydrogen in a material being examined. The penetration of the material by neutrons is similar to X-ray examination. By measuring the energy of returned neutrons and comparing it to the initial neutron energy, the relative density of a hydrogen-rich substance can be measured. The gauge at the former NAVWPNSTA Concord was licensed to be used for research and development.

Nondestructive examination (NDE) or testing (NDT): An inspection technique that involves examining the structure of materials without destruction of or physical change to the materials being examined. Industrial radiography using an ionizing radiation source to inspect metals and welds to ensure integrity and structure is one type of NDE/NDT.

None (contaminated media potential): Evidence of contamination in the specific media or migration pathway has not been found, or known contamination has been removed, and surveys indicate that the media or migration pathways meet present release criteria.

NNPP: Naval Nuclear Propulsion Program: a DON program to design, build, operate, maintain, and oversee operation of naval nuclear-powered ships and associated support facilities.

Nonimpacted site: A site having no reasonable possibility of residual G-RAM contamination resulting from site operations based on historical documents. This includes residential or other buildings that have or had no sealed radioactive sources other than smoke detectors or exit signs.

NPL: National Priorities List. Under the Superfund program, a list of sites of releases and potential releases of hazardous substances, pollutants, and contaminants that appear to pose the greatest threat to public health, welfare, and the environment.

NRC: U.S. Nuclear Regulatory Commission: an organization of the federal government that oversees and authorizes (usually by issuing licenses) the use of by-product, source, and special nuclear materials.

NRMP: Naval Radioactive Materials Permit. A site-specific or broad-scope DON license for the use of specified radioactive materials under specified conditions. These permits are issued by the Naval Radiation Safety Committee (NRSC) under the authority of the Master Materials License granted to the DON by the NRC.

NRSC: Naval Radiation Safety Committee. DON organization providing administrative control of all NRC-licensed radioactive materials used by the DON and U.S. Marine Corps.

Nuclide: Any known isotope, either stable or unstable, of any element. A single element can have isotopes, but when referring to isotopes of more than one element, the proper term is nuclide.

OPERATION CROSSROADS: The Crossroads Series tests were the first nuclear explosions after World War II, and the first nuclear weapon tests since Trinity. These were the first "weapons effects" tests ever conducted (tests designed specifically to study how nuclear explosions affect other things) rather than tests of the behavior of a weapon design. The purpose of the tests was to examine the effects of nuclear explosions on naval vessels, planes, and animals.

Pig: A radioactive source container, which can be the housing unit, transport unit, and/or an exposure controlling device.

Phosphor: A luminescent substance that emits light when excited by radiation (as electrons) and is used especially in fluorescent lamps and cathode-ray tubes.

RADIAC: Radiation Detection, Indication, and Computation. A DON acronym for instruments used to measure radiation emission or exposure rate.

Radioactive material: A substance that contains or emits radiation. Radioactive materials and radiation occur in nature. These materials are also used by the military and private industry and are present in common household items. Common items that use radioactive materials are smoke detectors; radioluminescent devices, including dials, ship's deck markers, and gauges; lead paint analyzers; static eliminators; non-electrically powered exit signs; and biological and chemical agent detectors.

Radiography: The process of examining and obtaining an image of a person, animal, object, or structure on a photographic plate using a radioactive source or a machine source of ionizing radiation (e.g., showing the position of bones by their greater absorption of the rays). Radiography allows manufactured components to be inspected for internal defects or flaws without damage.

Radioisotope: A radioactive isotope; i.e., an unstable isotope that undergoes spontaneous transformation, emitting radiation.

Radiologically impacted: An area, building, or piece of equipment that, under professional interpretation, has the possibility of having residual radioactive contamination associated with it.

Radioluminescence: Luminescence produced by the bombardment of radiant energy such as X-rays, radioactive waves, and beta or alpha particles on a material such as phosphors.

Radioluminescent paint: A paint containing a radioisotope that interacts with a phosphor to produce radioluminescence. The paint was commonly applied to devices that needed to be seen in areas without natural or artificial ambient lighting.

Radionuclide: A radioactive nuclide.

RASO: The Naval Sea Systems Command Detachment, Radiological Affairs Support Office, located in Yorktown, Virginia. RASO provides technical support to the DON for management and control of G-RAM.

Release criterion/criteria: A regulatory limit established to set a limit for decontamination of residual radioactive contamination. The term may be expressed as a quantification of radioactivity, dose, or exposure risk.

Scoping survey: A survey to identify radionuclide contaminants, relative radionuclide ratios and general levels, and extent of contamination; these surveys usually include surface scans, sampling, and dose rate assessments appropriate to determine whether further surveys are necessary.

Site: MARSSIM defines a site as any installation, facility, or discrete physically separate parcel of land or building or structure, thereof, that is being considered for survey or investigation.

Source: A device containing radioactive material. The device may be used in research and industrial processes and may be sealed or unsealed. Sealed sources are often part of specialized industrial devices that measure quantities such as the moisture content of soil or the density or thickness of materials (radiography or NDT). Sources may be enclosed in a housing that prevents the escape of the radioactive materials and are often referred to as “radioactive sources” or “sealed sources.”

Special weapons: A term used by the U.S. military since 1947 to refer to nonconventional weapons.

Spectroscopy: Physics that deals with the theory and interpretation of interactions of matter and radiation. Often used in the analysis of samples for quantification or qualification of radioactive content.

Structure: A man-made surface above the ground surface or contained within subsurface media.

Subsurface soil and media: Solid materials and media found below the surface soils.

Surface soil: The top layer of soil (6 inches below ground surface) (or fill) that is available for growing plants, resuspension of particles for inhalation, and mixing from human disturbances.

Surface water: Waters found in streams, rivers, lakes, wetlands, and oceans as well as coastal tidal waters.

Swipe test or survey: Type of sampling process used to measure removable radioactive contamination. A swipe usually consists of a small paper or cloth disk that is rubbed over a surface in a prescribed way to collect a representative sample of loose materials on the surface that is then evaluated to determine the radioactive materials present on the swipe.

Tensiometer: An instrument for measuring tensile strength, which is the stress at which a material breaks or permanently deforms.

Tidal Area: The northwest portion of the Concord Naval Weapons Station (originally known as the Naval Magazine, Port Chicago), consisting of approximately 6,304 acres of land, separated from the Inland Area by the town of Clyde and the Los Medanos Hills. The Tidal Area includes piers for the transshipment of munitions from ground to sea transport.

Trinity: The first test of technology for a nuclear weapon. The test was conducted by the United States on July 16, 1945 at a location 35 miles southeast of Socorro, New Mexico.

Undifferentiated: No visible separation into different structural parts; homogeneous.

Volatilizing: To cause a substance to pass off as a vapor.

Wetland: A type of sensitive environment sufficiently inundated or saturated by surface water or groundwater to support vegetation and marine and animal life adapted for life under saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

X-ray: A form of electromagnetic radiation with a wavelength in the range of 10 to 0.01 nanometers, corresponding to frequencies in the range of 30 petahertz to 30 exahertz (30×10^{15} Hz to 30×10^{18} Hz, respectively) and energies in the range of 120 electron

volts (eV) to 120 kiloelectron volts (keV). X-rays are emitted by excitation of electrons outside the nucleus of an atom, while gamma rays are emitted by the nucleus.

X-ray machine: A device for generating X-rays. X-ray machines work by applying controlled voltage and current to an X-ray tube, which results in a beam of X-rays. When the beam is projected through matter, some of the X-rays are absorbed while others pass through the object creating an image of the interior of the object.

1.0 EXECUTIVE SUMMARY

1.1 PURPOSE

This Historical Radiological Assessment (HRA) presents a comprehensive history of radiological operations conducted by the U.S. Department of the Navy (DON) at the former Naval Weapons Station Seal Beach Detachment (NAVWPNSTA) Concord, located in Concord, California. The document describes the history of operations involving general radioactive material (G-RAM). For the purposes of this document, G-RAM is defined as any radioactive material used by the DON or DON contractors not associated with the Naval Nuclear Propulsion Program. The HRA designates sites as impacted or nonimpacted; identifies potential, likely, or known sources of radioactive materials, contamination, and areas of use; assesses the likelihood of residual contamination and contamination migration; identifies sites that need further action; and provides recommendations for future radiological investigations and remediation processes.

This document has been prepared pursuant to the DON's Environmental Restoration Program to fulfill the requirements for a preliminary assessment in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The format and content are consistent with the guidelines for a Historical Site Assessment (HSA) as set forth in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).

1.2 SITE BACKGROUND

The former NAVWPNSTA Concord is located in the north-central region of Contra Costa County, California, about 35 miles northeast of San Francisco. The facility included two principal areas: the Inland Area and Tidal Area. The Tidal Area and 115 acres of the Inland Area were transferred to the Department of the Army on September 31, 2008. This HRA focuses on Inland Area property retained by the DON. The former NAVWPNSTA Concord Inland Area encompasses approximately 5,205 acres and is bounded by steep hills to the north and east, and the City of Concord to the south and west.

This HRA covers the radiological history at the former NAVWPNSTA Concord from January 20, 1945, to the present time. Facilities located in the former NAVWPNSTA Concord Inland Area supported ordnance operations and ordnance operation support functions, with ammunition storage being the largest single land use. Currently, all facilities are nonoperational.

Details of the radiological history of the former NAVWPNSTA Concord are provided in Section 6.0 of this HRA. Historical radiological operations included:

- Assessment and examination of weapons materials and components using various X-ray machines and particle accelerators

- Assessment and examination of weapons materials and components by gamma radiography
- Assessment and examination of materials by gas chromatography and scanning electron microscope
- Receipt, repair, and disposition of equipment containing radioluminescent dials or gauges
- Storage and examination of depleted uranium (DU) ammunition
- Storage of instrument calibrators
- Storage and transshipment of radioactive materials from other DON facilities
- Handling and disposal of radioactive materials by shipment to off-site vendors or waste disposal sites
- Storage and maintenance of special weapons

1.3 HRA METHODOLOGY

The primary purpose of the HRA is to designate sites as impacted or nonimpacted. An impacted site is one that has the potential for radioactive contamination based on historical information, or one that is known to contain or have contained radioactive contamination. In many instances, designation as impacted does not confirm that radioactive contamination is present, only that the possibility exists and must be investigated. If contamination is found at a former NAVWPNSTA Concord site, measures will be taken to remove the contamination to or below release criteria. Once a site is designated as impacted, it remains impacted even if a radiological survey indicates that no residual radioactivity is present or after residual contamination is removed.

A nonimpacted site is one where, based on historical documentation or results of previous radiological survey information, there is no reasonable possibility for residual radioactive contamination. If new historical information becomes available or contamination is found at a nonimpacted site, the site would be redesignated as impacted.

To designate a site as impacted or nonimpacted, the HRA defines the extent of past radiological operations, assesses the likelihood of potential contamination and potential contamination migration pathways, and recommends future actions. As well as being used to designate impacted sites, this information can be used to support removal actions within the context of the CERCLA process.

The DON researched multiple federal and personal archives to obtain information for preparation of this HRA. In an effort to find and interview personnel with knowledge of radiological operations at the former NAVWPNSTA Concord, the DON placed public notices in 15 local newspapers and prepared a Fact Sheet announcing the HRA and soliciting public input. The Fact Sheet was distributed to local and interested residents and displayed at several centers providing

services to military veterans. The DON also issued a press release. The DON gathered information from current employees at the former NAVWPNSTA Concord and the DON's Radiological Affairs Support Office who had working knowledge of radiological activities at Concord.

The DON compared historical information to evaluations made during several site reconnaissance visits to determine whether a site is impacted. The results were compiled and are provided in this HRA. The Final HRA may be revised or an addendum may be prepared at a later date if significant sources of information are identified that would require further research.

1.4 REGULATORY INVOLVEMENT

The U.S. Nuclear Regulatory Commission (NRC) and its regulatory predecessor, the Atomic Energy Commission (AEC), exercised licensing and regulatory authority over radioactive materials at the former NAVWPNSTA Concord. Prior to the cessation of all active military operations, the Inland Area at the former NAVWPNSTA Concord possessed five AEC/NRC licenses that authorized storage, examination, and nondestructive testing of DU penetrators; use of uranium-235 as a component of a nuclear density gauge for research and development; possession and use of radioactive sources for radiography operations; and possession and use of specific radioactive materials in an X-ray nondispersive spectroscopy system.

In 1985, the NRC granted a Master Material License to the Chief of Naval Operations and permitted the DON to issue Naval Radioactive Materials Permits (NRMPs). During its history, radiological work was performed at the former NAVWPNSTA Concord under the authority of five NRMPs. The NRMPs generally replaced the original NRC licenses.

1.5 ASSESSMENT SUMMARY

After review of the radiological operations at the former NAVWPNSTA Concord buildings, structures, and open areas, the DON designated those with a history of radiological operations as "impacted sites." MARSSIM defines a site as any installation, facility, or discrete, physically separate parcel of land, or any building or structure or portion thereof, that is being considered for survey and investigation. The designation as impacted does not confirm the presence of radioactive material, only that there is a possibility for residual radioactive contamination. An assessment of contamination potential and contamination migration potential is provided for each of these buildings and areas along with recommendations for future actions.

In summary, this HRA has concluded that:

- There are 48 impacted sites (7 buildings/structures and 41 magazines).

- Scoping surveys are recommended for 7 buildings/structures (IA-20, IA-21, IA-21A, IA-22, IA-58, 81, and 87), 6 DU munitions storage magazines, and 35 special weapons magazines.
- Potentially contaminated media include surface and subsurface soils, structures and their interiors, and drainage systems.
- No evidence of a pathway for potential contamination to migrate off base.
- No impacted site is recommended for emergency action.

Based on the information provided in the HRA, only routine constraints are recommended for future remediation activities at impacted sites because it is anticipated that either no contamination or low concentrations of residual radioactive material will be identified.

1.6 CONCLUSIONS

Radioactive materials were used and stored within the former NAVWPNSTA Concord, Inland Area. A total of 48 sites are considered impacted from these activities. This HRA has not confirmed that actual radioactive contamination is present at these sites, and further investigations are recommended.

2.0 INTRODUCTION

2.1 SCOPE

This Historical Radiological Assessment (HRA) presents a comprehensive history of radiological operations conducted by the Department of the Navy (DON) at the Inland Area of Naval Weapons Station Seal Beach Detachment Concord (hereinafter referred to as the former NAVWPNSTA Concord) (Figures 2-1 and 2-2). The document describes the history of operations involving general radioactive material (G-RAM). For the purposes of this document, G-RAM is defined as any radioactive material used by the DON or DON contractors not associated with the Naval Nuclear Propulsion Program (NNPP). No NNPP activities were conducted at the former NAVWPNSTA Concord.

The HRA designates sites as impacted or nonimpacted; identifies potential, likely, or known sources of radioactive materials, and areas of use; assesses the likelihood of residual contamination and contamination migration; and provides recommendations for future radiological investigations.

2.2 HRA METHODOLOGY

The primary purpose of the HRA is to designate sites as impacted or nonimpacted based on previous operations or investigations. An "impacted" site is one that has the potential for radioactive contamination based on historical information, or one that is known to contain or have contained radioactive contamination. Once a site is designated as impacted, it remains impacted even if a radiological survey indicates that no residual radioactivity is present or after residual contamination is removed. Designation as impacted does not confirm that radioactive contamination is present, only that the possibility exists and must be investigated. At impacted sites, further investigation is required to determine if there is residual radioactive contamination at levels exceeding release criteria to verify that the building or area is not contaminated, that there is no potential for residual radioactive contamination at levels exceeding natural background or fallout, and that the site meets today's release standards. If contamination is found at a former NAVWPNSTA Concord site, measures will be taken to remove the contamination to or below release criteria. Documentation of further investigation and/or remediation of impacted sites will be presented separately from this HRA.

A nonimpacted site is one where, based on historical documentation or results of previous radiological survey information, there is no reasonable possibility for residual radioactive contamination. If new historical information becomes available or contamination is found at a nonimpacted site, the site would be redesignated as impacted.

To designate a site as impacted or nonimpacted, the HRA defines the extent of past radiological operations, assesses the likelihood of potential contamination and potential contamination migration pathways, and recommends future actions. As well as being used to designate impacted sites, this information can be used to support removal actions within the context of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

The DON researched multiple federal and personal archives to obtain information for preparation of this HRA. In an effort to find and interview personnel with knowledge of radiological operations at the former NAVWPNSTA Concord, the DON placed public notices in 15 local newspapers and prepared a Fact Sheet announcing the HRA and soliciting public input. The Fact Sheet was distributed to local and interested residents, and displayed at several centers providing services to military veterans. The DON also issued a press release. The DON gathered information from current employees at the former NAVWPNSTA Concord and the DON's Radiological Affairs Support Office (RASO) who had working knowledge of radiological activities at Concord.

The DON compared historical information to evaluations made during several site reconnaissance visits to determine whether a site is impacted. The results were compiled and are provided in this HRA. This HRA meets the protocol for a preliminary assessment, as defined by CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 *Code of Federal Regulations* [CFR] Part 300), and can be used to support removal actions within the CERCLA process. An HRA is comparable to the HSA as defined in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (HRA-620).

2.3 HISTORY

Details of the radiological history of the former NAVWPNSTA Concord are provided in Section 6.0 of this HRA. Historical radiological operations included:

- Assessment and examination of weapons materials and components using various X-ray machines and particle accelerators
- Assessment and examination of weapons materials and components by gamma radiography
- Assessment and examination of materials by gas chromatography and scanning electron microscope
- Receipt, repair, and disposition of equipment containing radioluminescent dials or gauges
- Storage and examination of depleted uranium (DU) ammunition
- Storage of instrument calibrators
- Storage and transshipment of radioactive materials from other DON facilities

- Handling and disposal of radioactive materials by shipment to off-site vendors or waste disposal sites
- Potential storage and servicing of special weapons

2.4 REGULATORY BACKGROUND

The information in this HRA is presented pursuant to the DON's Installation Restoration (IR) Program. The IR Program is specific to military facilities, and its purpose is to identify, investigate, and environmentally restore sites with hazardous substances to reduce the risk to human health and the environment. The IR Program functions in accordance with CERCLA and the Superfund Amendments and Reauthorization Act of 1986 (SARA) as directed by Executive Order 12316 of August 20, 1981, which requires the U.S. Department of Defense (DoD) to comply with CERCLA.

The DON instituted the Navy Assessment and Control of Installation Pollutants (NACIP) Program in the mid-1980s as a method of complying with CERCLA. The first step in the NACIP Program is to conduct an initial assessment study (IAS) to assess potential contamination by hazardous materials, including radioactivity. The former NAVWPNSTA Concord IAS was completed in 1983 (HRA-274, HRA-681). The former NAVWPNSTA Concord was placed on the National Priorities List (NPL) in December 1994. Per Executive Order 12580, the DON is authorized as the lead agency responsible for compliance with CERCLA and SARA.

The DoD has the authority to undertake CERCLA actions under Title 42 of the *United States Code* (USC), Section 9604; Title 10 of the USC, Section 2705; and Federal Executive Order 12580. Under the authority of CERCLA, DoD has undertaken the assessment of radioactive materials at the former NAVWPNSTA Concord by conforming to the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Title 40 of the CFR, Part 300. Because CERCLA defines radionuclides as hazardous substances, radionuclides are included in the CERCLA process to investigate, characterize, and remediate contamination. Appendix B of Title 40 of the CFR, Section 302.4 lists the specific radionuclides defined as CERCLA hazardous substances. The radionuclides of concern (ROCs) known to have been used at the former NAVWPNSTA Concord are included on this list.

MARSSIM, a consensus document of the U.S. Environmental Protection Agency (EPA), DoD, U.S. Department of Energy (DOE), and the U.S. Nuclear Regulatory Commission (NRC), provides detailed guidance for investigation of radiologically impacted sites. Developed to be consistent with CERCLA, MARSSIM uses a single-phase approach to address radioactive contamination issues versus CERCLA's multi-phased approach; that is, site inspection, remedial investigation, and feasibility study. Once the radioactive material has been identified and remediated at impacted sites, MARSSIM recommends a Final Status Survey (FSS) for radiological release of a site for unrestricted use to fulfill the CERCLA closure and postclosure

process. Section 8.0 of this document provides the current status of each impacted site with the appropriate recommendation to comply with MARSSIM.

2.5 REPORT ORGANIZATION

This HRA is organized to present the history of radiological operations at the former NAVWPNSTA Concord from January 1945, when the Inland Area was commissioned (HRA-5), to the present time by providing the following information:

- Potential, likely, or known sources of G-RAM
- Potential, likely, and known areas of G-RAM use
- History of G-RAM operations, investigations, remediations, and surveys
- Classification of an area as impacted or nonimpacted by radiological operations
- Identification of potential contamination migration pathways
- Information useful to radiological scoping and characterization surveys
- Recommendations for future radiological investigations and remediation processes

The basic organization of the report is presented below. Individual tables, figures, and appendices are not included here but are listed in the Table of Contents. Tables and figures are included after their respective tabs in the order they are first mentioned in the text. Section 10.0 lists the reference documents used to prepare this HRA. References are cited in text in parentheses beginning with "HRA-" and followed by a number for the source listed in Section 10.0. The actual reference documents are organized and provided electronically in a project database included on a CD-ROM in Appendix D.

- Abbreviations, Acronyms, and Symbols
- Glossary
- Section 1.0 – Executive Summary
- Section 2.0 – Introduction
- Section 3.0 – Site Identification and Description
- Section 4.0 – HRA Methodology
- Section 5.0 – Regulatory Involvement
- Section 6.0 – History
- Section 7.0 – Assessment of Impacted Sites
- Section 8.0 – Findings and Recommendations
- Section 9.0 – Conclusions

- Section 10.0 – References
- Tables
- Figures
- Appendices

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3.0 SITE IDENTIFICATION AND DESCRIPTION

This section details the geological and physical site characteristics and the current and historical information for the former NAVWPNSTA Concord as well as the immediately adjacent sensitive areas.

3.1 SITE DESCRIPTION

The former NAVWPNSTA Concord was a major munitions transport and shipment facility located in the north-central region of Contra Costa County, California, about 35 miles northeast of San Francisco (Figure 2-1). The installation is bounded by Suisun Bay to the north, the City of Concord to the south and west (Figure 2-2), and Bay Point to the east. The facility includes three main landholdings: the Tidal Area (6,304 acres), the former NAVWPNSTA Inland Area (5,205 acres), and the Radiography Facility located in Pittsburg, California (1.68 acres). The Tidal Area and 115 acres of the Inland Area were transferred to the Department of the Army (DOA) on September 31, 2008. The Radiography Facility is currently being disposed of by the General Services Administration rather than through the Base Realignment and Closure (BRAC) process. The Tidal Area property under the DOA's control is not part of this HRA. This HRA focuses on DON activities in the former NAVWPNSTA Concord Inland Area. References throughout this document to the former NAVWPNSTA Concord or the Inland Area refer to the 5,205-acre Inland Area.

Facilities located in the Inland Area are nonoperational and are listed in Table 3-1 by building number. The facilities were formerly dedicated to ordnance operations and ordnance operations support functions.

Ammunition storage in the Inland Area was the largest single land use of this area. Ammunition was stored in five magazine groups and two groups of barricaded railroad sidings. Support facilities for inspection and maintenance of ordnance were located throughout the Inland Area.

Construction of the waterfront handling facilities located in the Tidal Area began in January 1942, and the facilities were commissioned as the Naval Magazine Port Chicago on June 27, 1942. During this time frame, the original name of the closest town and surrounding area was changed from Bay Point to Port Chicago. The Inland Area, located in the Diablo Creek Valley, was acquired in 1944 and commissioned on January 20, 1945 (HRA-5). It was linked to the Tidal Area by the Port Chicago and Clayton Railroad (HRA-23). In 1963, the base was officially renamed Naval Weapons Station Concord. In April 1998, it became a detachment of Naval Weapons Station Seal Beach, and in 1999 the name Naval Weapons Station Seal Beach Detachment Concord was adopted. On December 16, 1994, the Naval Weapons Station Seal Beach Detachment Concord was added to the NPL. In 2008, the base was operationally closed and referred to as the former NAVWPNSTA Concord.

Aerial images of the site are presented on Figures 3-1 through 3-4.

3.2 GEOLOGY

Gently sloping land extends through most of the western half of the former NAVWPNSTA Concord, while the northern boundary exhibits ridges of nearly 800 feet. The rolling hills and gentle slopes covering the majority of the site consist of alluvium, while the steep slopes along the northeast side are composed of soft sandstone. Soils of the Altamont Diablo-Fontana association predominate throughout the Inland Area. These clay-rich alluvial soils formed in material weathered from soft, fine-grained sandstones and shales, and are well sorted, moderately deep-to-deep, and well drained. Runoff is medium to rapid, depending on the slope, and the hazard of erosion is moderate to high. Numerous other soil types, mostly clays, clay loams, and silty clay, are encountered in the Inland Area. A geologic cross section showing major formations at the former NAVWPNSTA Concord is presented on Figure 3-5 (HRA-274, HRA-665).

The up-thrusted bedrock feature, which topographically separates the Inland and Tidal Areas, is typical of the geology of Contra Costa County, where northwest trending fault systems divide the county into large up- and downthrown blocks of Tertiary-age rock. The hills of the Inland Area are composed chiefly of undifferentiated marine sandstones and shales, marine conglomerates of the San Pablo Group, and volcanic lavas and tuffs of the Moraga and Orinda Formations. The central valley areas around Seal Creek are underlain by thick, undifferentiated alluvium of Pleistocene age that eroded from the upthrown blocks and extends to a depth of up to 500 feet below ground surface (bgs) beneath the Inland Area. This alluvium is highly variable and ranges from rapidly permeable gravels to dense clays, with silty soils predominant.

The former NAVWPNSTA Concord is within the geologically complex and tectonically active California Coast Range, approximately 35 miles east of San Francisco Bay. There are several active or potentially active major faults in the vicinity of the base (HRA-668). The Hayward and Calaveras Faults are the primary seismic stress lines, or faults, in Contra Costa County. These faults are major branches of the San Andreas Fault system. Both faults are active, and the Hayward Fault was the source of severe earthquakes in 1836 and 1868. The faults are capable of producing an earthquake of 6.7 or greater magnitude on the Richter scale during the next 25 years. Since 1934, nearly 200 earthquakes have been recorded in Central Contra Costa County. Ten of these registered magnitudes between 4.0 and 5.4 on the Richter scale. The California U.S. Geological Survey considered other faults in the county to be active, including the Clayton-Marsh Creek-Greenville, Concord, and Pleasanton Faults.

The Clayton-Marsh Creek-Greenville Fault line and its lateral projections extend west through the northwest portion of the former NAVWPNSTA Concord at the base of the steep hillsides. This structure is a major active fault and has produced several earthquakes with magnitudes up to

3.4 on the Richter scale that had epicenters located on or near the former NAVWPNSTA Concord property. The Concord Fault is a northwest-trending strike-slip fault, located approximately 1 mile to the southwest of the former NAVWPNSTA Concord. The fault is interpreted to be the southward extension of the Green Valley Fault. The Concord-Green Valley Fault lies due west of the facility and is believed capable of producing an earthquake of magnitude 5.0 or 6.0 on the Richter scale during the next 50 years (HRA-665). The Pleasanton Fault is a minor but active fault.

Additionally, faults of undetermined status include the Pinole, Franklin, and Mount Diablo. For geologic, elevation, and topographic information and faults, see Figures 3-6 through 3-8.

3.3 HYDROLOGY

The former NAVWPNSTA Concord lies entirely within the Mount Diablo-Seal Creek Watershed, which drains approximately 36 square miles located between Mount Diablo to the south and Suisun Bay to the north. The Mount Diablo inter-coastal highlands range in elevation from 100 feet above mean sea level (msl) along the San Francisco Bay to 3,840 feet above msl at Mount Diablo (HRA-665). The streams draining this watershed flow north from headwaters on the slopes of Mount Diablo through Clayton Valley and the Inland Area to the outlet at Hastings Slough and Suisun Bay. The primary drainage, Mount Diablo Creek, is known as Seal Creek from the point where it enters former NAVWPNSTA Concord property to its mouth at Suisun Bay (HRA-274). Suisun Bay is 4 miles downstream from the former NAVWPNSTA Concord.

Seal Creek is the only significant flowing stream situated in the Inland Area of the base. Surface runoff within the Inland Area either flows directly into this creek and to Hastings Slough and Suisun Bay or enters the storm water system and is eventually discharged to the bay. Flooding along Seal Creek has historically been confined to the area downstream of State Route 4 near the Concord Municipal Golf Course, the former NAVWPNSTA Concord entrance, Port Chicago Highway, and marsh areas at lower elevation. Floodplain areas are subject to inundation due to heavy rainfall and resulting stream overflow.

Groundwater is present in the low-lying valley portions of the Inland Area in the coarser sand and gravel units of the unconsolidated alluvial deposits. The shallow groundwater is typically encountered at a depth of 20 feet or more bgs under semiconfined to confined conditions in the main industrial complex of the Inland Area. North of State Route 4, the water table typically ranges in depth from 30 to 40 feet bgs, with the shallower groundwater encountered at higher elevations. Groundwater has been encountered as shallow as 8 to 10 feet bgs at the western boundary of the base. The DON estimates the average lateral groundwater flow rate to be 26 feet per year. The groundwater is believed to flow to the northwest following surface contours with a gradient of approximately 0.004 to 0.005 foot per foot (HRA-665).

Groundwater is available in moderate quantities from the unconsolidated formations and bedrock underlying the Inland Area and supply wells used to water livestock and irrigate the Concord Municipal Golf Course (western portion of the base). Two springs are used as a water supply for wildlife and cattle, and one spring at a former ranch house on the base is capped.

The former NAVWPNSTA Concord does not utilize groundwater as a source of water either for human consumption or sanitation; however, before the 1960s the base water supply was obtained from three now-abandoned deep wells that were located on the west side of the Inland Area along Kinne Boulevard. These wells were drilled into bedrock at depths of 116, 300, and 500 feet bgs. However, the quality of the groundwater is only fair due to relatively high concentrations of dissolved solids, hardness, chlorides, and iron. Surface water sources replaced this drinking water supply in the early 1960s.

Municipal drinking water wells operated as a backup supply by the Contra Costa Water District (CCWD) are situated due west of the Inland Area surrounding Mallard Reservoir. Private wells situated further west in the industrial area supply water used for process and cooling purposes. All of these nearby wells are situated in the inferred downgradient direction from the operational portions of the Inland Area.

3.4 CURRENT AND FUTURE USE

The DON, through the BRAC Program Management Office West, currently manages several leases and licenses at the former NAVWPNSTA Concord. Approximately 4,276 acres is outleased for cattle grazing purposes. The City of Concord leases approximately 82 acres for a portion of the Diablo Creek Golf Course. The Concord Little League uses a 5.86-acre parcel located across from the former Navy Housing site for year-round baseball games. The Department of the Interior, through the Bureau of Reclamation, owns the Contra Costa and Clayton canals that dissect the Inland Area.

Planning for local civilian development and reuse of the former NAVWPNSTA Concord is currently underway. Future uses of the property will likely include residential, commercial, and industrial uses and open space.

3.5 ADJACENT POPULATION AND LAND USE

Industrial, residential, agricultural, and open space areas surround the former NAVWPNSTA Concord. The 2000 Census reported 33,871,648 inhabitants of the State of California, with more than 8,000,000 residing in counties at least partially within a 50-mile radius of the former NAVWPNSTA Concord. The metropolitan areas of Sacramento, San Francisco, Alameda, and Santa Clara Counties make up most of this population. Table 3-2 shows the distribution of this population. Table 3-3 shows the population of cities within a 10-mile radius of the former NAVWPNSTA Concord.

The former NAVWPNSTA Concord is bordered on the south by residential sections of the City of Concord. These neighborhoods are made up of single-family, medium-density housing. Most of the housing dates from the mid-1950s. In addition, seven public schools and several parks are adjacent to the Navy property line. Table 3-4 lists the schools located within 1 mile of the former NAVWPNSTA Concord.

The Diablo Creek Golf Course occupies a 162-acre triangle of land between State Route 4, the Port Chicago Highway, and the former NAVWPNSTA Concord. The City of Concord operates a large water treatment plant and the Mallard Reservoir located just west of the Port Chicago Highway. To the east, the former NAVWPNSTA Concord is bounded by steep, uninhabited hills.

North of State Route 4 and west of the former NAVWPNSTA Concord, the land is zoned for industrial development and is occupied by several industries, including Phillips Refining, Marketing and Transportation, and the Monsanto Chemical Company (HRA-663).

State route 4 is a major thoroughfare for Sacramento/Stockton/Bay Area commuters and that, on average, weekday traffic volume is much greater than weekend volume (as is typical of a major highway).

3.6 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally sensitive areas are located on and in the vicinity of the former NAVWPNSTA Concord. Wildlife areas of the former NAVWPNSTA Concord include an eagle nest location, wetlands, habitat for protected birds, and habitat for federally listed species. An active eagle nest is located in the Los Medranos Hills in a eucalyptus grove (HRA-644).

The entire former NAVWPNSTA Concord provides habitat for many species of birds protected under the Migratory Bird Treaty Act. Particularly important bird habitat areas are wetlands and areas with trees.

Several monitoring efforts and studies of threatened and endangered and other sensitive species on former NAVWPNSTA Concord have been conducted, including assessments associated with the Environmental Impact Statement for Disposal and Redevelopment of the NAVWPNSTA Concord (HRA-675, HRA-690, HRA-701, HRA-702). Wildlife surveys were conducted within all representative environments including grassland, woodland, anthropogenic, and developed areas.

Federally listed species that are present in the former NAVWPNSTA Concord include (HRA-675, HRA-701):

- California red-legged frog (*Rana aurora draytonii*)
- California tiger salamander (*Ambystoma californiense*)

Federally listed species that may be present in the former NAVWPNSTA Concord include (HRA-690, HRA-702):

- Alameda whipsnake (*Masticophis lateralis euryxanthus*)
- Least Bell's vireo (*Vireo belli pusillus*)

4.0 HRA METHODOLOGY

The DON uses an HRA as a tool to document historical radiological operations at an installation and recommend future actions. This section describes the general processes used by the DON to prepare an HRA and details the process used to prepare this HRA.

4.1 HRA OVERVIEW

This HRA generally follows the guidelines in MARSSIM (HRA-620) for preparation of an HSA and provides information in a format similar to the preliminary assessment protocol used by the EPA within the CERCLA process. An HRA provides historical documentation of radiological operations for a specified period. This documentation is vital for the future transfer of current and former DON and Marine Corps property and includes documentation of operations involving radioactive materials, regulatory controls of these operations, and closeout surveys following these operations.

This HRA documents radiological operations from the time the former NAVWPNSTA Concord was established as a DON facility in 1945, through the time of closure and any subsequent surveys and investigations, to the present time.

4.2 PURPOSE

The purpose of this HRA is to document radiological operations involving the use of G-RAM at the Inland Area at the former NAVWPNSTA Concord (see Figure 4-1 for the physical boundary). Examples of G-RAM activities at the former NAVWPNSTA Concord include:

- Use of X-ray machines and particle accelerators to nondestructively examine materials. While these machines left no residual radioactive materials after the power to them was turned off, some of the machines were built with DU shielding.
- Use of gamma radiography devices to nondestructively examine materials (gamma sources included cobalt-60 [^{60}Co] and iridium-192 [^{192}Ir]).
- Operation of a neutron density gauge that contained both a uranium-235 (^{235}U) and a californium-252 (^{252}Cf) source in a fission chamber. The gauge was located in Building 35 in Pittsburg, California, and was not used in the former NAVWPNSTA Concord. However, the fission chamber was stored at the former NAVWPNSTA Concord pending its disposition after use of the density gauge ceased.
- Use of other instruments having components equipped with radioactive sources to nondestructively examine materials (e.g., a gas chromatograph with a nickel-63 [^{63}Ni] source).

- Maintenance of an assortment of radiation detection instrumentation the DON referred to as RADIACs. At the former NAVWPNSTA Concord, RADIACs were used to measure the radiation intensity in the vicinity of a location where a gamma radiography device was used (Photograph 4-1). Exempt quantity radioactive sources, not subject to licensing, were used for performing operational checks of these RADIACs. The NRC has defined exempt quantity as the quantity of a radioactive by-product material that does not exceed the microcurie limits requiring licensing. Material that does not exceed the limits set forth in 10 CFR Section 30.71, Schedule B, constitutes an exempt quantity.
- Receipt of radioactive materials and sources sent by other facilities to the former NAVWPNSTA Concord for storage, maintenance, and/or shipment to vendors or disposal sites. These materials were stored at facilities (primarily Building IA-58) in the former NAVWPNSTA Concord. For example, two RADIAC calibrators from the *USS Acadia* (AD-42) were sent to the former NAVWPNSTA Concord and stored on the base (see Section 6.8).
- Storage of DU projectiles in six magazines at the former NAVWPNSTA Concord. Quality Engineering Laboratory (QEL) personnel participated in a program to examine DU projectiles for defects and degradation in storage ("shelf life" testing).
- Generation and storage of small amounts of radioactive waste from former NAVWPNSTA Concord activities for off-site disposal at a licensed disposal facility, pending shipment by the DON.
- Potential storage of special weapons in 35 magazines in the Alpha Area and maintenance of these weapons in Building 81 and possibly Building 87.

Photograph 4-1. Example of a RADIAC (Model AN/PDR 43)

This HRA provides the following information about the above listed G-RAM operations at the former NAVWPNSTA Concord:

- History of buildings, structures, and outdoor areas potentially impacted by G-RAM
- Potential, likely, or known sources of radioactive materials and radioactive contamination
- Previous investigation results
- Likelihood of contamination migration
- Recommended future actions

4.3 HRA PREPARATION GUIDELINES

This section describes the MARSSIM guidelines applicable to the preparation of this HRA. As described in Section 2.4, the MARSSIM is a consensus document of the EPA, DoD, DOE, and NRC. The MARSSIM provides detailed guidance for the investigation of areas potentially impacted by radiation.

Preparation of an HRA is the first step in the MARSSIM process for evaluating the effects of past radiological operations and identifying those areas that are considered to be impacted. The HRA is followed by scoping surveys, additional surveys for site characterization, and remedial action recommendations for the impacted areas. The final step in the process is to demonstrate regulatory compliance for free release of the property by performing FSSs on the impacted areas. The FSS report is the final clearance document presented to regulators and the public for a site.

Per the MARSSIM guidance, HRAs are prepared to:

- Identify potential, likely, or known sources of radioactive materials and radioactive contamination based on available information
- Identify ROCs
- Provide initial classification of impacted and nonimpacted sites
- Determine whether or not areas pose a risk to human health or the environment from radiological operations
- Assess the likelihood of contaminated media and contamination migration
- Provide information useful to scoping and characterization surveys
- Provide recommendations for future actions

Based on the MARSSIM guidelines, the following activities should be conducted to satisfy the requirements of the HRA:

- Historical research
- Classification of areas as impacted or nonimpacted
- Identification of potentially contaminated media
- Identification of survey requirements
- Identification of survey types to implement recommendations

The above-listed activities were completed and are detailed in Sections 4.4 and 8.

4.3.1 Historical Research

MARSSIM recommends that historical information be collected by:

- Reviewing site evaluations; federal, state, and local investigations; and any emergency actions
- Reviewing existing radiological data in correspondence, licenses, site permits, authorizations, and operating records
- Finding and interviewing current and previous employees or other personnel with knowledge of G-RAM operations at the site
- Performing site reconnaissance by reviewing maps, drawings, photographs, and blueprints, and conducting a physical inspection of facilities
- Using professional judgment

4.3.2 Nonimpacted and Impacted Sites

MARSSIM recommends that after reviewing the information obtained during historical research, a general preliminary area classification of nonimpacted or impacted be assigned to all sites.

Nonimpacted sites are those where, based on historical documentation or results of previous radiological survey information, there is no reasonable possibility for residual radioactive contamination. Examples of such sites are residential or administrative buildings. If the site has no radiological history but does have areas with only standard safety devices that contain generally licensed or unlicensed radioactive material, such as smoke detectors or exit signs, this area is classified as nonimpacted. Generally licensed radioactive materials are defined by the NRC in 10 CFR Part 31.

Nonimpacted sites are not considered for radiological investigation because there is no reasonable potential for radioactive material to be present. If new information becomes available that identifies radiological operations associated with a nonimpacted site or contamination is found at a nonimpacted site, the site is reclassified as impacted. Discovery of minimal radioactivity attributable to natural background radiation or fallout from weapons testing is not, in itself, cause for designation of a site as impacted. Radioactive fallout is the term used for

radioactive particles that settle on the earth following their release into the atmosphere after discharge from nuclear power plants or nuclear explosions. The activities at the former NAVWPNSTA Concord did not generate fallout. Areas containing machines that produced ionizing radiation (such as X-ray machines or particle accelerators) are not classified as impacted solely on the basis of the use of these machines.

An impacted site is one that has the potential for radioactive contamination based on historical information, or one that is known to contain or have contained radioactive contamination. In many instances, designation of a site as impacted does not confirm that radioactive contamination is present. Instead, such designation may only establish that the possibility of contamination exists and must be investigated. Impacted sites are generally those with a history of radiological operations that have the potential for residual radioactive contamination. Examples include locations where leaks or spills are known to have occurred, areas where radioactive materials were used or stored, former burial or disposal sites, areas where radioactive decontamination was performed, and radium paint facilities. Although an impacted site may be remediated and released as free from residual contamination, the site is not reclassified as nonimpacted following remediation.

4.3.3 Potentially Contaminated Media

If an area is classified as impacted, the potentially contaminated media within the area must be identified. While MARSSIM focuses on surface soils and building surfaces, it also provides preliminary guidance on other media types, including:

- Surface Media
- Subsurface Media
- Surface Water
- Groundwater
- Air
- Structures

4.3.4 Survey Classifications

If an area is classified as impacted, the survey requirements must be classified. MARSSIM classifies survey requirements for impacted areas as Class 1, 2, or 3, depending upon the potential for residual contamination. The classification is used to ensure that areas with a greater potential for radioactive contamination receive a higher degree of survey effort. Class 1 surveys are assigned to areas having the greatest potential for contamination. The classification of a building, structure, or site is a critical step in the survey design process and is used to ensure that

areas with higher potential for contamination receive a higher degree of survey effort, with Class 1 areas having the greatest potential for contamination.

The criteria used for designating an area as Class 1, 2, or 3 are usually described in the survey or site work plan. As surveys progress and data are analyzed, areas may be reclassified based on newly acquired survey data. For example, if contamination is found in a Class 3 area, it typically is reclassified as Class 1 or Class 2, depending on the results of the survey. These same categories have been applied to the recommended actions listed in Section 8.0. The three classification categories are described in more detail below. MARSSIM guidance provides detailed information regarding the size of surveys and the type and dimensions of the building, structure, or area.

4.3.4.1 Class 1 Areas

A Class 1 area is an impacted area that is recognized as having a high potential for radioactive contamination, is known to be contaminated, or had prior remediation to remove radioactive contamination. This would include any area known to contain contamination in excess of release limits based on a scoping or characterization survey, and areas previously designated as Class 2 or 3 where contamination above the release limits has been found.

Class 1 areas require 100 percent systematic surveys. To conduct these surveys, each area is divided into survey units to facilitate the process and analysis of the resulting data. The maximum area of a Class 1 survey unit is 100 square meters for floor areas of buildings and 2,000 square meters for open land areas. Sizes of the survey units depend on the type and dimensions of the building, structure, or area.

4.3.4.2 Class 2 Areas

A Class 2 area is an impacted area that is recognized as having a potential for radioactive contamination but is not expected to exceed the release limit. This would include any area known to contain minor isolated areas of contamination with a low potential for exposure, buffer zones around Class 1 areas, and Class 3 areas where minimal contamination was found.

Class 2 areas require systematic surveys over 10 to 100 percent of the area. The area is divided into survey units to facilitate the process and analysis of the resulting data. The maximum area of a Class 2 survey unit is 1,000 square meters for floor areas of buildings and 10,000 square meters for open land areas. Sizes of the survey units depend on the type and dimensions of the building, structure, or area.

4.3.4.3 Class 3 Areas

A Class 3 area is an impacted area that is not expected to contain residual contamination exceeding the release limit. This could include buffer zones around Class 1 or 2 areas.

Surveys of Class 3 areas are not standardized and may be conducted randomly. There is no limit to the size of a survey unit. Sizes of the survey units depend on the type and dimensions of the building, structure, or area.

4.3.5 Survey Types

The HRA includes recommendations for the types of surveys that should be performed. The type of survey (scoping, characterization, or final status) is based on the potential for contamination. These survey types have been assigned to the recommended actions listed in Section 8.0. The three types are described in more detail below.

4.3.5.1 Scoping Surveys

The objective of the scoping survey is to augment the HRA for areas with potential residual contamination. Specific objectives of the survey include:

- Providing input to the characterization survey design, if necessary
- Supporting the classification of all or part of the impacted area
- Obtaining an estimate of the variability in the residual radioactivity concentration
- Identifying nonimpacted areas that may be appropriate for reference areas

4.3.5.2 Characterization Surveys

The objective of the characterization survey is to identify those portions of an area that have been affected by site activities and are potentially contaminated. Specific objectives of the characterization survey include:

- Determining the nature and extent of radiological contamination
- Evaluating remediation alternatives
- Providing input into the FSS design

4.3.5.3 Final Status Surveys

An FSS is performed to demonstrate that residual radioactivity satisfies the predetermined criteria for release for unrestricted use, or, where appropriate, for use with designated limitations. An FSS must be conducted prior to transferring an impacted property.

4.4 PREPARATION OF THIS HRA

This HRA reviews historical radiological operations and past radiological investigations to provide a complete picture of the current radiological status of the former NAVWPNSTA Concord. This HRA also addresses radioactive waste collected, packaged, and shipped from the former NAVWPNSTA Concord for off-site disposal; however, it does not address the off-site disposal facilities where the radioactive wastes were sent because they have no direct bearing on the radiological conditions at the former NAVWPNSTA Concord. These activities are discussed in Sections 4.4.1 through 4.4.8.

4.4.1 Physical Boundaries

The scope of this HRA is to assess the radiological status of sites within the former NAVWPNSTA Concord, Inland Area. This HRA therefore addresses radiological operations within the physical boundary of the former NAVWPNSTA Concord as described in Section 3.0 and shown on Figure 4-1. Figure 4-1 shows the boundary of the area included in the HRA, which excludes the 115 acres near the entry gate that were transferred to the Army. This map also contains a wind rose presenting the predominant wind direction. This HRA does not address or include radiological operations conducted at the Tidal Area or Building 35 in Pittsburg, California, or at other DON facilities outside the Inland Area boundary.

4.4.2 Time Covered by the HRA

The DON instituted condemnation proceedings to acquire the former NAVWPNSTA Concord property in June 1944, and the property was acquired over the succeeding months. For purposes of this HRA, the information included herein covers the time frame from January 20, 1945, when the Inland Area was commissioned (HRA-5), to the present time.

4.4.3 Research

To prepare this HRA, the DON reviewed and evaluated available historical records and current radiological and nonradiological information. Research activities included archive and Internet searches, site assessments, site reconnaissance, and information obtained from public outreach.

Researching records of the former NAVWPNSTA Concord activities at various archives was the primary method of obtaining information for this HRA because DON operations at the former NAVWPNSTA Concord were conducted over more than 5 decades and have since been discontinued. The DON also searched for former personnel and individuals with knowledge and records concerning radiological operations at the former NAVWPNSTA Concord; however, people were difficult to locate because of the time that has passed since most of the operational activities took place.

Section 10.0 lists pertinent documents and other source material used as references and supporting documentation for this HRA. Appendix D provides electronic copies of documents included in a project database (on a CD). This project database is sorted chronologically and contains more than 700 records.

4.4.3.1 Archive Research

Documents from both public and military archives and records were included in the broad search for relevant site-specific information. Table 4-1 lists archives where historic information about the former NAVWPNSTA Concord was researched.

Archive research entails researching available documents, maps, drawings, and photographs that have been collected in the archive. Searches include queries for keywords and subject matter relevant to the possession and use of radiological materials.

Knowledgeable, radiologically qualified researchers traveled to the sites listed in Table 4-1 and reviewed archived documents. After careful review of the records, those documents that discussed G-RAM (i.e., areas where G-RAM was used or stored, procedures and training applicable to the use of G-RAM, radiological controls, regulatory documents, and waste disposal activities) were extracted and reviewed in detail. The DON reviewed several thousand documents. Documents considered important for this HRA were copied, electronically scanned, and saved in the project database. Section 10.0 lists the resulting references. Detailed review of these files resulted in the historical record documented in Section 6.0 and the compilation of impacted sites discussed in Section 8.0.

4.4.3.2 Radionuclide Identification

To properly assess a site, an HRA must determine what radionuclides were used or stored, by whom they were used, and where they were used. Table 4-4 lists radionuclides that were used or stored at the former NAVWPNSTA Concord. This list was compiled by researching documentation of radiological operations and Atomic Energy Commission (AEC)/NRC licenses and DON Naval Radioactive Material Permits (NRMPs) authorizing specific quantities and uses of radioactive materials. Table 4-5 lists the radionuclides that potentially remain a concern at the former NAVWPNSTA Concord today.

4.4.4 Internet Search

The DON searched the Internet for relevant documents pertaining to the former NAVWPNSTA Concord's history and the use or storage of radiological material. The documents found during this search were included in the list of references (Section 10.0) and the project database (Appendix D).

4.4.5 Radiological Assessments

Throughout its history of radiological operations, the former NAVWPNSTA Concord was routinely surveyed for radiation levels and residual contamination from operations where radioactive materials were used. Closeout surveys were performed when radioactive materials were removed from buildings. Records documenting closeout surveys were found in the archives. Section 10.0 lists these records. With the exception of the Black Pit at Red Rock, no records of postclosure radiological assessments are present in the archive between the time BRAC recommended closure of the former NAVWPNSTA Concord in 2005 and the present.

No current radiological assessments were underway at the former NAVWPNSTA Concord at the time this HRA was developed.

4.4.6 HRA Site Reconnaissance

Qualified individuals with radiological knowledge visually inspected the areas with a history of radiological operations. During these visits, some of the buildings still displayed warning signs or posted operational restrictions, primarily warnings of X-ray operations (Photograph 4-2). Radiation warning signs that remained at former NAVWPNSTA Concord were inventoried and have been removed. If any additional radiological postings are identified in the future, they will be removed after the circumstances for which they were installed have been investigated and the Navy has ensured that no hazards remain. No radiological surveys were conducted during the on-site inspections.

Photograph 4-2. Example of Remaining Posting in Building IA-58 (Doors to X-ray Room)

4.4.7 Public Outreach

The DON performed public outreach activities to inform the public of the commencement of the HRA and to request that individuals with knowledge and records concerning radiological operations at the former NAVWPNSTA Concord contact the DON for an interview. A toll-free telephone number and an e-mail address were provided to allow the public to contact the HRA team to schedule an interview. The toll-free number was activated on June 1, 2008 and discontinued on December 12, 2008, because the public outreach portion of the project had been concluded.

4.4.7.1 Fact Sheet

The DON issued a Fact Sheet in July 2008 to announce that an HRA was being prepared for the former NAVWPNSTA Concord. The Fact Sheet summarized the base history, described the HRA process, and provided the toll-free telephone number and e-mail address to allow the public to contact the HRA team. The DON mailed the Fact Sheet to people interested in receiving information about the former NAVWPNSTA Concord who had placed their names on the Concord Community Mailing List. The DON also distributed and displayed the Fact Sheet in the lobby of eight different military veterans' centers. Table 4-4 includes a list of centers that

displayed the Fact Sheet. Additional copies of the Fact Sheet were displayed at the guard house of the former NAVWPNSTA Concord, provided to an EPA representative for placement around the City of Concord and distribution to EPA staff, provided to a RAB member for placement around the City of Concord, and disseminated to senior-level staff at Naval Weapons Station Seal Beach. The Fact Sheet is included in Appendix B.

4.4.7.2 Public Notice

The DON placed public notice advertisements in several area newspapers requesting that individuals with knowledge of radiological operations at the former NAVWPNSTA Concord contact the HRA team. The public notice appeared in 15 newspapers in the Concord, San Jose, San Francisco, and Sacramento areas, and included the *Contra Costa Times* newspapers, the *Alameda Newspaper Group* newspapers, *San Jose Mercury News, Vallejo Times Herald,* and the *Sacramento Bee*. The notice included the toll-free telephone number and e-mail address to allow the public to contact the HRA team to schedule an interview. The content of the advertisement and proof of publication are provided in Appendix B. A complete list of all the newspapers and dates of publication is presented in Table 4-2.

4.4.7.3 Interviews

Three potential interviewees responded to the public notice advertisement by leaving a message at the toll-free telephone number. A member of the HRA team contacted the respondents, informed them about the purpose of the interview, and provided them with background information on the HRA. All three interviewees were former employees of the former NAVWPNSTA Concord. The topics discussed during the interview included the former employees' positions, responsibilities, period(s) of employment, and how they were involved with, or knew of, radiological operations at the former NAVWPNSTA Concord. Respondents were assured that no personal information would be provided to another government agency or a private party without their written permission. None of the three respondents had working knowledge of radiological activities at the former NAVWPNSTA Concord.

The DON conducted one additional interview based on contact information obtained from a flyer distributed by a member of the public at a Concord City Council meeting. This individual was contacted by telephone. The individual provided information based on his work experience at the former NAVWPNSTA Concord while he was in the Navy. Appendix C provides a summary of the in-depth interview.

4.4.7.4 Current Employees

The DON routinely contacted current employees of the former NAVWPNSTA Concord and RASO, who had working knowledge of radiological activities, during the research phase of the HRA. Since these individuals were still employed by the government at the time of contact, they

are considered working resources and were not treated as interviewees for the purposes of this HRA.

The Radiation Safety Officer (RSO), who has held the position since 1985 and continues to work on the Tidal Area for the DOA, provided documents and records related to radiological operations at the site. The information from these documents and records is presented in Sections 6.0 and 8.0.

Several other former NAVWPNSTA Concord and RASO personnel who are currently employed by the DON were instrumental in gathering information for this HRA. Documents provided by the RASO office in Yorktown, Virginia, were incorporated into the project database for this HRA (Appendix D).

4.4.7.5 Press Release

The DON issued a press release in early October 2008 to expand the distribution of the information regarding preparation of this HRA. Appendix B includes a copy of the press release. Appendix B also includes a list of media outlets that accessed the press release information and a list of media sites that displayed the information (the list is current until October 7, 2008, when the team discontinued monitoring the media).

4.4.8 Site Designation

Based on information derived from the archive reviews, site reconnaissance, and interviews, sites at the former NAVWPNSTA Concord have been designated as impacted or nonimpacted radiologically. For each impacted area, the DON identified potentially contaminated media and recommended appropriate radiological screening surveys. Section 8.0 provides this information.

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5.0 REGULATORY BACKGROUND

With few exceptions, individuals and organizations that possess or use radioactive materials must be licensed by the United States Government. In some cases, but not for the former NAVWPNSTA Concord, these licenses may be granted by a state that agrees to perform the in-state functions of a nuclear regulator, hence their being called "Agreement States." California has been an Agreement State since September 1, 1962. These licenses are issued following an application process and subject the licensee to strict compliance with license requirements, inspections by the issuing agency to ascertain compliance, and periodic license renewal.

During its operational history, the former NAVWPNSTA Concord's radiological operations were originally subject to the licensing requirements of the AEC, NRC, and the DON. Following the creation of the EPA, the former NAVWPNSTA Concord became subject to environmental regulation. This section provides a brief overview of the regulatory agencies and processes applied to the former NAVWPNSTA Concord.

5.1 FEDERAL REGULATORY AGENCIES

5.1.1 AEC/NRC

The Atomic Energy Act of August 1, 1946, established the AEC to develop and manage the atomic energy program after World War II (WWII). A civilian government agency, the AEC assumed responsibility for control of radioactive materials and their uses from the Manhattan Engineer District, the wartime project responsible for developing the atomic bombs detonated in the United States and Japan during the last months of WWII (HRA-275). The AEC's mission included the production and control of fissionable material, accident prevention, research, and peaceful uses of the atom, including the commercial generation of electricity. The AEC exercised absolute control over atomic energy production, nuclear materials, and facilities using the materials. The act provided for a five-member commission, a General Advisory Committee, and a Military Liaison Committee within the National Military Establishment, which worked with the AEC on military applications of atomic energy.

In 1953, the DoD established the Committee on Atomic Energy (CAE) to provide assistance and guidance for research and development activities within DoD. The main areas of interest for the CAE were atomic research and its effect on national security, and research and development of atomic energy for military use. During this time, the AEC and DoD also formalized the Agreement for the Development, Production and Standardization of Atomic Weapons, which established regulations to prevent conflicts of responsibility between the military and the AEC (HRA-4).

The AEC controlled uses of radioactive materials by issuing "authorizations" or "permits" until 1954, when the Atomic Energy Act was modified. This modification amended AEC controls and established the licensing program, which allowed for partnerships with private facilities to produce fissionable materials. An additional amendment in 1964 permitted private ownership of fissile material in nuclear fuels, aiding the growing nuclear power industry.

The Energy Reorganization Act of 1974 established two new federal agencies to administer and regulate atomic energy activities. On January 19, 1975, the AEC was dissolved and replaced with the U.S. Energy Research and Development Administration (ERDA) and the NRC. The NRC assumed responsibility for regulation of the by-product, source, and special nuclear materials previously controlled by the AEC, as well as the civilian nuclear power program. Military weapons applications of radioactive materials remained under the control of ERDA, which became part of the newly formed DOE in 1977.

5.1.1.1 AEC Licensing Controls

With the establishment of AEC licensing in 1954, procurement and use of radioactive materials became more rigorously controlled. Users were required to submit lengthy "license applications," with different license types required for by-product, source, or special nuclear materials. AEC required license applications to include:

- Quantity of each radionuclide to be possessed at any one time
- Purposes for which the licensed material was to be used
- Location where radioactive materials were used
- Qualifications of an RSO
- Demonstration that facilities were adequate to safely control materials and protect human health
- Administrative controls
- Monitoring procedures and instrumentation
- Material receipt and accountability procedures
- An occupational radiation safety program for workers
- Standard operating and emergency procedures
- Radioactive waste disposal procedures

5.1.1.2 NRC Licensing Controls

In 1975 when the NRC assumed the licensing duties previously held by the AEC, there were no substantive changes to the licensing rules. Those licenses issued by the AEC remained in effect under the NRC.

5.2 DON RADIOACTIVE MATERIALS CONTROLS

5.2.1 General Control of Radioactive Materials

The first formal DON document controlling use of radioactive materials was Safety Series No. 9 of 1942 for radium-226 (^{226}Ra) (HRA-2). However, the DON did not establish a formal radiological controls program for all types of radioactive materials until 1946, shortly after the end of WWII. These were the predecessors of the more stringent radiological controls programs the DON has in effect today. In 1947, the Chief of Naval Operations (CNO) issued the first Radiological Safety Manual for general applications of radioactive materials (HRA-3). This manual was based on knowledge gained from the bombing of Hiroshima and Nagasaki and OPERATION CROSSROADS testing of the atomic bomb. As experience with and knowledge of the effects of radiation on ships and naval personnel grew, the DON worked to establish more protective requirements that met or exceeded federal regulations.

In the late 1940s and early 1950s, the DON's Bureau of Medicine and Surgery (BUMED) and Bureau of Ships (BUSHIPS) worked closely with the Radiation Laboratory and Naval Radiological Defense Laboratory at the Hunters Point Shipyard to develop controls for use of radioactive materials throughout the DON. BUMED established and incorporated safety tolerances into regulations, determined physiological effects, developed treatment methods for radiation injuries, and approved specifications for instruments to cover medical uses and exposure to radioactive materials. BUMED continues to oversee the radiation health protection program in the DON and Marine Corps today.

BUSHIPS developed and procured instruments to detect radioactivity, equipment to protect personnel aboard ships, and methods and equipment for decontaminating ships. Eventually, the DON reorganized, and these responsibilities were assigned to Naval Sea Systems Command (NAVSEA). Today, NAVSEA is responsible for controlling the use of radioactive materials by the DON, including the Marine Corps, and provides oversight and regulatory guidance to the NNPP, Nuclear Weapons Radiological Controls, and G-RAM programs. These activities are collectively known as the Radiological Affairs Support Program (RASP). The RASP is administered by the RASO.

5.2.2 AEC Licensing of DON Headquarters Commands

The former NAVWPNSTA Concord was subject to AEC licensing requirements for radioactive materials that began with the 1954 Atomic Energy Act. From 1946 to 1954, there were no licensing requirements as they are known today because all nuclear activities were controlled by a virtual government monopoly through the AEC (HRA-703). In some instances, after the act of 1954 was passed, the DON's headquarters commands applied to the AEC for authority to use radioactive materials under an AEC license. AEC licenses were issued to a single headquarters command, whether or not the material was to be used by an individual field command or ship. In

some cases, the licenses authorized use of a radioactive commodity by multiple commands. Five AEC licenses that were used at the former NAVWPNSTA Concord are listed below. A summary of these licenses is also presented in Table 5-1.

- **AEC Special Nuclear Material License No. SNM-1850** was issued to the DON at NAVWPNSTA Concord in 1979. The license authorized use of ^{235}U contained in a Reuter-Stokes fission counter chamber as a component of a nuclear density gauge for research and development at the former NAVWPNSTA Concord. The license was superseded by NRMP 04-60036-H1NP (HRA-187, HRA-286, HRA-290, HRA-351).
- **AEC Source Material License No. SUB-1190** was issued to NAVSEA in 1974 and permitted the former NAVWPNSTA Concord as an approved storage site for DU penetrators (HRA-112, HRA-350).
- **AEC Source Material License No. SUB-1209** was issued to the DON at NAVWPNSTA Concord in 1974 and allowed the storage, examination, and nondestructive testing of DU penetrators. At the former NAVWPNSTA Concord, the license was superseded by NRMP 04-60036-L1NP (HRA-107, HRA-116, HRA-122, HRA-153, HRA-160, HRA-174, HRA-276).
- **AEC By-product Material License No. 04-03141-01** was issued to BUSHIPS in 1959. The license was converted to an NRMP on April 1, 1987. The license authorized the use of radioactive sources of varying strengths for radiography operations. The former NAVWPNSTA Concord was on the list of user sites. At the former NAVWPNSTA Concord, the license was superseded by NRMP 04-60036-A1NP (HRA-11, HRA-227).
- **AEC By-product Material License No. 04-03141-02** was issued to the DON at NAVWPNSTA Concord on February 27, 1968. The license authorized the possession and use of radioactive iodine-125 (^{125}I), americium-241 (^{241}Am), and polonium-210 (^{210}Po) in an X-ray nondispersive spectroscopy system. The license was terminated on February 6, 1978 (HRA-66, HRA-69, HRA-98, HRA-124, HRA-125, HRA-126, HRA-129, HRA-159, HRA-167).

The State of California became an Agreement State with the AEC on September 1, 1962, and established the California Agreement State Licensing Program managed by the California Department of Public Health (CDPH). As a federal entity, the former NAVWPNSTA Concord remained under the AEC licensing program; thus, the agreement state licensing program had no effect on radiological activities at the site. This remained the case after the AEC became the NRC in January 1975.

5.2.3 Naval Radioactive Materials Permit Program

In 1985, the NRC granted a Master Material License to the DON and permitted the DON to issue NRMPs for sites that use radioactive materials. The NRMP program is controlled by RASO, which performed the regulatory functions of the NRC at the former NAVWPNSTA Concord.

The initially issued NRMPs generally replaced similar NRC licenses. During its history, radiological work was performed at the former NAVWPNSTA Concord in accordance with the requirements of five NRMPs. These NRMPs were amended and renewed as time progressed and licensing conditions changed. A list of NRMPs issued for the former NAVWPNSTA Concord is provided below. A summary of the NRMP licenses is also presented in Table 5-1. Details of the NRMP history are presented in Section 6.0.

- **NRMP 04-60036-A1NP** was converted from NRC license 04-03141-01 on April 1, 1987, and terminated on August 27, 1990. Permitted the possession and use of by-product material for radiography sources (HRA-356, HRA-421, HRA-429, HRA-435, HRA-461, HRA-465, HRA-698, HRA-699).
- **NRMP 04-60036-B1NP** was issued on August 21, 1989, and terminated on August 6, 2008. Permitted the possession of ^{241}Am for research and development and RADIAC functional and response checks, and ^{226}Ra for storage pending disposal (HRA-430, HRA-485, HRA-578, HRA-609, HRA-624, HRA-625, HRA-634, HRA-635, HRA-669, HRA-677, HRA-678, HRA-683, HRA-685, HRA-688, HRA-699).
- **NRMP 04-60036-C1NP** was issued on November 1, 1994, and terminated on December 12, 1995. Permitted the storage of ^{241}Am and cesium-137 (^{137}Cs) sources in instrument calibrators (HRA-544, HRA-554, HRA-571, HRA-573, HRA-699).
- **NRMP 04-60036-H1NP** was converted from NRC license SNM-1850 on May 18, 1987, and terminated on August 2, 1994. Permitted the possession of ^{235}U in a Reuter-Stokes fission chamber in a nuclear density gauge (HRA-351, HRA-404, HRA-414, HRA-466, HRA-524, HRA-525, HRA-531, HRA-534, HRA-697).
- **NRMP 04-60036-L1NP** was converted from NRC SUB-1209 on January 4, 1989, and terminated on August 16, 2001. Permitted the storage and nondestructive examination of DU penetrators (HRA-361, HRA-390, HRA-477, HRA-483, HRA-617, HRA-638, HRA-639, HRA-699).

5.3 NONLICENSED ACTIVITIES INVOLVING RADIOACTIVE MATERIALS OR MACHINES THAT PRODUCE IONIZING RADIATION

Small quantities of radioactive materials, below levels controlled by the AEC/NRC, were also used in commodity items in the former NAVWPNSTA Concord. These items included smoke detectors, small check sources for radiation survey instruments, and radioluminescent dials and gauges (HRA-326).

X-ray machines and particle accelerators produce ionizing radiation. Although these machines were used at the former NAVWPNSTA Concord, they did not use radioactive materials or produce radioactive contamination. Controls for these types of equipment generally followed manufacturers' guidelines with the additional implementation of standard DON controls.

5.4 FEDERAL REGULATORY AUTHORITY AND OVERSIGHT

Several regulatory agencies oversee the environmental program at the former NAVWPNSTA Concord. The following subsections provide information about these organizations and their responsibilities at the former NAVWPNSTA Concord.

5.4.1 NRC

The NRC is the federal regulatory authority for use of source, special nuclear, and by-product material as defined in Title 10 of the CFR. Currently, the DON holds an NRC Master Materials License to cover use of NRC-licensed radioactive materials by the DON, including the Marine Corps. The NRC no longer exercises direct authority over potential residual contamination at the former NAVWPNSTA Concord because this authority was transferred to the DON by the Master Materials License.

5.4.2 EPA

The EPA is a federal agency established in 1970 to protect human health and safeguard the natural environment (air, water, and land). For the former NAVWPNSTA Concord, the EPA provides regulatory oversight under the CERCLA framework for determinations regarding the radiological release of outdoor structures and open areas. The EPA participates in the Remedial Project Manager (RPM) Team Meetings and is a member of the Restoration Advisory Board (RAB) for the former NAVWPNSTA Concord.

5.4.2.1 CERCLA

The U.S. Congress enacted CERCLA (commonly known as Superfund) in 1980. CERCLA allows the EPA to:

- Establish prohibitions and requirements for closed or abandoned hazardous waste sites
- Establish liability for entities responsible for releases of hazardous waste sites where cleanup costs are incurred
- Establish a trust fund to provide for cleanup when a responsible party cannot be identified

CERCLA authorizes two types of response actions:

- Removal actions, which are prompt responses to address releases that pose an imminent or substantial threat to human health or the environment
- Remedial responses, which are permanent actions taken to protect human health and the environment from a release of hazardous substances

CERCLA also enabled the revision of the NCP to provide guidance and procedures to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. This revision also established the NPL.

5.4.2.2 SARA

SARA amended CERCLA in 1986 and made significant changes to the program. These changes provided new enforcement authorities, including:

- Stressing the importance of permanent remedies and innovative technologies
- Considering other environmental laws and regulations
- Increasing state involvement
- Increasing the focus on human health problems
- Encouraging greater citizen participation in the decision-making process

SARA also required EPA to revise the Hazard Ranking System (HRS) to ensure accurate assessment of sites placed on the NPL.

5.4.2.3 NPL

The NPL is a list developed by EPA to rank the sites that most warrant cleanup of hazardous substances. EPA uses a numerical rating system with a specific cutoff score to determine whether a site is eligible for inclusion in the NPL. The identification of a site for the NPL notifies the public that the EPA has determined the site warrants further investigation to assess risks to human health and the environment. It also serves as notice to responsible parties that EPA may be seeking remedial action. The NPL identifies sites that may be eligible to receive funding for response costs using EPA's trust fund.

5.4.2.4 CERCLA and the Former NAVWPNSTA Concord

In 2005, the former NAVWPNSTA Concord was identified for closure and reuse under the Base Closure and Realignment Act of 1990. The DON is proceeding with the former NAVWPNSTA Concord process for radiological release of the site under CERCLA in coordination with EPA Region 9.

5.4.2.5 Major Steps in the CERCLA Process

The CERCLA remedial process has been divided into the following series of steps:

- **Preliminary Assessment –** A screening process to determine whether further study is necessary. (This HRA, in accordance with MARSSIM requirements, satisfies the requirements of a preliminary assessment for the CERCLA process.)

- **Site Investigation –** An on-site investigation to determine whether there has been a release or a potential for a release and to determine any associated threats.
- **Remedial Investigation –** A process generally taken by the responsible agency to determine the nature and extent of the problem associated with a release.
- **Feasibility Study –** Action taken by the lead agency to develop and evaluate options for remedial actions.
- **Proposed Plan –** Presentation of the nature and extent of contamination, alternatives evaluated, and preferred approach to remediation.
- **Record of Decision –** A public document that describes the selected cleanup action.
- **Remedial Design –** Technical analysis of the site remedy with detailed plans for implementation.
- **Remedial Action –** Actual implementation of the cleanup.

5.4.2.6 Naval Radiation Safety Committee (NRSC)

The NRC has granted the CNO a Master Materials License, which allows the DON to administer and manage the use of licensed radioactive materials. To manage that license authority, the DON established the NRSC chaired by CNO N45, the Environmental Readiness Division. The NRSC is supported by two technical support centers: the DON Environmental Health Center, which manages medical uses of radioactive materials, and the NAVSEA Detachment RASO, which manages industrial and operational uses. RASO is the DON's office providing support for radiological issues at the former NAVWPNSTA Concord.

5.4.2.7 RASP

The CNO delegated to NAVSEA the responsibility for the safe uses of radioactive materials and machines that produce ionizing radiation. To implement the responsibilities for G-RAM, NAVSEA established the RASP. RASO provides technical support to NAVSEA for administration and management of the RASP.

5.4.2.8 IR Program

The DON established the IR Program to implement the requirements of Defense Environmental Restoration Program (DERP) and CERCLA. The purpose of the IR Program is to identify, investigate, and clean up or control releases of hazardous substances and to reduce the risk to human health and the environment from past waste disposal operations and hazardous materials spills on DON property in a cost-effective manner. RASO provides technical expertise to the DON to assist in addressing G-RAM issues associated with IR sites.

5.5 STATE OF CALIFORNIA

The State of California works with EPA and the DON to ensure that requirements for state participation in CERCLA cleanup actions are fulfilled at the former NAVWPNSTA Concord. The primary state agencies involved with the former NAVWPNSTA Concord are detailed below.

5.5.1 CDPH

CDPH is the recognized California public health authority. This department also implements the California Agreement State Radioactive Material Licensing Program through its Radiologic Health Branch (RHB). CDPH will provide consultation to the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) on radiological issues at BRAC sites on the NPL.

As a department of the California Environmental Protection Agency, the Department of Toxic Substances Control's (DTSC's) mission is to protect Californians from exposure to hazardous wastes. DTSC attends the RAB and RPM Team Meetings and plays an integral role in overseeing the cleanup actions at the former NAVWPNSTA Concord.

5.5.2 Water Board

The Regional Water Quality Control Board (Water Board) is a regional office of the California State Water Resources Control Board. The Water Board develops and enforces water quality objectives and protects the beneficial uses of the state's waters. The Water Board participates in the RPM Team Meetings, is a member of the RAB, and plays an integral role in overseeing the cleanup actions at the former NAVWPNSTA Concord.

5.6 LOCAL COMMUNITY

The local community participates in the regulatory process through representation on the RAB.

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6.0 HISTORY

This section summarizes the history of the former NAVWPNSTA Concord as it relates to the use of G-RAM. The summary is augmented by Section 8.0, where the specific building and area use are discussed in detail. The building photographs in this section were taken in 2008.

The DON's use of radioactive materials is divided into two categories:

- Use associated with the NNPP
- Possession and use of all other radioactive materials (i.e., G-RAM), including nuclear weapons

This historical review has not revealed any evidence that NNPP activities were conducted at the former NAVWPNSTA Concord.

6.1 OVERVIEW

Since its inception as the Naval Magazine Port Chicago in November 1942, the former NAVWPNSTA Concord provided transshipment and storage services for munitions used in military operations in the Pacific and Asia. In July 1945, the Bureau of Ordnance authorized Port Chicago to establish a Quality Control (QC) Laboratory. The purpose of this laboratory was to apply statistical analyses and test methods for inspection of ammunition being returned from ships and forward areas in the Pacific theater of WWII. The laboratory began operations in early 1946. By 1951, the QC Laboratory was known as the QEL. The DON found no records of its operations between 1946 and 1957 during the extensive records search of the archives. The earliest record found was the Naval Station's Command History from 1957, which described early operations (HRA-5).

Part of the effort executed at the former NAVWPNSTA Concord was the construction of mobile X-ray facilities to be used at other military bases. In 1957, a separate radiographic (X-ray) facility was put into operation. In 1958, a Nuclear Weapon Component Division was added to the QEL. The QEL was tasked with developing test equipment and procedures for use in the surveillance of nuclear weapons systems. In late 1958, the QEL was established as a separate department, later called the Quality Evaluation and Engineering Laboratory (QEEL) (HRA-87, HRA-89), and then the Weapons Quality Engineering Center (WQEC). The QEL was assigned to support the entire DON ordnance establishment, including the Marine Corps, and other departments and agencies of the DoD (HRA-5).

In addition to QEL/QEEL/WQEC activities, storage of DU ammunition and handling of special weapons were part of the radiological operations conducted at the former NAVWPNSTA Concord. The QEL/QEEL/WQEC was the primary user of machine-generated radioactivity and radioactive sources such as sealed radiography sources and calibration sources at the former

NAVWPNSTA Concord. The first record of the licensed use of radioactive materials was an AEC inspection report of 1959 for license 04-03141-01 (HRA-6). The last of the licenses and permits issued to the former NAVWPNSTA Concord, NRMP 04-60036-B1NP, was terminated in 2008 (HRA-691) after the four remaining radioactive sources were removed from the site (HRA-685). A complete list of the licenses granted to the DON and associated with uses at the former NAVPNSTA Concord is presented in Sections 5.2.2 and 5.2.3.

6.2 LICENSING

The first federal agency to require licensing of radioactive materials was the AEC. In 1975, the AEC was divided into the NRC and the ERDA, which was later absorbed into the DOE. The NRC began operating on January 19, 1975, assuming control of the licenses that had been issued by the AEC. A history of AEC licensing and the AEC licenses issued to the DON and used at the former NAVWPNSTA Concord are described in Section 5.2.2. These licenses were amended and renewed as necessary to keep them current with conditions at the site and maintain their compliance with the law.

As previously discussed in Section 5.0, the NRC granted a Master Material License to the DON in 1985, which permitted the DON to issue NRMPs to sites that use radioactive materials. The former NAVWPNSTA Concord operated under the requirements of five NRMPs during its history. NRMPs were amended and renewed as time passed and conditions changed at the site. All NRMPs were terminated after radiological activities for which they were issued ceased and the radioactive materials for which they were issued were physically removed. The last NRMP was terminated in 2008 (HRA-688, HRA-691). A listing of the NMRPs for the former NAVWPNSTA Concord is provided in Section 5.0.

6.3 PRIMARY TOOLS FOR NONDESTRUCTIVE EXAMINATION

Nondestructive examination of weapons and other materials was a major activity for the QEL. From its early days, the QEL was instrumental in the use and development of industrial X-ray machinery, specializing in the development of portable X-ray units for use at military facilities worldwide (HRA-5). The buildings that supported the QEL and WQEC are described in Section 8.0.

The QEL used industrial X-ray machines, a particle accelerator, and gamma-emitting radioisotopes to examine the internal parts of munitions, weapons, and other materials without dismantling them. The most powerful of the machines and sources at the former NAVWPNSTA Concord were used and stored in Building IA-58, which was part of the WQEC (Photograph 6-1). A 1980 report (HRA-211) and a 1985 letter (HRA-326) document industrial X-ray machines in use at the former NAVWPNSTA Concord and Pittsburg. The 1980 report includes the locations of these machines at that time.

In addition to the fixed and portable X-ray machines, the former NAVWPNSTA Concord used portable gamma radiography devices to examine weapons components and materials. Early radiography devices used ^{226}Ra as the source of gamma radiation. Later devices used elements such as ^{60}Co and ^{192}Ir as a replacement for radium. The historic record indicates that both ^{60}Co and ^{192}Ir were possessed and used by the former NAVWPNSTA Concord in radiography devices under AEC/NRC license 04-03141-01 and its successor NRMP 04-60036-A1NP (HRA-22, HRA-202, HRA-327, HRA-435). These licenses also permitted the use of DU for shielding in radiography devices.

6.3.1 Van de Graaff, X-ray Machines and Particle Accelerators

From its earliest days, the QEL at the former NAVWPNSTA Concord was tasked with non-destructive examination of weapons and weapons materials. The former NAVWPNSTA Concord used several large X-ray machines and particle accelerators to perform these examinations. The machines were located in Building IA-58 and at the radiography facility in Pittsburg, California. Additionally, the QEL was tasked with developing portable X-ray machines. These machines were widely used on the base and at military facilities worldwide (HRA-5).

Machine-generated X-ray radiation from the equipment used at former NAVWPNSTA Concord leaves no residual radioactivity and does not form the basis for declaring a site impacted, because the X-ray energy emitted by the equipment was not powerful enough to cause materials they penetrated to become radioactive. The generation of X-ray radiation ceases when power to the X-ray machine is turned off. As stated, the use of the X-ray units is not a reason to designate a building as impacted. However, in this case, some of the X-ray devices were constructed with DU shielding, including the Van de Graaff machine in Building IA-58 (Photograph 6-2). If the shielding was handled or removed from the X-ray machines, there is a potential for spreading contamination. The Van de Graaff machine was surveyed and inspected and found not to contain DU. Since this was the last of the X-ray machine components at the former NAVWPNSTA Concord, it was concluded that all DU shielding has been removed from IA-58 (HRA-643, HRA-682).

A linear electron particle accelerator with maximum energy output of 10 megaelectron volts (MeVs), which utilized a DU collimator to focus the particle beam, was also used for radiography purposes in Building IA-58. The maximum energy generated by the particle accelerator was below the threshold for inducing radioactivity in its surroundings or potential target materials.

The accelerator has been dismantled and removed. Use of a particle accelerator is not a reason to designate a building as impacted (HRA-7).

Photograph 6-1. Building IA-58, the Weapons Quality Engineering Center

Photograph 6-2. Empty Housing for Van de Graaff X-ray Machine in Building IA-58

6.3.2 Sealed Source Gamma Radiography

The use of gamma radiography was an important and frequently applied weapons examination technique at the former NAVWPNSTA Concord. Electromagnetic (gamma) radiation emits higher energy photons from the nucleus of an element than the relatively low energy of X-rays; therefore, industrial radiography using gamma radiation can penetrate more deeply into the material being examined. When the radiation passes through the subject (in the same way as X-rays), it leaves an image of the subject's internal parts and structure on film.

The use of gamma emitters as the source to generate the penetrating radiation in a radiography device requires separate procedures not associated with X-ray machines. While an X-ray machine can produce levels of radiation harmful to humans, it stops producing radiation when it is turned off. A radioactive isotope emits radiation constantly. In terms of radiation strength, the large size of the sources used in radiography devices requires they be shielded to minimize exposure to personnel near them, especially the operators. Former NAVWPNSTA Concord personnel operating the devices were monitored for exposure to radiation, and the results of these measurements were reported to employees and regulators (HRA-304, HRA-336, HRA-347). The emission of radiation from a device is not necessarily a reason to consider the location where it was used or stored impacted. The gamma radiation does not cause materials to become radioactive, and when the source that generates the gamma radiation is removed or moved into its shielded storage container, also known as a "pig," the radioactivity goes with it.

The use of these high-energy gamma sources is regulated, and a license is required to possess and operate them. The DON was issued AEC By-product Material License No. 04-03141-01 in 1959 to regulate the use of radiography sources in its possession. The historical record did not contain an actual copy of this license; however, communication between the AEC and the DON makes references to it. By-product Material License No. 04-03141-01 was issued to the DON rather than specifically to NAVWPNSTA Concord. The first evidence of the application of this license to the former NAVWPNSTA Concord is an AEC letter to the DON describing the results of an inspection of Concord's licensed activities conducted January 12, 1959 (HRA-6). The radioisotope of concern in this report was ^{60}Co.

Radiography sources can "leak" radioactive material. A leak is the migration of some of its radioactive component by some means, such as abrasion or wear, to a surface either in/on the device or some surface outside the machine. Leakage is monitored by periodically testing the radiography device and surveying storage locations. Potential leakage was measured at several independent off-site facilities licensed by the NRC to perform radioactive material leak testing, such as Radiation Detection Company. There are multiple leak testing records in the former NAVWPNSTA Concord archive, and they are included in the HRA project database. The earliest is from 1963 (HRA-10) and the most recent from 1990 (HRA-449). There are no records of leakage detected from the leak tests performed on the radioactive sources used for gamma

radiography. The IAS mentions that there were two to three events with positive leak tests of non-radiography sources, possibly instrument response check sources for use with radiation survey instruments or other sealed radioactive sources in Building IA-58. These sources were packaged and returned to the manufacturer for repairs (HRA-274). Those areas where gamma radiography is known or suspected of having been performed are not considered impacted for the purposes of this HRA.

As radioactive sources used in radiography devices decay, it becomes necessary to replace a depleted source with a new one. This is especially true for devices containing radionuclides with short half-lives such as ^{192}Ir, which has a half-life of 73.8 days. Source change out was done in Building IA-58 on several occasions (HRA-56, HRA-71). Radiation surveys were conducted at the time of source change. It should be noted that during the construction of gamma radiography sources, they are fully encapsulated in metal to minimize the possibility of leakage.

The historical record is incomplete regarding the exact locations of where gamma radiography was performed or where the equipment was stored. The former NAVWPNSTA Concord developed portable gamma radiography equipment, which could be used almost anywhere on the base. The records are unclear whether the devices were used at the Tidal Area, at Building 35 in Pittsburg, at the former NAVWPNSTA Concord, or at all three locations. However, it was determined unlikely that residual radioactive material would be left in a building from the use of gamma radiography devices. This assessment was based on results reported in the multiple periodic leak test reports available in the historical record (e.g., HRA-199, HRA-206, HRA-243, HRA-251, HRA-255).

Radiography operations ceased at the site in 1984 (HRA-355). All radiography devices were removed from the former NAVWPNSTA Concord before NRMP 04-60036-A1NP was terminated in August 1990 (HRA-465).

6.4 OTHER (NOT PRIMARY) TOOLS FOR NONDESTRUCTIVE EXAMINATION

The QEL used a scanning electron microscope, a gas chromatograph, an energy dispersive X-ray spectrometer, and an X-ray nondispersive/spectroscopy system as tools for nondestructive examinations. Each of these devices had some association with radioactivity, and each is described below.

6.4.1 Scanning Electron Microscope

The DON used a scanning electron microscope (SEM) in Building IA-20 of the QEL (HRA-287, HRA-705). The SEM is a type of microscope that images a sample surface by scanning it with a high-energy beam of electrons in a raster scan pattern. The electrons interact with the atoms that make up the sample producing signals that contain information about the sample's surface topography, composition, and other properties such as electrical conductivity. The types of

signals produced by an SEM include secondary electrons, back scattered electrons, characteristic X-rays, light (cathodoluminescence), specimen current, and transmitted electrons. These types of signals require specialized detectors that are not usually all present on a single machine. The signals result from interactions of the electron beam with atoms at or near the surface of the sample. The former NAVWPNSTA Concord SEM included an electron column that operated at peak voltages of 5, 10, 15, and 30 kilovolts (HRA-287, HRA-349, HRA-718). Since the SEM was a device that emitted X-rays only when it was operating, there is no possibility of residual radioactivity from its use.

6.4.2 Gas Chromatograph

The DON used a gas chromatograph (GC) in Building IA-21 and possibly in Building IA-22 of the QEL (HRA-326, HRA-705). Gas chromatography is a process in which the components of a mixture of chemicals are separated by volatilizing the sample into a carrier gas stream. The gas stream with the sample is passed through a column at a rate primarily determined by the mixture's physical properties and the temperature and composition of the column. GC columns are either packed or capillary style. A packed column is either filled with a stationary phase or contains packing (typically polymers) coated with the stationary phase. In capillary columns, the nonvolatile liquid stationary phase is coated onto the inner walls of small diameter tubing. Different components move through the column at different rates, appearing one after the other at the effluent end where they are detected and measured. The speed at which samples move through the column can be weighed against a number of variables to determine their specific properties.

The gas chromatograph located in room 12 of Building IA-21 at the former NAVWPNSTA Concord included an electron capture detector with a ^{63}Ni source (HRA-326, HRA-349, HRA-708). There is one handwritten reference to this detector being in Building IA-22 (HRA-705). The RSO also recalls the detector being in Building IA-22.

There are multiple examples of requests for leak tests and actual test results documented for the ^{63}Ni in this detector (HRA-352, HRA-354). There is no record that the source leaked any of its radioactivity.

6.4.3 Energy Dispersive X-Ray Spectrometer

The DON used an energy dispersive X-ray spectrometer in Building IA-20 (HRA-288, HRA-349, HRA-705, HRA-718). Energy dispersive X-ray spectroscopy (sometimes referred to as EDS, EDX, or EDXRF) is an analytical technique used to determine the elements contained in a sample or the characteristics of a sample. An energy dispersive X-ray spectrometer analyzes X-rays emitted by a sample.

To obtain the characteristic X-rays from a sample under investigation, a high-energy beam of charged particles, such as electrons, protons, or X-rays, is focused into the sample being studied.

At rest, an atom within the sample contains ground-state (or unexcited) electrons in discrete energy levels or electron shells bound to the nucleus. The beam excites an electron in an inner shell, ejecting it from the shell while creating an electron hole from where the electron was ejected. An electron from an outer, higher-energy shell then fills the hole. The difference in energy between the higher-energy and lower-energy shells is released in the form of an X-ray. The number and energy of the X-rays emitted from a sample can be measured by an energy dispersive spectrometer. Because the energy of the X-rays is characteristic of the difference in energy between the two shells and of the atomic structure of the element from which they were emitted, these differences allow the elemental composition of the sample to be measured.

The energy dispersive X-ray spectrometer did not contain G-RAM.

6.4.4 X-Ray Nondispersive/Spectroscopy System

The DON used an X-ray nondispersive/spectroscopy system in Buildings IA-21 and IA-58. In 1968, the former NAVWPNSTA Concord was issued AEC license 04-03141-02 for an X-ray nondispersive/spectroscopy system (HRA-66); however, there is no information defining the operation or application of the system. The information that is available indicates that the system was manufactured by Technical Measurement Corporation and was a model type 331/332 X-ray Nondispersive/Spectroscopy System. The original license application listed four isotopes: ^{125}I, and ^{241}Am associated with the spectroscopy system, and cobalt-57 (^{57}Co) and ^{210}Po associated with the accompanying Nuclear Products Company Model 2V1000 Staticmaster ionization unit (HRA-64). The AEC response stated that it would issue a license for ^{125}I and ^{241}Am, and that the former NAVWPNSTA Concord should contact the manufacturer of the Staticmaster ionization unit so that appropriate submissions to the State of California would be made to deem this unit satisfactory for licensing (HRA-65). The record shows that the license was eventually amended to include ^{210}Po (half-life 138.4 days) (HRA-69, HRA-70) as an antistatic component. There is no record of a license or resolution of the licensing of the ^{57}Co source.

HRA-326 is a letter that includes information gathered in preparation for a Technical Assistance Visit by RASO. The ^{57}Co source is listed on an ionization radiation inventory together with other unlicensed materials. The ^{57}Co source was found to leak during the execution of routine leak tests and was returned to the manufacturer for repair (HRA-79, HRA-80). Since ^{57}Co has a half-life of 271 days, it is no longer a concern.

The ^{125}I and ^{210}Po sources were disposed of by early 1978 (HRA-163). There is no record of the disposition of the ^{241}Am source. While there are leak test requests (HRA-486) and reports (HRA-487) for this isotope, it is not clear that the tested disk source was a component of this spectroscopy system. The ^{241}Am source is listed on a source inventory from 1985 (HRA-326) as a nonlicensed instrument check source. None of these leak tests reported any leakage.

The operating characteristics and location of the spectroscopy system are unknown. Given the short half-lives and low initial activities of the ^{125}I and ^{210}Po sources, there is no possibility that residual activity from these isotopes would be measurable at this time. No structure in the former NAVWPNSTA Concord is considered impacted by the operation of this system.

6.5 DEPLETED URANIUM

The DON used DU at the former NAVWPNSTA Concord as shielding for X-ray machines and as ammunition that was stored and nondestructively and destructively examined. Table 4-5 lists the DU-impacted buildings.

DU is composed primarily of the isotope uranium-238 (^{238}U). Natural uranium is about 99.27 percent ^{238}U, 0.72 percent ^{235}U, and 0.0054 percent uranium-234 (^{234}U). The primary application of ^{235}U is within the nuclear power industry and nuclear weapons, where it is used for fission. To obtain the required product, natural uranium is enriched in ^{235}U by separating the isotopes by mass. The by-product of enrichment, called DU, contains less than one third as much ^{235}U and ^{234}U as natural uranium. Because of its high density (19.1 grams per cubic centimeter [g/cm^3]; the density of lead is 11.34 g/cm^3), DU is used where dense mass is required, such as for aircraft control surface counterbalances and radiation shielding in medical radiation therapy and industrial radiography equipment. Military uses of DU include defensive armor plating and armor-piercing projectiles, also known as penetrators. DU is considered mildly radioactive as it decays by emitting a 4.3-MeV alpha particle. It poses health risks to humans from its alpha radioactivity and as a heavy metal poison when it is ingested into the body. It is also pyrophoric, i.e., it can ignite in air or when struck against another material. This property is a factor for its use in ammunition (HRA-654).

In addition to the use of DU as shielding in X-ray machines, as discussed above in Section 6.3.1, 20-millimeter DU ammunition for the PHALANX Close-in Weapons System (CIWS) (Photographs 6-3 and 6-4) was stored in six magazines in the former NAVWPNSTA Concord. These magazines are identified on Figure 8-7. The former NAVWPNSTA Concord's possession of DU ammunition was licensed by the AEC/NRC (licenses SUB-1190 and SUB-1209) and subsequently under NRMP 04-60036-L1NP.

DU is also difficult to machine and is susceptible to damage, including manufacturing flaws and degradation during long-term storage (HRA-361). Because DU is susceptible to damage, the licenses for storage required the ammunition to be in sealed containers (HRA-153, HRA-174). The projectiles were also encased in nylon during the manufacturing process for protection against oxidation, damage, and abrasion (HRA-106). The nylon is discarded when the projectile leaves the muzzle of the weapon firing it. Radiation monitoring devices were placed in the magazines and read periodically to measure the radiation exposure from the stored rounds (HRA-439).

Photograph 6-3. PHALANX CIWS Firing from a Ship

Photograph 6-4. CIWS Ammunition Aboard a Vessel that shows protective orange nylon covers on the DU projectile

The former NAVWPNSTA Concord was licensed to nondestructively examine and store PHALANX rounds without their nylon covers (HRA-106, HRA-107, HRA-112, HRA-174). Monitoring of storage conditions and examination/disassembly of DU penetrators were ongoing activities at the former NAVWPNSTA Concord; however, the location of the examination and the extent of disassembly are not clear from the historic record (HRA-182, HRA-274, HRA-502, HRA-610). Testing did not include firing the ammunition at the former NAVWPNSTA Concord, which was done elsewhere (HRA-182). Storage magazines were monitored for temperature and humidity (HRA-299), and the DU penetrators were checked and monitored for damage using ultrasonic dye penetrant and microscopic examination (HRA-182). Other entities participated in these tests. For example, DU penetrators from the former NAVWPNSTA Concord were transported to the Lawrence Livermore National Laboratory in California and sectioned or cut apart for examination (HRA-235, HRA-238). Sectioned rounds were returned to the former NAVWPNSTA Concord for examination. There are records indicating that DU penetrators might have been sectioned at the former NAVWPNSTA Concord (HRA-223). If so, the cutting took place underwater to contain the cuttings and minimize the potential for the uranium metal cuttings to combust spontaneously (HRA-197).

The wastes from these examinations, including the water, were collected, packaged, and sent to a waste disposal facility (HRA-106, HRA-165, HRA-197). The IAS provides anecdotal evidence that there were two to three events when water from the ultrasonic baths that had been in contact with penetrators was disposed of down the drains; however, radiation surveys did not indicate any measurable release (HRA-274). The NRC performed at least one inspection to ensure the work complied with their requirements for handling the DU (HRA-139).

Because of DU's pyrophoric properties, brittleness, and toxicity, military and industrial users of DU are careful to protect DU products (e.g., use cadmium plating on shielding [HRA-254] or plastic and metal casings on projectiles [Photograph 6-4]). Finished products made from DU, such as the radiation shielding and projectiles at former NAVWPNSTA Concord, were protected from degradation. Additionally, DU radiation shielding was inside a metal housing and the projectiles were required to be stored in sealed containers. The possibility of spreading DU contamination was low, and specific handling practices were created to minimize radiation exposure to personnel (HRA-106). The danger of exposure to DU is greatest from finely divided particles from firing and subsequent disintegration of projectiles or the oxides from burning metal. There is no evidence in any extant record that DU was ever burned or fired at the site. The potential of residual contamination from DU at former NAVWPNSTA Concord is extremely low, as handling and storage practices at the site were designed to protect both the DU and personnel and to minimize the spread of contamination.

The last of the DU penetrators was removed from the former NAVWPNSTA Concord, and NRMP 04-60036-L1NP was terminated in 2001 (HRA-638, HRA-639).

6.6 URANIUM-235 (^{235}U)

The former NAVWPNSTA Concord was licensed to have a small quantity of ^{235}U (less than 2 grams) as a component of a Reuter-Stokes fission chamber in a nuclear density gauge. ^{252}Cf, a neutron-emitting radioisotope, was also a component of this device. The possession of this device was controlled under AEC/NRC License SNM-1850 and NRMP 04-60036-H1NP. ^{235}U is a closely regulated isotope. Because it is a fissionable material, the smallest amounts are licensed and strictly controlled.

The license application for this source stated it was to be stored and used at either the radiography facility at the former NAVWPNSTA Concord or in Building 35 at Pittsburg. The NRC approved this license with stipulations for the gauge's use at the former NAVWPNSTA Concord or Pittsburg. Available records indicate that the gauge was located and used in Building 35 at Pittsburg. While the installed fission chamber was small, the gauge was a large device that was not readily portable (HRA-180). The DON does not consider the gauge to have impacted any site in the former NAVWPNSTA Concord because there is no credible evidence in the historic record that it was ever moved to or used there. Records of frequent swipe tests indicate there was no leakage of radioactivity from this source during its life at Building 35 in Pittsburg (HRA-512, HRA-522).

^{235}U was removed from the gauge and stored in a safe in Building IA-58 after use of the density gauge ceased and prior to its disposal (HRA-508). NRMP 04-60036-H1NP was terminated in 1994 following disposal of the ^{235}U (HRA-531, HRA-534).

There is no evidence of any other use of ^{235}U at the former NAVWPNSTA Concord, nor was any license or NRMP issued for such use. However, since special weapons potentially were a component of the former NAVWPNSTA Concord's G-RAM, and ^{235}U was a possible isotope used in these weapons, ^{235}U is included as an ROC for the sites impacted by special weapons.

6.7 RADIUM-226 (^{226}Ra)

At the former NAVWPNSTA Concord, the known sources of ^{226}Ra were two dials and pointers of minesweep tensiometers and instrument check sources. A sealed source of unknown origin was also stored in Building IA-58.

^{226}Ra is the heaviest of the alkaline earth metals and is intensely radioactive. This metal is found in tiny quantities in the uranium ore pitchblende and in various other uranium minerals. ^{226}Ra emits alpha particles, beta particles, and gamma rays. Radium was formerly used in self-luminous paints for watches, aircraft switches, clocks, and instrument dials. Mixed with an element that emitted light when it was exposed to radiation (radioluminescence), ^{226}Ra was applied to instruments, deck markers, and other surfaces that needed to be illuminated in a dark environment. Many DON facilities had radium dial painting shops. However, there is no record

that the former NAVWPNSTA Concord hosted such a facility. It is possible that there were gauges and instrument faces at the former NAVWPNSTA Concord that had radium paint on them. There is no record of any such devices being a concern at the base except for minesweep (Chatillon) tensiometers that were shipped to the former NAVWPNSTA Concord from other DON facilities for calibration. While the record of these tensiometers at the former NAVWPNSTA Concord begins in 1985 (HRA-302, HRA-305), it is possible that they were on the base prior to this date. There is also a historic record of a military radio with radium dials received from the State of California for disposal by the former NAVWPNSTA Concord in 1997 (HRA-589).

The Chatillon tensiometers were equipped with oil-filled gauges that used radioluminescent paint on their dial faces and pointers. The WQEC used cautionary procedures for handling these tensiometers in the calibration laboratory (HRA-302). However, one of the gauges was opened in the calibration laboratory on April 15, 1985. An entry in a laboratory notebook indicated that some of the radium paint "flaked off" in Building IA-20 but was captured (HRA-309). A table where the instrument was opened became contaminated during this operation. It was subsequently decontaminated (HRA-305, HRA-309). Following the cleaning of the table, a follow-up survey was performed to ensure there was no residual contamination from the gauge (HRA-309). The results showed no residual contamination. The laboratory notebook includes records of leak tests of the shipping boxes for tensiometers with no leakage from any package ever noted.

Calibration and surveying of tensiometers were ongoing activities at the former NAVWPNSTA Concord at least until December 1993 (HRA-305). There was no further mention of opening the tensiometer gauges or spread of contamination from these devices. None of the Chatillon tensiometers remain at the base. Many independent leak tests for ^{226}Ra were performed on the tensiometers and their boxes; none detected any leakage of radioactivity (HRA-306, HRA-310, HRA-329, HRA-333). However, the laboratory notebook indicated that very low-level contamination on tensiometers gauges was encountered infrequently (HRA-305).

In addition to the tensiometers, a 0.998 millicurie ^{226}Ra source contained in a 3-inch by 5-inch solid cylinder was stored in Building IA-58 (HRA-508). There is little record of the use of this source on base. The former NAVWPNSTA Concord also had instrument check sources containing ^{226}Ra (HRA-326). Records of the disposal of these sources were located (HRA-595, HRA-598).

6.8 RADIACS, CALIBRATORS, AND CHECK SOURCES

To monitor radiological activities at the former NAVWPNSTA Concord, the base maintained instruments used to measure radiation emission or exposure rate. The DON called these instruments RADIACs. These RADIACs required calibration and operational checks prior to

use, both of which used radioactive sources. According to the current site RSO, no instruments were calibrated at the former NAVWPNSTA Concord during his tenure. RADIACs needing calibration were sent to the Mare Island Naval Shipyard (MINSY) and then to San Diego after MINSY stopped performing calibrations in the early 1990s. The former NAVWPNSTA Concord did maintain a variety of small instrument check sources (HRA-326, HRA-370). These sources were not licensed and were disposed of when the last of the RADIACs were removed from the base after radiography operations ceased (HRA-645, HRA-647, HRA-650, HRA-651). In addition to radium in radioluminescent paint in the tensiometers, the former NAVWPNSTA Concord also had at least one instrument check source that incorporated this radioisotope (HRA-326).

At some time in its early history (circa 1950–1960), the former NAVWPNSTA Concord possessed a calibrator that used a radium source. No historical information for this source was found in the archives, and site and vendor personnel had no information about it (HRA-443). The source was in Building IA-58 (HRA-319). It has been removed from the building.

In 1994, two RADIAC calibrators were acquired from the *USS Acadia* (AD-42), which was being decommissioned, with the intention of establishing a RADIAC calibration facility at the former NAVWPNSTA Concord. The two calibrators were equipped with ^{137}Cs (gamma calibrator) and americium-beryllium (neutron calibrator) sources. These calibrators were stored in Building IA-58 (HRA-539). Surveys of the exteriors of the containers for these sources detected no radioactive contamination (HRA-546). The former NAVWPNSTA Concord applied for an NRMP for these calibrators for use in the proposed calibration facility, but none was issued and the calibration facility was not established (HRA-551). The sources were shipped from the former NAVWPNSTA Concord without being used at the base. They remained unopened and in storage in Building IA-58 while they were at the base (HRA-553).

6.9 G-RAM STORAGE AND DISPOSAL

The former NAVWPNSTA Concord was a transshipment facility for radioactive materials from other facilities (e.g., other military installations such as shipyards) either to vendors licensed to receive them or to waste disposal facilities. Additionally, some radioactive material from other than former NAVWPNSTA Concord locations (e.g., ^{235}U from the neutron density gauge at Building 35 in Pittsburg) was also stored at the former NAVWPNSTA Concord awaiting disposal. Building IA-58 appears to have been the site where these materials were stored (HRA-507). Radioactive items from off-site were also sent to the former NAVWPNSTA Concord for storage and disposal (HRA-170, HRA-580, HRA-589). Building IA-58 was also the site in the former NAVWPNSTA Concord from which gamma radiography devices were shipped to other military facilities (HRA-246).

The former NAVWPNSTA Concord generated little radioactive waste from routine operations. DU ammunition studies did result in some waste material generation. These wastes and DU specimens were stored in Buildings IA-20 and IA-58 (HRA-197, HRA-225, HRA-369). All waste materials have been removed from the base. There is no documented evidence that G-RAM wastes were ever disposed of at any site in the former NAVWPNSTA Concord.

The historical record includes information about the disposal of many sealed sources (HRA-596, HRA-599).

6.10 BLACK PIT AT RED ROCK

The Black Pit at Red Rock is an area approximately 10 feet wide by 25 feet long and depressed as much as 5 feet bgs (Figure 6-1) (Photograph 6-5). The site was noted in the 1983 IAS because it was a sunken area with deep black soil supporting "only depressed, weedy vegetation"; however, no record existed concerning its use (HRA-274). Chemicals identified in a soil sample included metals, pesticides, and polychlorinated biphenyls (PCBs), which indicated the site was used for disposal of waste generated at the former NAVWPNSTA Concord (HRA-274). No mention was made of the potential for disposal of radioactive materials at the "pit," and no radiological investigation was conducted at the time of the IAS.

Photograph 6-5. Black Pit at Red Rock

In 1984, a second study was conducted to confirm the results of the 1983 assessment. This study confirmed the presence of chemicals at the site. Again, no radiological analyses were performed (HRA-572).

In 1995, the DON conducted a field test to establish whether gamma-emitting radioactive material was present at the Black Pit. The results were reported in a 1995 draft Technical Memorandum, which stated that the field test was conducted because the samples collected during the 1983 IAS were analyzed for some specific metals that had potentially radioactive isotopes including cobalt and rubidium. The ground surface was also surveyed for radioactivity because of the presence of these metals. The gamma scan detected radiation levels consistent with background levels at the former NAVWPNSTA Concord (HRA-572).

In January 2003, a radiological surface scan survey was performed at the Black Pit at the request of the DON. This surface scan confirmed that the radiation levels detected did not exceed "three times the background levels" or greater than 11 microRoentgens per hour at the former NAVWPNSTA Concord (HRA-655).

Since there is no evidence in the historical record to indicate that disposal of radioactive materials or other G-RAM activity was conducted at the Black Pit site, and the two radiation surveys conducted there did not indicate radioactivity in the soil above background levels, the DON deemed the site nonimpacted and no further action is necessary.

6.11 SPECIAL WEAPONS

Following the successful detonation of atomic bombs in the United States and Japan during WWII, the U.S. Government determined that the Manhattan Engineer District was not an appropriate entity for the future development and control of these weapons. In 1946, the AEC was created to manage the nation's nuclear arsenal (HRA-275). As a part of the new AEC, a joint Army-Navy (the only major military arms existing at the time; the Air Force was created from the Army Air Corps on September 18, 1947) atomic energy organization called the Armed Forces Special Weapons Project (AFSWP) was formed on December 31, 1946, to "discharge all military service functions relating to atomic energy." The charter of the AFSWP was published in a letter of January 29, 1947, from the Army Chief of Staff and the CNO. From the founding of the AFSWP to the present, the military has identified nuclear weapons as special weapons.

The DON has been at the forefront of nuclear weapons activities since the Alpha and Baker bomb tests at Bikini Atoll during OPERATION CROSSROADS in June and July 1946. Over the succeeding years, the DON has developed its weapons capabilities, and nuclear warheads have been components of many weapons systems. As these weapons are manufactured and dispensed to the fleet, there is a need for storage in secure magazines. The former NAVWPNSTA Concord was a logical site for storing special weapons, because it was an important weapons transshipment base for naval operations in the Pacific Ocean and it possessed many magazines in a location that could be secured.

In early 1958, a Nuclear Weapon Component Division was added to the QEL. The QEL was tasked with developing test equipment and procedures for use in the surveillance of nuclear

weapons systems (HRA-5). Also in 1964, the record shows that an annual Nuclear Technical Proficiency Inspection was conducted (HRA-23).

The DON has always considered nuclear weapons sensitive and has treated their existence and deployment as secret. Historically, it has neither confirmed nor denied the presence of special weapons at or on any of its facilities, vessels, or aircraft. This policy has been applied at the former NAVWPNSTA Concord (HRA-518, HRA-520).

Thirty-five magazines have been identified in the historical record in the secure "A" or "Alpha" Area (Photograph 6-6, 6-7 and 6-8) as potentially having been used for special weapons storage (Table 6-1) (HRA-665). Building 81 is also located inside the Alpha Area. Building 81 was an ordnance maintenance and test building that hosted the WQEC (HRA-431). It is probable that this building was used for maintaining special weapons, as indicated in the IAS (HRA-274). It is also probable that Building 87 potentially was associated with special weapons due to its location, inaccessibility, configuration, and proximity to the Alpha Area.

Photograph 6-6. View of the Alpha Area Magazines

Photograph 6-7. Overhead View of Entrance to Alpha Area (the fortified guard house, Building 79, is near the center of the photograph)

Photograph 6-8. Building 79 (the fortified guard house) looking north

The DON has not confirmed that special weapons were stored in these magazines (Table 6-1 provides a complete list of the magazines). However, because these 35 magazines are designated as special weapons magazines, the HRA conservatively determines that the magazines are impacted. The same conservative determination is used for Buildings 81 and 87. Neither building has been confirmed to have stored or maintained special weapons but the HRA considers these buildings impacted. This conservative approach requires the evaluation of all 35 magazines and Buildings 81 and 87 for their potential impact on the environment. The Alpha Area magazines and Buildings 81 and 87 are discussed further in Section 8.0.

Concerns about nuclear proliferation require that the special nuclear materials in weapons be tightly controlled with strict accountability (HRA-696). Special weapons might also contain tritium, a radioactive isotope of hydrogen (^3H). While leakage of tritium is a consideration for an impacted site, special weapons are designed and manufactured not to leak their radioactive contents during routine handling or storage. Disassembling and dismantling these weapons are potential mechanisms for dispersing their radioactive components. The presence of special weapons-related residual radioactive materials remaining in the Alpha Area magazines and Buildings 81 and 87 is not considered probable, although these structures are considered impacted for the purposes of this HRA.

No weapons are stored in any of the abandoned magazines or in Building 81 at the Alpha Area.

6.12 HISTORICAL RADIOLOGICAL INVESTIGATIONS, SURVEYS, AND STUDIES

Since the beginning of radiological operations at the former NAVWPNSTA Concord, there have been few radiological investigations to assess residual G-RAM resulting from these operations. The following investigations were noted during this HRA:

Building IA-58:

- Radiological swipe survey after the WQEC was discontinued at the base on April 17, 2002 (HRA-649)
- Radiological swipe survey of the empty Van de Graaff X-ray machine housing on June 19, 2006 (HRA-673)

Black Pit at Red Rock Area:

- Gamma radiation survey by the DON in 1993 (HRA-572)
- Gamma radiation survey by PRC Environmental Management, Inc., on September 23, 1995 (HRA-572)
- Radiological Survey by Weston Solutions, Inc., on January 23, 2003 (HRA-655)
- Site inspection by Tetra Tech EMI on March 27, 2008 (HRA-687)

None of the referenced investigations and surveys found any indication that loose radioactive contamination or radiation levels in excess of naturally occurring background radiation existed at sites investigated/surveyed sites at former NAVWPNSTA Concord at the time the investigations and surveys were conducted.

7.0 ASSESSMENT OF IMPACTED SITES

This section describes the methods and definitions used in Section 8.0 to categorize and assess the likelihood of residual contamination at impacted sites, the contaminated media involved, the potential for migration of contamination, and the recommended actions for each impacted site. Evaluations and definitions are based on guidance provided in MARSSIM.

The assessment of impacted sites was based on their operational history and whether G-RAM was used, stored, or potentially disposed of at the site. The DON also used previous site surveys and investigations, when available, to confirm or expand on the historical information.

7.1 IMPACTED SITES

An impacted site is one that has a potential for radioactive contamination based on historical information or is known to contain radioactive contamination. Areas immediately adjacent to the primary impacted site may be included in this designation. Impacted sites may include:

- Sites where radioactive materials were used or stored
- Sites where known spills, discharges, or other unusual occurrences involving radioactive materials have occurred, or may have occurred, that could have resulted in the release or spread of contamination
- Sites where radioactive materials might have been disposed of or buried

7.2 NONIMPACTED SITES

A nonimpacted site is one with no reasonable possibility for residual radioactive contamination, based on historical documentation or results of previous radiological survey information.

7.3 IMPACTED SITE ASSESSMENTS

Section 8.0 provides the assessments for each impacted site. These are based on the historical record and any site surveys or assessments conducted prior to October 31, 2008. The assessments cover both media and migration pathways. These assessments may change in the future as the result of the implementation of recommended actions or location of additional historical information. The process used to assess the potential radiological contamination at an impacted site is detailed below.

7.3.1 Contamination Potential

The DON determined the potential for residual radioactive contamination at each impacted site through a professional evaluation of historical information, previous survey results, discussions

with knowledgeable people, and site reconnaissance. As recommended actions continue in the future, these assessments may change. Contamination potentials are categorized as:

- **Known-Restricted Access.** Radioactive contamination is known to exist at levels that could require protective clothing, respiratory protection, radiation monitoring, and site access controls.
- **Known-Continued Access.** Low levels of contamination exist, but the contamination is contained in a system, fixed on building surfaces, or is in generally inaccessible areas.
- **Likely.** Residual radioactive contamination is expected but has not been confirmed.
- **Unlikely.** Residual radioactive contamination is not expected, but investigation is warranted.
- **Unknown.** Residual radioactive contamination potentially exists, but no clear indication of possible contamination levels or contaminants has been established.
- **None.** Radioactive contamination has been fully assessed and removed, if necessary, and the site has been free-released by the DON and regulators. The site remains classified as impacted, but no further action is required.

7.3.2 Contaminated Media

Section 8.0 also categorizes and assesses different types of media at each impacted site that contain or are suspected of containing radioactive contamination. The DON used previous survey data, historical information, and professional judgment to confirm the presence of contamination or determine contamination potential. Generic terms, as defined in MARSSIM, are used to categorize the types of material that would contain the contamination. For example, if a building contains radioactive contamination in concrete floor materials, the medium would be defined as "structures." To ensure that all potential media contamination has been evaluated, Section 8.0 includes an assessment for all media categories for each impacted site. The definitions for the types of media that could be contaminated are:

- **Surface Soil.** The top layer of soil (to 6 inches bgs), fill, gravel, waste piles, concrete, or asphalt that is available for direct exposure, growing plants, resuspension of particles for inhalation, and mixing from human disturbances; this definition includes surface sediment in underwater areas
- **Subsurface Soil.** Solid materials and media found below the surface soils; this definition can include underwater subsurface sediment
- **Surface Water.** Waters found in streams, rivers, lakes, ponds, wetlands, and oceans as well as coastal tidal waters
- **Groundwater.** Waters contained in subsurface materials and aquifers

- **Air.** Atmosphere that becomes a migration pathway for resuspension and dispersal of radioactive contamination and contaminated media
- **Structures.** A man-made surface(s) above the ground surface or contained within subsurface media
- **Drainage Systems.** Sanitary drains, facility storm drains, or septic systems and leach fields and sediments contained therein; this category can include bay sediments where drainage to the bay occurs

7.3.3 Contaminated Media Assessment

Section 8.0 provides an assessment of each contaminated media category at each impacted site. The DON determined these ratings during the evaluation of each media type. The ratings may change if additional historical information becomes available or further information is developed during the performance of surveys at the site. Ratings are defined as:

- **High.** Evidence of contamination in the media or migration pathway has been identified.
- **Moderate.** The potential for contamination in the media or migration pathway exists, although the extent has not been fully assessed.
- **Low.** The potential for contamination in the type of media or migration pathway is remote.
- **None.** Evidence of contamination in the specific media or migration pathway has not been found, or known contamination has been removed, and surveys indicate that the media or migration pathways meet present release criteria.

7.3.4 Potential Migration Pathways

Migration pathways are the media or transport mechanisms that allow contamination to spread in the immediate vicinity of the contaminated media or off-site. The assessment of each impacted site in Section 8.0 provides an evaluation of the potential migration of radioactive contamination. The type of potential or confirmed contaminated media and the ROCs were used to assess the potential migration pathways.

7.4 RECOMMENDED ACTIONS

Section 8.0 also provides a recommended action for each impacted site. The recommendation is the result of the summary investigations conducted to determine ROCs, contamination potential, contaminated media, and potential migration pathways for exposure. The categories of recommended actions are defined below.

- **Emergency Action.** Immediate remediation or containment is required because the levels of radioactive contamination or radiation exposure are such that there is

a high potential for significant exposure or release of radioactive materials to the public or the environment.

- **Scoping Survey.** Historical documentation indicates that radioactive materials may be present at an impacted site that has not had an initial evaluation previously performed, and a survey is required to determine whether contamination in excess of current release criteria exists. The intent of scoping surveys is to identify radionuclide contaminants, relative radionuclide ratios, and general levels and extent of contamination. These surveys usually include minimal surface scans, sampling, and dose rate assessments.
- **Characterization Survey.** Radioactive contamination has been confirmed within an impacted site by a scoping survey, and action must be taken to determine the extent of the contamination and to identify and define the extent of the ROCs. These surveys include facility or site in-depth surveys, sampling, monitoring, and analysis to provide the basis for acquiring necessary technical information to develop, analyze, and select appropriate cleanup techniques.
- **Remediation.** Radioactive contamination has been fully characterized within an impacted site, and remedial or removal action is necessary to comply with site-specific release criteria. Remedial action support surveys are performed while remediation is being conducted to guide the cleanup activities.
- **Final Status Survey.** Historical documentation and previous investigations or remediations indicate that radioactive contamination has been removed from an impacted site, and a survey needs to be conducted in accordance with MARRSIM guidelines to verify that the impacted site complies with applicable site release criteria. This survey includes the appropriate measurements and sampling that will define the radiological condition of the site in preparation for release. The surveys are conducted following completion of decontamination or remediation activities, if any were performed, but can also be conducted to confirm that past radiological activities at the impacted site did not result in residual contamination.
- **Free Release.** Historical documentation and previous investigations and surveys indicate that all applicable release criteria have been met, and the site documentation is ready for review by the DON and applicable regulators for future nonradiological usage. This may include confirmatory surveys by the DON or regulatory personnel to verify the results reported in the release documentation.
- **No Further Action.** An impacted site has been shown by the DON and applicable regulatory agencies to meet release criteria.

A description of scoping, characterization, and final status surveys is contained in Section 4.3.5.

7.5 MARSSIM SURVEY CLASSIFICATIONS

As described in Section 4.3.4, MARSSIM classifies surveys for impacted sites as Class 1, 2, or 3, depending on the potential for residual contamination. The classification is used to ensure that

areas with a higher potential for contamination receive a higher degree of survey effort, with areas with the greatest potential for contamination receiving Class 1 surveys. The survey classification impacts FSSs and is instrumental in assessing free release documentation.

The survey classifications will be applied to recommended actions in Section 8.0, where appropriate. As surveys progress and data are analyzed, areas may be reclassified based on newly acquired survey data. For example, if contamination is found during a Class 3 survey, a more extensive Class 1 survey would typically be conducted. Detailed descriptions of the survey classifications are provided in Section 4.3.4.

7.6 IMPACTED SITE EXAMPLE

A building, formerly used as a research laboratory, is identified as an impacted site. Undefined contamination has been found on interior building surfaces during a Class 3 scoping survey.

Contamination Potential

Known-Continued Access. The contamination has been confirmed, but there is no indication of hazardous levels.

Potentially Contaminated Media

Surface Soil – Low. There is a slight likelihood that contamination from the building could be in the surface soils immediately surrounding the site.

Subsurface Soil – Low. There is a very slight likelihood that contamination from the surface soils could be in subsurface soils. Depending on the information available at the time of rating and professional evaluation of the information, this potential could be identified as "*None*."

Surface Water – None. There is no surface water near the site.

Groundwater – None. As the contamination is in the interior of the building, there is no potential for groundwater contamination.

Air – None. Contamination found in the building surfaces is insufficient to cause concern about airborne contamination. This rating would be based on the type and level of radioactivity identified in the contamination.

Structures – High. Contamination has been identified in the building.

Drainage Systems – High. With surface contamination on the building interior surfaces, there is a significant potential that the drainage systems (primarily sanitary) would be contaminated, as most laboratory rooms contain sink drains.

Migration Pathways for Exposure to the Public or Environment

Surface Soil – Low. The potential contamination in the surface soils would present a low probability for exposure to the public or off-site environment, as there is no probable transport mechanism to cause detectable levels of contamination to spread to off-site locations.

Subsurface Soil – None. There is limited means of initially contaminating subsurface soils; therefore, an exposure to the public or off-site environment is not likely.

Surface Water – None. The information on potentially contaminated media already established that there were no surface waters in the vicinity of the site. Contamination in the interior of a building would require transport of the contamination to surface waters by a secondary method such as runoff to a storm drain system, which is not likely to occur.

Air – None. Low levels of interior building surface contamination would require transport of a significant portion of the contamination outside the confines of the building and then a secondary mechanism to carry the contamination off-site.

Structures – Low to Moderate. Migration of the contamination in the building is likely. However, the potential for contamination to migrate to the public would be dependent on the access and security controls for the building.

Drainage Systems – Low. With contamination on interior building surfaces, the building drainage sanitary system may be contaminated. Low levels in drainage systems would be diluted by the flow of noncontaminated liquids from other sources. The exposure potential from this contamination is minimal.

Recommended Actions. Characterization survey.

8.0 FINDINGS AND RECOMMENDATIONS

This section describes the 48 sites at the former NAVWPNSTA Concord that are designated as being impacted by G-RAM operations. The distinction between the terms "impacted" and "nonimpacted" is discussed below. The former and current use of an impacted site is provided below as well as ROCs and any previous radiological investigations. This section categorizes and defines the likelihood of residual contamination at the impacted area, the contaminated media involved, the potential for migration of G-RAM, and the recommended actions for each impacted site using the categories described in Sections 4.0 and 7.0.

This section also provides a summary of potential contamination and migration pathway assessments and recommendations for all impacted sites.

8.1 IMPACTED VERSUS NONIMPACTED

The DON assessed past radiological operations at the former NAVWPNSTA Concord to determine whether these operations had an impact on buildings, structures, or open areas. These evaluations were based on guidance provided in MARSSIM to define all sites as either impacted or nonimpacted by radiological operations. Impacted sites are those areas with some potential for residual contamination due to radiological operations, including the use, handling, packaging, or disposal of radioactive materials. A nonimpacted site is one with no reasonable possibility for residual radioactive contamination, based on historical documentation or results of previous radiological survey information.

8.2 IMPACTED SITES

The 48 impacted sites are depicted on Figure 8-1. Details regarding each area are provided in Sections 8.2.1 through 8.2.11. Table 8-1 provides a summary of facility function at the time of base closure and other facility functions for impacted sites. Table 8-2 provides a summary of the assessments and recommendations for the impacted sites.

8.2.1 Building IA-20 – WQEC Chemical Laboratory

Photograph 8-1. Building IA-20 looking north

Photograph 8-2. Building IA-20 looking northwest

Site Description: The building is a single-story frame structure on a concrete slab (Figure 8-2, Figure 8-2FP [floor plan] Bldg IA-20a, Figure 8-2FP Bldg IA-20b, Figure 8-2FP Bldg IA-20c). Review of historical drawings indicates that additions to the building were made circa 1976. Building IA-20 is approximately 480 square feet (ft^2).

Former Radiological Uses: From 1964 to the mid-1990s, Building IA-20 housed the chemical and materials testing laboratory. The laboratory was known as the WQEC chemical laboratory and was used primarily to test oils and hydraulic fluids and to develop new test methods to evaluate weapons. The materials testing laboratory evaluated the structural integrity and dynamics of ordnance casings, shells, and missiles (HRA-668). The WQEC also used calibrated and serviced tensiometers. Chatillon tensiometers equipped with oil-filled gauges that used radioluminescent paint on their faces and pointers were also shipped to Concord from other DON facilities for calibration (HRA-302, HRA-305) (Section 6.7).

The laboratory housed an SEM and an energy dispersive X-ray spectrometer (Kevex fluorescent spectrometer) (HRA-287, HRA-288, HRA-349, HRA-705, HRA-718) (Sections 6.4.1 and 6.4.3). These devices did not contain G-RAM.

An NRC audit in 1984 indicated that source material inspections under AEC Source Material License No. SUB-1190 were conducted in Building IA-20. This license permitted the former NAVWPNSTA Concord to store DU penetrators and indicated that DU penetrators were inspected in Building IA-20 (HRA-300) (Section 6.5). DU penetrators were potentially disassembled in the laboratory (HRA-139, HRA-182, HRA-197, HRA-223, HRA-274, HRA-502, HRA-610). Radioactive materials containing ^{226}Ra and ^{238}U were handled and stored in the building prior to disposal (HRA-260, HRA-261, HRA-299, HRA-720).

Building IA-20 is impacted due to the handling and storage of ^{226}Ra and ^{238}U. Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{226}Ra, ^{238}U

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials above current release criteria are present as a result of radioactive source, DU, and waste handling activities.

8.2.2 Building IA-21 – WQEC Material Test Laboratory

Photograph 8-3. Building IA-21 looking southeast

Photograph 8-4. Building IA-21 looking northeast

Photograph 8-5. Building IA-21 rear looking west

Photograph 8-6. Interconnecting Corridor between Building IA-21 and Building IA-22

Site Description: The building is a two-story concrete and steel structure with the lower floor a basement below ground (Figure 8-2, Figure 8-2FP [floor plan] Bldg IA-21a, Figure 8-2FP Bldg IA-21b, Figure 8-2FP Bldg IA-21c). Building IA-21 is approximately 2,900 ft^2 and is attached to Building IA-21A along its southeastern wall.

Former Radiological Uses: Building IA-21 housed offices and the WQEC/QEL material (environmental) test laboratory where nondestructive tests of weapon materials were performed. These included chemical, environmental, and metallurgical tests. A GC was located in room 12 of the building, and this GC had an electron capture detector with a ^{63}Ni source associated with it (HRA-708) (Section 6.4.2). Salt deterioration tests on steel were concluded in 1976, and after this date, the use of this laboratory was reduced. The laboratory also used sealed radioactive sources for radiography examinations (^{60}Co) (Section 6.3.2). DU penetrators were potentially disassembled and examined in the laboratory (HRA-139, HRA-182, HRA-197, HRA-223, HRA-274, HRA-502, HRA-610) (Section 6.5). The Environmental Condition of Property Report states that low-level radioactive waste (LLRW) was handled in Building IA-21 (HRA-668).

Building IA-21 is impacted due to the presence of the ^{63}Ni source associated with the GC, gamma radiography (^{60}Co), handling and examination of DU (^{238}U), and handling of LLRW (^{60}Co and ^{226}Ra). Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{60}Co, ^{63}Ni, ^{226}Ra, ^{238}U

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials above current release criteria are present as a result of source handling and storage, potential handling and disassembly of DU penetrators, and handling of LLRW.

8.2.3 Building IA-21A – WQEC Evaluation Laboratory

Photograph 8-7. Building IA-21A looking east

Photograph 8-8. Building IA-21A looking northeast

Site Description: Building IA-21A is a single-story addition to Building IA-21 (Figure 8-2, Figure 8-2FP Bldg IA-21Aa, Figure 8-2FP Bldg IA-21Ab, Figure 8-2FP Bldg IA-21Ac, Figure 8-2FP Bldg IA-21Ad, Figure 8-2FP Bldg IA-21Ae). The building is a concrete and metal structure on a concrete slab with a concrete gable roof. Review of historical construction drawings indicated that the building was built in 1963. IA-21A is approximately 12,800 ft^2 and is attached to Building IA-21 along its northeastern wall.

Former Radiological Uses: Building IA-21A was an evaluation laboratory that did electronic testing of microcircuits. The historical record indicates that the building was also used as a wet chemistry laboratory. One reference in the historical record of sources indicates that an X-ray nondispersive/spectroscopy system that contained an ^{241}Am source was stored in room 15 of the building (HRA-64) (Section 6.4.4). DU penetrators were potentially disassembled and examined in the laboratory (HRA-139, HRA-182, HRA-197, HRA-223, HRA-274, HRA-502, HRA-610) (Section 6.5).

Building IA-21A is impacted due to the presence of the ^{241}Am source associated with the X-ray nondispersive/spectroscopy system, and potential handling and examination of DU (^{238}U). Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{238}U, ^{241}Am

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials above current release criteria are present as a result of source handling and storage, and potential handling and disassembly of DU penetrators.

8.2.4 Building IA-22 – WQEC Photography Laboratory

Photograph 8-9. Building IA-22 looking southeast

Photograph 8-10. Building IA-22 looking northeast

Photograph 8-11. Rear of Building IA-22 looking west

Site Description: The building is a single-story concrete and steel structure (Figure 8-2, Figure 8-2FP Bldg IA-22a, Figure 8-2FP Bldg IA-22b, Figure 8-2FP Bldg IA-22c, Figure 8-2FP Bldg IA-22d). Building IA-22 is approximately 11,300 ft^2.

Former Radiological Uses: Building IA-22 was a wet chemistry laboratory and possible location of a GC with a ^{63}Ni beaming electron capture detector (HRA-665, HRA-708) (Section 6.4.2). The WQEC photography laboratory was located in Building IA-22 starting in 1955. A 1967 license application stated that a ^{210}Po source associated with the X-ray Nondispersive/Spectroscopy System was stored in room 11 of the building (HRA-64) (Section 6.4.4). ^{210}Po is not a radionuclide of concern due to its half-life of 138 days.

DU penetrators were potentially disassembled and examined in the laboratory (HRA-139, HRA-182, HRA-197, HRA-223, HRA-274, HRA-502, HRA-610) (Section 6.5).

Building IA-22 is impacted due to the possible presence of the ^{63}Ni source associated with the GC, and potential handling and examination of DU (^{238}U). Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{63}Ni, ^{238}U

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials above current release criteria are present as a result of the possible presence of the electron capture detector, and potential handling and disassembly of DU penetrators.

8.2.5 Building IA-58 – WQEC X-ray Building

Photograph 8-12. Building IA-58 looking north/northeast

Site Description: The main building is a windowless, three-story concrete structure consisting of the X-ray exposure bay (Figure 8-3, Figure 8-3FP Bldg IA-58a, Figure 8-3FP Bldg IA-58b, Figure 8-3FP Bldg IA-58c). Review of historical drawings indicated that the building was constructed in 1952. Building IA-58 is approximately 5,100 ft^2. The building wing to the left in the photograph houses a former low-voltage exposure bay, equipment bay, small offices, and a storage room. There is a thick, concrete rolling door at the south end of the exposure bay.

Former Radiological Uses: Building IA-58 was the WQEC Scientific and Engineering Division's primary X-ray facility in the former NAVWPNSTA Concord. Review of historical records revealed activities including storage of radiography devices containing ^{60}Co and storage of radioactive check sources, including ^{90}Sr and ^{137}Cs (HRA-244, HRA-370, HRA-551) (Sections 6.3.2 and 6.8). The ^{241}Am source from the X-ray Nondispersive/Spectroscopy system, as well as an ^{241}Am source from the *USS Acadia*, was also stored in this building (HRA-64, HRA-539) (Sections 6.4.4 and 6.8). There is also a record of storage of a ^{226}Ra source in this building (HRA-508) (Section 6.7). In addition, a ^{235}U source associated with the fission chamber from the neutron density gauge (from building 35 at Pittsburg) was stored in this building (Section 6.6).

DU penetrators were stored in Building IA-58 (HRA-300). DU penetrators were potentially disassembled in the laboratory (HRA-139, HRA-182, HRA-197, HRA-223, HRA-274, HRA-502, HRA-610). The IAS estimated that the WQEC handled approximately 130 DU penetrators per year, generating approximately two 55-gallon drums of LLRW in a 5-year period (HRA-274) (Section 6.5).

The building housed the Van de Graaff, a linear electron particle accelerator, and other X-ray machines (Section 6.3.1).

Building IA-58 was the primary radiography facility at the former NAVWPNSTA Concord, and it served as a storage location for radioactive materials, such as radiography cameras, sources, and LLRW. Building IA-58 is impacted due to the presence of ^{60}Co, ^{90}Sr, ^{137}Cs, ^{226}Ra, ^{235}U, and ^{241}Am sources and LLRW, and handling and examination of DU (^{238}U). Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{60}Co, ^{90}Sr, ^{137}Cs, ^{226}Ra, ^{235}U, ^{238}U, ^{241}Am

Previous Radiological Investigations:

Radiological swipe survey after the WQEC was discontinued at the station (HRA-649)

Radiological swipe survey of the empty Van de Graaff X-ray machine housing (HRA-673)

Note: Neither of these surveys was a building clearance survey.

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials are present above current release criteria as a result of source handling and storage activities.

8.2.6 Building 81 – Ordnance Maintenance and Test Building

Photograph 8-13. Building 81 looking north

Photograph 8-14. Building 81 looking northwest

Photograph 8-15. Building 81 looking northeast

Photograph 8-16. Secured man door on Building 81

Site Description: The building is a large, one-story, earth-covered concrete structure (Figure 8-4, Figure 8-4FP Bldg 81a, Figure 8-4FP Bldg 81b, Figure 8-4FP Bldg 81c, Figure 8-4FP Bldg 81d, Figure 8-4-FP Bldg 81e, Figure 8-4FP Bldg 81f, Figure 8-4FP Bldg 81g). Building IA-81 is approximately 28,000 ft^2. The building had a sink and sanitary sewer system that drained into a septic tank. The historical record indicated that there was a leach field associated with the building (HRA-668).

Three test bays with several cells were located in Building 81. There was a control room between test bays 1 and 3. The center of the building was earth-filled.

Former Radiological Uses: The WQEC ordnance maintenance and test activities were located in Building 81. The historical record included references to missile assembly and maintenance of special weapons (HRA-605), explosive operations, and machine radiography in test cell C-8 (HRA-431, HRA-437) (Sections 6.11 and 6.3). ^{3}H, ^{235}U and plutonium-239 (^{239}Pu) are isotopes associated with special weapons. The potential for gamma radiography (^{60}Co) being conducted in this building is high.

Building 81 is impacted due to the potential handling of ^{3}H, ^{235}U, and ^{239}Pu associated with special weapons and potential for gamma radiography (^{60}Co). Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{3}H, ^{60}Co, ^{235}U, plutonium-239 (^{239}Pu)

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials above current release criteria are present as a result of the potential handling of special weapons and based on a recommendation of the former NAVWPNSTA Concord RSO (HRA-605).

8.2.7 Building 87 – Storage Building

Photograph 8-17. Building 87 looking northwest

Photograph 8-18. Building 87 looking northeast

Site Description: The building is a windowless, single-story concrete structure (Figure 8-5, Figure 8-5FP Bldg 87a, Figure 8-5FP Bldg 87b, Figure 8-5FP Bldg 87c, Figure 8-5FP Bldg 87d, Figure 8-5FP Bldg 87e, Figure 8-5FP Bldg 87f). Building 87 is approximately 25,000 ft^2, inclusive of the loading dock. According to records, Building 87 had a sink and sanitary sewer system that drained into a septic tank as well as a leach field (Figure 8-5FP Bldg 87c, Figure 8-5FP Bldg 87d). The septic tank was removed in 1997 under a RCRA corrective action (HRA-668).

Former Radiological Uses: Building 87 was a storage building for inert materials. It is possible that gamma radiography (^{60}Co) was conducted in the building (Section 6.3.2). Because of its remote location and proximity to the Alpha Area, potential maintenance of special weapons in the building cannot be discounted (Section 6.11).

Building 87 is impacted due to the potential handling of ^{3}H, ^{235}U, and ^{239}Pu associated with special weapons and the potential for gamma radiography (^{60}Co). Table 4-5 lists the ROCs and their uses.

Current Uses: Unoccupied

ROCs: ^{3}H ^{60}Co, ^{235}U, ^{239}Pu

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: Low

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: Low

Recommended Actions: Conduct a **scoping survey** of the building structure and drains to assess whether radioactive materials above current release criteria are present as a result of the potential handling of special weapons and based on a recommendation of the former NAVWPNSTA Concord RSO (HRA-605).

8.2.8 Depleted Uranium Munitions Magazines 6LC87, 6LC88, 6LC96, 6PC44, 6PCZ65, and 6PCZ58

Photograph 8-19. Overview of the DU Munitions Magazines looking west

Photograph 8-20. Example of a Single DU Munitions Magazine

Site Description: Depleted Uranium Munitions Magazines 6LC87, 6LC88, 6LC96, 6PC44, 6PCZ65, and 6PCZ58 are interspersed among conventional munitions storage magazines (HRA-439) (Figure 8-6, Figure 8-6FP DU Magazines a, Figure 8-6FP DU Magazines b). A typical DU magazine was an earthen-covered concrete structure approximately 100 feet wide behind the concrete facade and 50 feet deep. The standard magazines were typically outfitted with two doors, glass block, and several roof vents. A railroad track runs along the front to allow railcars to be loaded and unloaded at the magazine.

Former Radiological Uses: The magazines were used for storage of DU ammunition for the PHALANX CIWS (Section 6.5).

The DU magazines are impacted due to the storage, and potential handling and examination of DU (^{238}U). Table 4-5 lists the ROCs and their uses.

Current Uses: None

ROCs: ^{238}U

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: None

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: None

Drainage Systems: None

Recommended Actions: Conduct a **scoping survey** of the structures to assess whether radioactive materials above current release criteria are present as a result of the potential handling and disassembly of DU penetrators.

8.2.9 Special Weapons – Bulk Magazines 2AC61, 2AT5, 2AT6, 2AT7, 2AT8, 2AT9, 2AT10, 2AT11, 2AT12, 2AT13, 2AT14, 2AT15, 2AT16, 2AT17, 2AT18, 2AT19, and 2AT20

Photograph 8-21. Example of a Special Weapons Bulk Magazine

Site Description: Special Weapons – Bulk Magazines 2AC61, 2AT5, 2AT6, 2AT7, 2AT8, 2AT9, 2AT10, 2AT11, 2AT12, 2AT13, 2AT14, 2AT15, 2AT16, 2AT17, 2AT18, 2AT19, and 2AT20 (HRA-665) are earthen-covered concrete bunkers approximately 45 feet wide (behind the facade with the door) by 80 feet deep (Figure 8-7, Figure 8-7FP Special Weapons Magazines a, Figure 8-7FP Special Weapons Magazines b).

Former Radiological Uses: The magazines were potentially used for storage of special weapons (Section 6.11).

The Special Weapons – Bulk Magazines are impacted due to the potential handling of special weapons and the ^{3}H, ^{235}U, and ^{239}Pu potentially associated with them.

Current Uses: None

ROCs: ^{3}H, ^{235}U, ^{239}Pu

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: None

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: None

Drainage Systems: None

Recommended Actions: Conduct a **scoping survey** of the structures to assess whether radioactive materials above current release criteria are present as a result of the potential handling of special weapons.

8.2.10 Special Weapons – RI Magazines 2AC62, 2AC63, 2AC64, 2AC65, 2AC66, 2AC67, 2AC68, 2AC69, 2AC70, 2AC71, 2AC72, 2AC73, 2AC74, 2AC75, 2AC76, 2AC77, and 2AC78

Photograph 8-22a. Special Weapons RI Magazine

Photograph 8-22b. Interior of an empty Special Weapons RI Magazine

Photograph 8-22c. Special Weapons RI Magazine

Site Description: The Special Weapons – RI Magazines 2AC62, 2AC63, 2AC64, 2AC65, 2AC66, 2AC67, 2AC68, 2AC69, 2AC70, 2AC71, 2AC72, 2AC73, 2AC74, 2AC75, 2AC76, 2AC77, and 2AC78 (HRA-665) are earthen-covered concrete bunkers approximately 50 feet wide behind the facade with the door by 80 feet deep beneath the earthen cover (Figure 8-7).

NOTE: RI typically stands for "receipt inspection"; unable to confirm.

Former Radiological Uses: The magazines were potentially used for storage of special weapons (Section 6.11).

The Special Weapons – RI Magazines are impacted due to the potential handling of special weapons and the ^{3}H, ^{235}U, and ^{239}Pu potentially associated with them.

Current Uses: None

ROCs: ^{3}H, ^{235}U, ^{239}Pu

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: None

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: None

Drainage Systems: None

Recommended Actions: Conduct a **scoping survey** of the structures to assess whether radioactive materials above current release criteria are present as a result of the potential handling of special weapons.

8.2.11 Special Weapons Magazine 2HT14

Photograph 8-23. Special Weapons Magazine 2HT14

Site Description: Special weapons magazine 2HT14 (HRA-665) is an earthen-covered concrete structure. There is only one magazine with this configuration.

Former Radiological Uses: The magazine was potentially used for storage of special weapons (Section 6.11).

The Special Weapons Magazine 2HR14 is impacted due to the potential handling of special weapons and the ^{3}H, ^{235}U, and ^{239}Pu potentially associated with them.

Current Uses: None

ROCs: ^{3}H, ^{235}U, ^{239}Pu

Previous Radiological Investigations: None

Contamination Potential: Unlikely

Contaminated Media:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: Low

Drainage Systems: None

Potential Migration Pathways:

Surface Soil: None

Subsurface Soil: None

Surface Water: None

Groundwater: None

Air: None

Structures: None

Drainage Systems: None

Recommended Actions: Conduct a **scoping survey** of the structure to assess whether radioactive materials above current release criteria are present as a result of the potential handling of special weapons.

9.0 CONCLUSIONS

9.1 HISTORICAL RESEARCH

The Concord Naval Weapons Station was purchased by the DON in early 1942 and commissioned as the Naval Magazine, Port Chicago on June 27, 1942, as a subsidiary command of the Naval Ammunition Depot, Mare Island. In early 1944, the DON began the process of acquiring the Inland Area property that became the former NAVWPNSTA Concord. While the former NAVWPNSTA Concord was primarily obtained as a site for ammunition storage, G-RAM was gradually introduced at the site, at first in the form of industrial radiography and other nondestructive examination devices, and later with DU penetrators and special weapons. These remained the primary sources of G-RAM until the time of the former NAVWPNSTA Concord's closure under the BRAC process in the early 2000s.

9.2 IMPACTED SITE ASSESSMENTS

The preparation of this HRA was a comprehensive process involving the review of information from several thousand records in seven federal record repositories, the Internet, and personnel interviews. Analysis of the information from this research resulted in a total of 48 sites being designated as impacted by G-RAM operations. This designation indicates each site has the potential for radioactive contamination based on historical information.

The potential for residual contamination at impacted sites was assessed using the following categories: Known-Restricted Access, Known-Continued Access, Likely, Unlikely, and Unknown. The assessment of potential contamination at the 48 impacted sites is summarized as follows:

Known-Restricted Access – 0

Known-Continued Access – 0

Likely – 0

Unlikely – 48

Unknown – 0

The categories High, Moderate, Low, and None were used to assess potentially contaminated media for each impacted site. The ratings of potentially contaminated media at each of the 48 impacted sites are:

High – 0

Moderate – 0

Low – 48

None – 0

The categories of High, Moderate, Low, and None were also used to assess potential migration pathways for any radioactive contamination at each impacted site. The ratings of migration pathways assessed at each of the 48 impacted sites are:

High – 0

Moderate – 0

Low – 7

None – 41

The categories of Emergency Action, Scoping Survey, Characterization Survey, Remediation, Final Status Survey, Free Release, and No Further Action were used to recommend future actions at each impacted site. The recommended actions for each of the 48 impacted sites are:

Emergency Action – 0

Scoping Survey – 48

Characterization Survey – 0

Remediation – 0

Final Status Survey – 0

Free Release Pending Review of Final Status Survey Report – 0

No Further Action – 0

9.3 SUMMARY OF FINDINGS

Using the above criteria, this HRA concludes that:

- There is a low potential for residual radioactive contamination at the 48 impacted sites.
- Scoping surveys are recommended for 7 buildings/structures (Buildings IA-20, IA-21, IA-21A, IA-22, IA-58, 81, and 87), 6 DU munitions storage magazines, and 35 special weapons magazines.

- To date, no historical information about radiological operations or previous radiological surveys at any of the impacted sites presents a level of concern that would require any emergency action.
- To date, high-level contamination has not been found at the former NAVWPNSTA Concord, nor is the potential considered a possibility in this HRA.
- To date, no impacted sites require restricted access due to known levels of radioactive contamination.
- To date, no evidence of potential airborne contamination has been found.
- No evidence of a pathway for potential contamination to migrate off the former NAVWPNSTA Concord has been identified.

The overall conclusion of the HRA is that 48 sites are impacted; however, the potential for residual radioactive contamination is unlikely. This HRA recommends that the areas of potential contamination be assessed, and, if contamination is detected, contaminant removal be addressed.

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10.0 REFERENCES

This section lists all the archival documents and sources used as references in preparation of this HRA.

HRA No.	Title
HRA 2	Safe Handling of Radioactive Luminous Compound. 1 January 1942. DON
HRA 3	Radiological Safety Manual. 8 December 1947. DON
HRA 4	Agreement between the AEC and the DOD for the development, production and standardization of Atomic Weapon. 21 March 1953. ATOMIC ENERGY COMMISSION
HRA 5	1957 Command History. 1 January 1958. DON
HRA 6	Untitled report of AEC inspection. 1 June 1959. ATOMIC ENERGY COMMISSION
HRA 7	1961 Command History. 01 January 1962. DON
HRA 10	Untitled report of leak test. 15 January 1963. THE BUDD COMPANY
HRA 11	Inspection Findings and Licensee Acknowledgement. 20 February 1963. ATOMIC ENERGY COMMISSION
HRA 22	Incoming Inspection and Radiation Survey of Budd Company Model 100A, "Iriditron" Gamma Radiography Exposure Device Containing a 100-curie Iridium-192 sealed source. 16 August 1963. DON
HRA 23	1963 Command History. 1 January 1964. DON
HRA 56	Iriditron-100, source change; radiation survey, and inspection of. 28 July 1966. DON
HRA 64	Application for Byproduct Material License. 29 November 1967. DON
HRA 65	Untitled Letter from AEC forwarding License No.04-03141-02. 27 February 1968. AEC
HRA 66	Byproduct Material License 04-03141-02. 27 February 1968. ATOMIC ENERGY COMMISSION
HRA 69	Untitled amendment 1 to license 04-03141-02. 24 June 1968. ATOMIC ENERGY COMMISSION
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HRA 71	Iriditron 100, Source Change, Radiation Survey, and Inspection of Report of Subject Activities in Building IA-58. 15 January 1969. DON
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HRA 87	RASO Report of Technical Assistance Visit to Radiography Facilities. 08 November 1972. DON
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HRA 106	Untitled NAVFAC request for source material license. 16 July 1974. DON
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TABLES

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TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
9	Laboratory near Building IA-58	
35	Materials Laboratory	
68	Data Processing	
79	Guard House	Alert Force Building, Standby Duty & Fast Reaction Force
80	Gate House	
81	Weapons Maintenance Building	Explosive and Toxic Laydown Area, Ordnance Maintenance and Test Building
82	Paint Shop – Special Weapons	Research Development Testing and Evaluation Storage Laboratory
83	Lunch, Locker and Boiler	Explosive and Toxic Laydown Area
84	Container Shed	Research Development Testing and Evaluation Storage Laboratory
85	Pump House No. 3	
86	Emergency Generator Building	
87	Inert Storage Building	Sparrow Air Launch Interceptor Missile Integration, Maintenance and Test Facility
88	Public Works Storage Shed	Missile/Spare Storage Area
89	Pump House No. 4	
91	Observation Tower	
93	Guidance Checkout Facility	Harpoon and Standard Missile SM-1, MS-2 Guided Missile Integration and Test Facilities
94	Ready Issue Building	Missile/Spare Storage Area
95	Sentry House	
96	Lunch, Locker, Boiler Building	Guided Missile Integration Facility
97	Warhead Assembly Building	Tomahawk Encan/Decan Facility, and Conventional Renovation Facility

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
98	Boiler and Sentry House	Guided Missile Integration Facility
112	Field Toilet	
113	Public Works Storage Shed	
114	Public Works Storage Shed	Fire Station
115	Pest Control Shed	Public Works Shop
116	Time Clock Shed	Public Works Shop
117	Sentry Shed	
119	Smoke Shack	
120	Salvage Yard Office	
121	Test Building	
122	Salvage Office	Original Tidal Operation
130	Booster Pump Station	
131	Water Storage Tank – 225,000G	
132	Water Storage Tank	
133	Sentry Shed (Gate 66)	
134	Sentry Shed (Gate 83)	
135	Sentry Shed (Arnold Overpass)	
136	Ice House	
137	General Warehouse, RIs	
139	Garage (Quarters 200–202)	
140	Garage (Quarters 204–206)	
141	Garage (Quarters 208–210)	
142	Garage (Quarters 201)	
143	Garage (Quarters 203)	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
144	Garage (Quarters 205–207)	
145	Garage (Quarters 246)	
146	Garage (Quarters 247–248)	
147	Garage (Quarters 250)	
150	Storage Building	Public Works Maintenance Storage
151	Gear Handling Building	Guided Missile Integration Facility
152	Gymnasium-Handball Court – Exercise Room	
155	Patio-Snack Bar	
156	Little League Ball Park	
159	Enlisted Men's Club	
160	Public Works Maintenance Storage	
161	Parade Ground-Drill Field	
167	Incinerator (Classified Materials)	
168	Data Processing Building	Laboratory
178	Service Station	Exchange Auto Repair Station
179	Trailers	Administrative Office
180	Trailers	Administrative Office
185	Enlisted Men's Barrack – Administration Building	Amusement Center
186	Enlisted Men's Barrack – Living Unit	
187	Enlisted Men's Barrack – Living Unit	
189	Paint Storage Building (Prefab)	
190	Swimming Pool Bath House	
192	Special Services Building	Administrative Office
193	Auto Hobby Shop	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
197	Sanitary Trailer	Public Toilet
200	Officer Quarters	
201	Officer Quarters	
202	Officer Quarters	
203	Officer Quarters	
204	Officer Quarters	
205	Officer Quarters	
206	Officer Quarters	
207	Officer Quarters	
208	Officer Quarters	
209A-B	Officer Quarters	
210	Officer Quarters	
211A-B	Officer Quarters	
212A-B	Officer Quarters	
213A-B	Officer Quarters	
214A-B	Officer Quarters	
215	Officer Quarters	
216	Officer Quarters	
222	Officer Quarters	
223A-B	Officer Quarters	
241	Garage for Officer Quarters 245	
244	Garage (Building 245)	
245A-B-C-D	Officer Quarters	
245E	Administrative Office and Police Station	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
245F	Officers Club	Academic Instruction
246	Officer Quarters	
247	Officer Quarters	
248	Officer Quarters	
249	Bachelor Officers' Quarters Annex	
250	Officer Quarters	
252	Navy Exchange Storehouse	Public Works Maintenance Storage
253	Navy Exchange Storehouse	Exchange Installation Warehouse
254	Marine Supply Storehouse	Troop Housing Strategy
256	Woodworking Hobby Shop	
257	Sentry Post (Highway 4 Overpass)	
259	Basketball Court	
260	Car Wash	
261	Weapon Quality Engineering Center Office Trailer/Laboratory	Guided Missile Laboratory
262	Life Cycle Building	Administrative Office
263	Breakdown Cell	Ammunition Rework and Overhead Shop
264	Special Service Issue	Academic Instruction Building
265	Special Service Issue	
266	Helicopter Pad	Miscellaneous Open Storage/Laydown
267	Tidal Area Tug Office Building	
269	Locomotive Steam Cleaning Pad	
270	Trailer	Data Processing Center
271	Storage Building	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
272	Picnic Grounds	
273	Guard House	
274	Guard House	
275	Guard House	
276	Trailer	Laboratory
277	Trailer	Data Processing Center
278	Trailer	
279	Guard Tower (Alpha)	
280	Guard Tower (Alpha)	
282	Trailer	Computation/Analysis Laboratory
283	Guard House (Post 6A)	
285	Community Service Building	
291	Missile Magazine – West	
292	Missile Magazine – East	
293	Data Processing	
294	Data Processing	
295	Weapon Quality Engineering Center, Nondestructive Testing	Materials Laboratory
296	Graphic Arts	Materials Laboratory
297	Calibrated Storage	Materials Laboratory
395	Administration	Marine Barracks/General Purpose Building
396	Lounge	Bachelor Enlisted Quarters
397	Bachelor Enlisted Quarters	
398	Marine Barracks/General Purpose Building and Dining	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
	Facility	
400	Gate/Sentry House	
405	Generator Building	Miscellaneous Utility Plant Building
406	Fabrication Building	Research Development Testing and Evaluation Storage Laboratory
407	Miscellaneous Utility Plant Building	
409	Chapel	
416	Storage	
418	Steam Cleaning Structure at IA-12	
419	Open Storage/Laydown	
420	Rework Facility Building 93 Compound	
422	Ordnance Operations Building at Airfield	
423	Metal Garage Explosive Ordnance Disposal Site	
428	Hazardous Waste Storage & Transfer	
429	Hazardous Waste Accumulation	Solid Waste Management Unit 29
430	Hazardous Waste Storage & Transfer	
431	Recreation Pavilion	
433	Hazardous Waste Storage	
434	Generator Shed/Shelter	
435	Gymnasium	
438	Truck Scalehouse	
441	Missile Magazine	
442	Missile Magazine	
511	Public Works Storage	Fossil Fuel Heating Plant

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
513	Runoff Oil/Water Separator	
521	Bachelor Enlisted Quarters E1/E4 Family Housing	
522	Gas Station	
1950s Excavation/fill Site	East of Building 93	
1XT-1	Ready Service Magazine	Explosives items storage in support of test and evaluation programs
1XT-2	Ready Service Magazine	Hazardous/flammable storage; explosives items storage in support of test and evaluation programs
1XT-3	Ready Service Magazine	Hazardous/flammable storage; explosives items storage in support of test and evaluation programs
1XT-4	Ready Service Magazine	Explosives items storage in support of test and evaluation programs
1XT-5	Ready Service Magazine	Explosives items storage in support of test and evaluation programs
1XT-6	Ready Service Magazine	Explosives items storage in support of test and evaluation programs
2AC-61	Magazine Special Weapons – Bulk	
2AC-62	Magazine Special Weapons – RI	
2AC-63	Magazine Special Weapons – RI	
2AC-64	Magazine Special Weapons – RI	
2AC-65	Magazine Special Weapons – RI	
2AC-66	Magazine Special Weapons – RI	
2AC-67	Magazine Special Weapons – RI	
2AC-68	Magazine Special Weapons – RI	
2AC-69	Magazine Special Weapons – RI	
2AC-70	Magazine Special Weapons – RI	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
2AC-71	Magazine Special Weapons – RI	
2AC-78	Magazine Special Weapons – RI	
2AE-61	Laboratory near IA-58	
2AT-1	Fuse and Detonator Magazine – Bulk	
2AT-10	Special Weapons Magazine – Bulk	
2AT-11	Special Weapons Magazine – Bulk	
2AT-12	Special Weapons Magazine – Bulk	
2AT-13	Special Weapons Magazine – Bulk	
2AT-14	Special Weapons Magazine – Bulk	
2AT-15	Special Weapons Magazine – Bulk	
2AT-16	Special Weapons Magazine – Bulk	
2AT-17	Special Weapons Magazine – Bulk	
2AT-18	Special Weapons Magazine – Bulk	
2AT-19	Special Weapons Magazine – Bulk	
2AT-2	Fuse and Detonator Magazine – Bulk	
2AT-20	Special Weapons Magazine – Bulk	
2AT-3	Fuse and Detonator Magazine – Bulk	
2AT-4	Fuse and Detonator Magazine – Bulk	
2AT-5	Special Weapons Magazine – Bulk	
2AT-6	Special Weapons Magazine – Bulk	
2AT-7	Special Weapons Magazine – Bulk	
2AT-72	Magazine Special Weapons – RI	
2AT-73	Magazine Special Weapons – RI	
2AT-74	Magazine Special Weapons – RI	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
2AT-75	Magazine Special Weapons – RI	
2AT-76	Magazine Special Weapons – RI	
2AT-77	Magazine Special Weapons – RI	
2AT-8	Special Weapons Magazine – Bulk	
2AT-9	Special Weapons Magazine – Bulk	
2HT-14	Special Weapons Magazine	
38T-1	Black Powder Magazine	
38T-2	Black Powder Magazine	
38T-3	Black Powder Magazine	
38T-4	Black Powder Magazine	
38T-5	Black Powder Magazine	
3AT Area	Area of Rifle Grenade Firing and Lead Pouring	
3FT-1	Fuze Detonator Magazine	
3FT-2	Fuze Detonator Magazine	
3FT-3	Fuze Detonator Magazine	
3FT-4	Fuze Detonator Magazine	
3FT-5	Fuze Detonator Magazine	
3FT-6	Fuze Detonator Magazine	
3FT-7	Fuze Detonator Magazine	
3FT-8	Fuze Detonator Magazine	
3FT-9	Fuze Detonator Magazine	
3FT-10	Fuze Detonator Magazine	
3FT-11	Fuze Detonator Magazine	
3FT-12	Fuze Detonator Magazine	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
3FT-13	Fuze Detonator Magazine	
4AT-21	High Explosive Magazine/RI	
4AT-22	High Explosive Magazine/RI	
4AT-23	High Explosive Magazine/RI	
4AT-24	High Explosive Magazine/RI	
4AT-25	High Explosive Magazine/RI	
4AT-26	High Explosive Magazine/RI	
4AT-27	High Explosive Magazine/RI	
4AT-28	High Explosive Magazine/RI	
4AT-29	High Explosive Magazine/RI	
4AT-30	High Explosive Magazine/RI	
4AT-31	High Explosive Magazine/RI	
4AT-32	High Explosive Magazine/RI	
4AT-33	High Explosive Magazine/RI	
4AT-34	High Explosive Magazine/RI	
4AT-35	High Explosive Magazine/RI	
4AT-36	High Explosive Magazine/RI	
4AT-37	High Explosive Magazine/RI	
4AT-38	High Explosive Magazine/RI	
4AT-39	High Explosive Magazine/RI	
4AT-40	High Explosive Magazine/RI	
5AT	Abandoned Tank 17	Solid Waste Management Unit 32
5AT Area	Army Standby. Identified as HE-5	Potential Explosive Ordnance Disposal Operations Noted in Fire Logs

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
5AT-41	High Explosive Magazine – Bulk	
5AT-42	High Explosive Magazine – Bulk	
5AT-43	High Explosive Magazine – Bulk	
5AT-44	Guided Missile Magazine – Bulk	
5AT-45	Guided Missile Magazine – Bulk	
5AT-46	High Explosive Magazine – Bulk	
5AT-47	High Explosive Magazine – Bulk	
5AT-48	High Explosive Magazine – Bulk	
5AT-49	High Explosive Magazine – Bulk	
5AT-50	High Explosive Magazine – Bulk	
5AT-51	High Explosive Magazine – Bulk	
5AT-52	High Explosive Magazine – Bulk	
5AT-53	High Explosive Magazine – Bulk	
5AT-54	High Explosive Magazine – Bulk	
5AT-55	High Explosive Magazine – Bulk	
5AT-56	High Explosive Magazine – Bulk	
5AT-57	High Explosive Magazine – Bulk	
5AT-58	High Explosive Magazine – Bulk	
5AT-59	Guided Missile Magazine – Bulk	
5AT-60	Guided Missile Magazine – Bulk	
6LC-100	Magazine (Small Arms)	
6LC-101	Magazine (Small Arms)	
6LC-102	Small Arms/Pyrotechnic Magazine	
6LC-103	Small Arms/Pyrotechnic Magazine	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
6LC-104	Small Arms/Pyrotechnic Magazine	
6LC-105	Small Arms/Pyrotechnic Magazine	
6LC-106	Small Arms/Pyrotechnic Magazine	
6LC-107	Small Arms/Pyrotechnic Magazine	
6LC-108	Small Arms/Pyrotechnic Magazine	
6LC-109	Small Arms/Pyrotechnic	
6LC-110	Small Arms/Pyrotechnic	
6LC-111	Guided Missile Magazine/RI	
6LC-112	Projectile Magazine	
6LC-113	Projectile Magazine	
6LC-114	Projectile Magazine – Bulk	
6LC-115	Guided Missile Magazine	
6LC-116	Guided Missile Magazine	
6LC-58 Field verified as PCZ58	Guided Missile Magazine/RI	
6LC-76	Projectile Magazine	
6LC-77	Projectile Magazine	
6LC-78	Projectile Magazine – Bulk	
6LC-79	Projectile Magazine	
6LC-80	Projectile Magazine	
6LC-81	Projectile Magazine – Bulk	
6LC-82	Small Arms/Pyrotechnic	
6LC-83	Small Arms/Pyrotechnic	
6LC-84	Small Arms/Pyrotechnic	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
6LC-85	Small Arms/Pyrotechnic	
6LC-86	Small Arms/Pyrotechnic	
6LC-87	Small Arms/Pyrotechnic	
6LC-88	Small Arms/Pyrotechnic	
6LC-89	Small Arms/Pyrotechnic	
6LC-90	Projectile Magazine – Bulk	
6LC-91	Projectile Magazine – Bulk	
6LC-92	Projectile Magazine – Bulk	
6LC-93	Projectile Magazine – Bulk	
6LC-94	Projectile Magazine	
6LC-95	Projectile Magazine – Bulk	
6LC-96	Projectile Magazine – Bulk	
6LC-97	Projectile Magazine – Bulk	
6LC-98	Guided Missile Magazine/RI	Steam Boiler
6LC-99	Projectile Magazine – Bulk	
6PC-1	Guided Missile Magazine	
6PC-10	Fixed Ammunition Magazine/RI	
6PC-11	Fixed Ammunition Magazine/RI	
6PC-12	Projectile Magazine – Bulk	
6PC-13	Guided Missile Magazine	
6PC-14	Projectile Magazine – Bulk	
6PC-15	Projectile Magazine – Bulk	
6PC-16	Guided Missile Magazine	
6PC-17	Projectile Magazine – Bulk	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
6PC-18	Projectile Magazine – Bulk	
6PC-19	Guided Missile Magazine/RI	
6PC-2	Guided Missile Magazine	
6PC-20	Fuze & Detonator Magazine – Bulk	
6PC-21	Projectile Magazine – Bulk	
6PC-22	Guided Missile Magazine/RI	
6PC-23	Guided Missile Magazine/RI	
6PC-24	Guided Missile Magazine/RI	
6PC-25	Guided Missile Magazine	
6PC-26	Fixed Ammunition Magazine/RI	
6PC-27	Projectile Magazine – Bulk	
6PC-28	Projectile Magazine – Bulk	
6PC-29	Projectile Magazine – Bulk	
6PC-3	Guided Missile Magazine	
6PC-30	Guided Missile Magazine	
6PC-31	Fixed Ammunition Magazine/RI	
6PC-32	Projectile Magazine – Bulk	
6PC-33	Projectile Magazine – Bulk	
6PC-34	Projectile Magazine – Bulk	
6PC-35	Projectile Magazine – Bulk	
6PC-36	Projectile Magazine – Bulk	
6PC-37	Fixed Ammunition Magazine/RI	
6PC-38	Fixed Ammunition Magazine/RI	
6PC-39	Fixed Ammunition Magazine/RI	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
6PC-4	Projectile Magazine – Bulk	
6PC-40	Fixed Ammunition Magazine/RI	
6PC-41	Fixed Ammunition Magazine/RI	
6PC-42	Fixed Ammunition Magazine/RI	
6PC-43	Fixed Ammunition Magazine/RI	
6PC-44	Fixed Ammunition Magazine/RI	
6PC-45	Fixed Ammunition Magazine/RI	
6PC-46	Fixed Ammunition Magazine/RI	
6PC-47	Fixed Ammunition Magazine/RI	
6PC-48	Fixed Ammunition Magazine/RI	
6PC-49	Fixed Ammunition Magazine/RI	
6PC-5	Projectile Magazine – Bulk	
6PC-50	Fixed Ammunition Magazine/RI	
6PC-51	Guided Missile Magazine/RI	
6PC-52	Guided Missile Magazine/RI	
6PC-53	Guided Missile Magazine/RI	
6PC-54	Guided Missile Magazine/RI	
6PC-55	Guided Missile Magazine/RI	
6PC-56	Guided Missile Magazine/RI	
6PC-57	Guided Missile Magazine/RI	
6PC-59	Fixed Ammunition Magazine/RI	
6PC-6	Projectile Magazine – Bulk	
6PC-60	Fixed Ammunition Magazine/RI	
6PC-61	Fixed Ammunition Magazine/RI	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
6PC-62	Fixed Ammunition Magazine/RI	
6PC-63	Fixed Ammunition Magazine/RI	
6PC-64	Fixed Ammunition Magazine/RI	
6PC-65 Field verified as 6PCZ65	Fixed Ammunition Magazine/RI	
6PC-66	Fixed Ammunition Magazine/RI	
6PC-67	Fixed Ammunition Magazine/RI	
6PC-68	Fixed Ammunition Magazine/RI	
6PC-69	Fixed Ammunition Magazine/RI	
6PC-7	Guided Missile Magazine/RI	
6PC-70	Fixed Ammunition Magazine/RI	
6PC-71	Guided Missile Magazine/RI	
6PC-72	Guided Missile Magazine/RI	
6PC-73	Guided Missile Magazine/RI	
6PC-74	Projectile Magazine	
6PC-75	Projectile Magazine	
6PC-8	Guided Missile Magazine/RI	
6PC-9	Projectile Magazine – Bulk	
7SH-1	Inert Storehouse Building	
7SH-10	Inert Storehouse Building	
7SH-11	Inert Storehouse Building	
7SH-12	Inert Storehouse Building	
7SH-13	Inert Storehouse Building	
7SH-14	Inert Storehouse Building	Environmental Testing and Training

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
7SH-2	Storehouse Building	
7SH-3	Storehouse Building	
7SH-4	GM Maintenance Facility	
7SH-5	Air Launch GM Building	Missile Wings and Fins Repair
7SH-6	Inert Storehouse Building	
7SH-7	GM Container Storage	
7SH-8	Inert Storehouse Building	
7SH-9	Inert Storehouse Building	
Airfield	Airfield	
Alpha Gate	At Building 79	Several Gas Spills Noted in Fire Logs
Area 24	Area 24	Fire Log Reference to Burning Boxcars
Area North and West of Burn Site	Area North and West of Burn Site	Possible Explosive Ordnance Disposal/Burn/Disposal
Army Reserve	Army Reserve Center	
Baldwin Park	Potential Ordnance Landfill	
Borrow Fill Area	South of Burn Area (Site 13)	Possible Explosive Ordnance Disposal /Burn/Disposal
Buena Vista features	Ponds, Trenches, Roads North of Buena Vista	
C-3	C-3 Earth Barricade	
C-3 Storage/Fill Area	East of Yard	Possible Disposal
Canal Pit	North of IA-25	Possible Disposal
Corral East	Operations North of 93	
Corral West	Operations East of IA-21	Includes Trench and Pit Area
Demo Area	Refer: Firelogs as Demolition Range, Pit, Area	
E. nitens Plantation	Eucalyptus Nitens Plantation	Site of Poor Growth and Mortality of Eucalyptus Plantation

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
		Near Building 93.
E-98	Administrative Office	
East RR Sidings incomplete	Excavated But Not Built	Possible Explosive Ordnance Disposal/Burn/Disposal
Gate 70	Refer: Firelogs as Gas Escort Location	
GBF Fill	GBF/Pittsburg Landfill	
Guam Fuel Spill	Refer: Firelogs Fuel Spill in Ditch	
HE5 Area	Army Maneuvers and Burning	Could be Tied in with 5AT Area
Homestead Quarry	1960s fill area	
IA-1	Administration Building and Communication Center	
IA-2	Security Office	Police Station
IA-2A	Sentry House	
IA-3	Pump House	
IA-4	Standby General Plant	Electric Distribution/Shelter
IA-5	GSK Warehouse	General Warehouse, Package Store, and Theatre
IA-6	Boilerhouse	Miscellaneous Utility Plant Building
IA-7	Firehouse	Burn Pit south of Firehouse
IA-8	Explosive Ordnance Disposal Offices	Ordnance Operations Building
IA-9	Scale House	
IA-10	Marine Barracks	Exchange Service Outlets, Print Plant, Ammunition Explosive & Toxic Laboratory, Materials Laboratory, etc
IA-11	Supply Office	Cold Storage, Data Processing, Telephone Exchange, etc.
IA-12	Heavy Equipment Repair	Railroad Equipment Shop
IA-13	Potable Water District Facility	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
IA-15	Public Works Shop and Offices	Public Works Shops, Administration Office, and Auto Vehicle Maintenance
IA-16	Transportation/Paint Shop	Public Works Shops and Auto Vehicle. Maintenance
IA-17	Service Station	
IA-18	Dispensary/Hospital/Dental	Medical and Dental Clinic
IA-18A	Ordnance Office	Administration Office
IA-18B	Ordnance Office	Administration Office
IA-18C	Ordnance Administration	Administration Office, Special Services Issue, Hobby Shop
IA-18D	Industrial Relations	Administration Office and Credit Union
IA-19	Boiler House	Miscellaneous Utility Plant Building
IA-20	Evaluation Laboratory	Materials Laboratory (hydraulic fluids testing)
IA-21	Quality Evaluation Laboratory	Materials Laboratory, Guided Missile Laboratory, and Computer Analysis Laboratory
IA-21A	Evaluation Laboratory	Storm Water Management Unit 10
IA-22	Evaluation Laboratory	Materials Laboratory
IA-23	Quality Evaluation Laboratory	Ammunition, Explosives & Toxic Laydown
IA-24	Battery Charging Building	Battery Shop, Public Works Shop, General Wholesale
IA-24A	Storage Shed Battery Shop	Public Works Maintenance Storage
IA-24B	Storage Shed Battery Shop	
IA-25	Missile Component Maintenance	Materials Laboratory
IA-27	Car Blocking Shop	Troop Housing Storage, Carpenter Shop
IA-27A and B	Explosive Barricade, Truck/Car	
IA-28	Hobby Shop/Gas Station	
IA-30	Area of Helicopter Landing	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
IA-33	Watchtower Observation Tower	
IA-35	Boiler House	Miscellaneous Utility Plant Building
IA-36	Boiler House	Miscellaneous Utility Plant Building
IA-37	Pit Shop (Carpenter/Labor)	Public Works Shop
IA-38	Central Shop Stores	General Warehouse, Navy
IA-40	Service Station	
IA-41	Paint Storage	Public Works Maintenance Storage, Hazardous Material Storage
IA-43	Hazardous, Flammable Storage	Public Works Maintenance Storage
IA-44	Guided Missile Maintenance Shop	Research Development Testing and Evaluation Storage Laboratory
IA-45	Block Structure	Old Pump House by the Airport
IA-46	Public Works Storage Shed	Public Works Maintenance Storage, Pesticide Mixing and Storing, Hazardous Waste Storage
IA-47	Observation Tower	
IA-48	Public Works Storage Shed	Vehicle Holding Shed Waiting
IA-49	Equipment Storage Shed	Public Works Shop, General Warehouse, Public Works Maintenance Storage
IA-50	Transfer Shed	Explosives Shipping/Transfer Department
IA-51	Auto Maintenance Facility (Tire)	Auto Vehicle Maintenance, Steam Cleaning Area and Turntable
IA-52	Compressor Building	Miscellaneous Utility Plant Building
IA-53	Burn Pit Site 13	Burn Area and Fire training
IA-54	Electric Substation	Storm Water Management Unit 19
IA-55	Ordnance Support Space	Ordnance Operations Building
IA-56	Field Office	Applied Instruction Building, Forklift Training School

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
IA-56A	Possible Septic Tank	
IA-57	Outdoor Pistol Range-Shack	Small Arms Range
IA-58	X-Ray Building – Quality Engineering Laboratory	Materials Laboratory
IA-59	Tennis Court	
IA-60	Playing Field Facility	
IA-100	Open Storage (three)	
IT-1	Water Storage Tank	
IT-2	Water Storage Tank	
IT-3	Water Source at Site 13	
IT-4	Water Storage Tank	
Labor Camp	Labor Camp	
Off-site discharge	Wastewater discharge to railroad at main gate	
Off-site Run-off	Main gate from off-site cement contractor	
Off-site3	Mt. Diablo USD Maintenance	
Out-feature northwest of IA-25	Potential disposal/burn area	
Out-features (trenches and pits)	North and east of IA-24	
Public Works Center Laydown Area	Public Works Center Laydown Area	
Railcar Storage	Stored railcars with Hydrazine	Held Hydrazine, Propellants, Unsymmetrical Dimethylhydrazine
Railroad tracks	Throughout the station	
RBS-1	Railroad Barricaded Siding	
RBS-10	Railroad Barricaded Siding	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
RBS-11	Railroad Barricaded Siding	
RBS-12	Railroad Barricaded Siding	
RBS-13	Railroad Barricaded Siding	
RBS-14	Railroad Barricaded Siding	
RBS-15	Railroad Barricaded Siding	
RBS-16	Railroad Barricaded Siding	
RBS-17	Railroad Barricaded Siding	
RBS-18	Railroad Barricaded Siding	
RBS-19	Railroad Barricaded Siding	
RBS-2	Railroad Barricaded Siding	
RBS-20	Railroad Barricaded Siding	
RBS-22	Railroad Barricaded Siding	
RBS-23	Railroad Barricaded Siding	
RBS-24	Railroad Barricaded Siding	
RBS-25	Railroad Barricaded Siding	
RBS-26	Railroad Barricaded Siding	
RBS-27	Railroad Barricaded Siding	
RBS-28	Railroad Barricaded Siding	
RBS-29	Railroad Barricaded Siding	
RBS-3	Railroad Barricaded Siding	
RBS-30	Railroad Barricaded Siding	
RBS-31	Railroad Barricaded Siding	
RBS-32	Railroad Barricaded Siding	
RBS-4	Railroad Barricaded Siding	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
RBS-5	Railroad Barricaded Siding	
RBS-59	Railroad Barricaded Siding	
RBS-6	Railroad Barricaded Siding	
RBS-60	Railroad Barricaded Siding	
RBS-61	Railroad Barricaded Siding	
RBS-62	Railroad Barricaded Siding	
RBS-63	Railroad Barricaded Siding	
RBS-64	Railroad Barricaded Siding	
RBS-7	Railroad Barricaded Siding	
RBS-8	Railroad Barricaded Siding	
RBS-9	Railroad Barricaded Siding	
RBS-92	Railroad Barricaded Siding	
RBS-93	Railroad Barricaded Siding	
RBS-94	Railroad Barricaded Siding	
RBS-95	Railroad Barricaded Siding	
RRBFA	Red Rock Borrow/Fill Area includes rectangular feature	
Scarred Area	North and West of IA-23	North and West of IA-23
SD-1	Smoke Drum Warehouse	
Site 13	Burn Area and Napalm Trench	Includes Building IA-53
Site 15	Classification Yard	
Site 16	Black Pit at Red Rock Includes Rectangular Feature	Disposal
Site 19	Seal Creek	
Site 23A	Inland Area Explosive Ordnance Disposal	
Site 23B	Eagle's Nest Explosive Ordnance Disposal	

TABLE 3-1

FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.[1]	Facility Function at Time of Base Closure[1]	Other Facility Functions[1]
Site 24B	Aircraft Firing Range	
South RR Sidings incomplete	Excavated but not built	Possible Explosive Ordnance Disposal/Burn/Disposal
Storm Water Management Unit 30	Unocal Oil Pipeline Site	Crude Oil Release 1989
Storm Water Management Unit 31	Diesel Fuel Oil Leak Main Entrance	
Storm Water Management Unit 44	Storm Water Management Unit 44	
Undeveloped property	East of Bailey Road	
Warren Rd	Railroad Ties Fire 10/30/65	
Waste Area 1968	Operations Southeast of IA-21	
West RR Sidings incomplete	Excavated but not built	Possible Explosive Ordnance Disposal /Burn/Disposal

Source:

* Weston Solutions, Inc. 2005 (HRA-665)

Notes:

[1] Facilities are not exclusively located in the former NAVWPNSTA Concord Inland Area.

Abbreviations and Acronyms:

NAVWPNSTA – Naval Weapons Station
RI – typically stands for “receipt inspection”; unable to confirm

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TABLE 3-2

POPULATION OF COUNTIES ALL OR PARTIALLY WITHIN A 50-MILE RADIUS OF THE FORMER NAVWPNSTA CONCORD

County	1990 Population	2000 Population
Alameda	1,279,182	1,443,741
Contra Costa	803,731	948,816
Marin*	230,096	247,289
Napa*	110,765	124,279
Sacramento*	1,041,219	1,223,499
San Joaquin*	480,628	563,598
San Francisco	723,959	776,733
San Mateo*	649,623	707,161
Solano	340,421	394,542
Sonoma*	388,322	458,614
Santa Clara*	1,497,577	1,682,585
Stanislaus*	370,522	446,997
Yolo*	141,092	168,660
Total Population	8,057,137	9,186,514

Sources:

U.S. Census Bureau November 2008

Notes:

* Only portions of the county are within a 50-mile radius of the former NAVWPNSTA Concord.

Abbreviations and Acronyms:

NAVWPNSTA – Naval Weapons Station

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TABLE 3-3

POPULATION OF CITIES WITHIN A 10-MILE RADIUS OF THE FORMER NAVWPNSTA CONCORD

City	1990 Population	2000 Population
Antioch	62,195	90,532
Bay Point	17,453	21,534
Clayton	7,317	10,762
Clyde	Data not available	694
Concord	111,348	121,780
Martinez	31,808	35,866
Mountain View	Data not available	2,468
Pacheco	3,325	3,562
Pittsburg	47,564	56,769
Pleasant Hill	31,585	32,837
Vine Hill	3,214	3,260
Waldon	Data not available	5,133
Walnut Creek	60,569	64,296
Total Population	376,378	449,493

Sources:

U.S. Census Bureau November 2008

Abbreviations and Acronyms:

NAVWPNSTA – Naval Weapons Station

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TABLE 3-4

SCHOOLS LOCATED WITHIN A 1-MILE RADIUS OF THE FORMER NAVWPNSTA CONCORD

School	Address and Telephone Number	Age Range (Years)	Program Times	Number of Children in Program
Ygnacio Valley Christian School	4977 Concord Blvd Concord, CA 94521 (925) 798-3131	3–14	Pre-K: 8:15 am – 11:30 am K–8th grade: 8:15 am – 3:15 pm	136
Pixie Play School	1797 Ayers Rd Concord, CA 94521 (925) 689-4030	2–5	Ages 2–3: 2 days/week 9:00 am – 11:30 am Pre-K: 3 days/week 9:00 am – 12:00 pm Enrichment: 2 days/week 12:00 pm – 2:00 pm	Data not available
Silverwood Elementary School	1649 Claycord Ave Concord, CA 94521 (925) 687-1150	5–11	8:15 am – 2:45 pm	408
Angels Montessori Pre-School	1566 Bailey Rd Concord, CA 94521 (925) 686-5621	2–6	7 am – 6 pm	40–50
Mountain View Elementary School	1705 Thornwood Dr Concord, CA 94521 (925) 689-6450	5–11	7:45 am – 2:20 pm	399
Tabernacle School	4380 Concord Blvd Concord, CA 94521 (925) 685-9169	3.75–13	Day care: 6:30 am – 6:30 pm K–8th grade: 8:00 am – 3:20 pm	520
Myrtle Farm Montessori School	4976 Myrtle Dr Concord, CA 94521 (925) 356-2482	3–6	7:30 am – 4:00 pm	30
Ayers Elementary School	5120 Myrtle Dr Concord, CA 94521 (925) 682-7686	5–11	7:45 am – 2:20 pm	425
King's Valley Christian School	4255 Clayton Rd Concord, CA 94521 (925) 687-2020	2–14	Day care: 6:30 am – 6:00 pm K–8th grade: 8:00 am – 3:00 pm	304

TABLE 3-4

SCHOOLS LOCATED WITHIN A 1-MILE RADIUS OF THE FORMER NAVWPNSTA CONCORD

School	Address and Telephone Number	Age Range (Years)	Program Times	Number of Children in Program
Concord High School	4200 Concord Blvd Concord, CA 94521 (925) 687-2030	14–18	7:10 am – 3:10 pm	1,646
El Dorado Middle School	1750 West St Concord, CA 94521 (925) 682-5700	11–14	8:20 am – 3:00 pm	972
Westwood Elementary School	1748 West St Concord, CA 94521 (925) 685-4202	5–11	M, T, Th, F: 7:45 am – 2:10 pm W: 7:45 am – 1:40 pm	400
Monte Gardens Elementary School	3841 Larkspur Dr Concord, CA 94519 (925) 685-3834	5–11	8:15 am – 2:25 pm	576
Mount Diablo High School	2450 Grant St Concord, CA 94520 (925) 682-4030	14–18	M, T, Th, F: 8:00 am – 3:15 pm W: 8:00 am – 2:10 pm	1,672
Saint Agnes Elementary School	3886 Chestnut Ave Concord, CA 94519 (925) 689-3990	5–14	8:00 am – 3:00 pm	345
First Lutheran Pre-School	4002 Concord Blvd Concord, CA	2–5	6:30 am – 6:00 pm	60

Sources:

School locations from GoogleEarth; other information obtained by phone contact between TtEC (Lisa Bercik) and each school.

Abbreviations and Acronyms:

K – kindergarten
NAVWPNSTA – Naval Weapons Station

TABLE 4-1

ARCHIVES AND OTHER RESEARCH LOCATIONS

Name	Location
National Archives and Records Administration	San Bruno, California
National Archives and Records Administration	Laguna Niguel, California
National Archives and Records Administration	Washington (downtown), DC
National Archives and Records Administration	Silver Spring, Maryland
Naval Weapons Station Seal Beach	Seal Beach, California
Naval Weapons Station Seal Beach Detachment Concord	Concord, California
Navy Radiological Affairs Support Office	Yorktown, Virginia
National Personnel Records Center, Military Personnel Records	St. Louis, Missouri

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TABLE 4-2

PUBLIC NOTICE IN NEWSPAPERS

Newspaper	Date(s) Public Notice was Published
Alameda Journal	07/08/2008
Alameda Times-Star	07/06/2008
The Argus	07/06/2008
Contra Costa Times	07/06/2008
The Daily Review	07/06/2008
East County Times	07/06/2008
San Francisco Chronicle	07/06/2008
San Jose Mercury News	07/13/2008
Oakland Tribune	07/06/2008
The Sacramento Bee	07/07 and 7/14/02008
San Mateo County Times	07/06/2008
The Tri-Valley Herald	07/06/2008
Vallejo Times-Herald	07/13/2008
Valley Times	07/06/2008
West County Times	07/06/2008

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TABLE 4-3

**OUTREACH ACTIVITIES –
CENTERS THAT DISPLAYED THE FACT SHEET**

Organization	Address	Phone Number
Contra Costa County Veterans	10 Douglas Dr. #100 Martinez, CA 94553	(925) 313-1481
Contra Costa County Veterans, Branch Office	100 37th St., Room 1033 Richmond, CA 94806	(510) 374-3241
Sacramento Veterans Resource Center	7270 E. Southgate Dr. Sacramento, CA 95823	(916) 393-8387
North Coast Veterans Resource Center	2107 Third St. Eureka, CA 95501	(707) 442-5852
North Bay Veterans Resource Center	2455 Bennet Valley Rd. B-117 Santa Rosa, CA 95402	(707) 578-8387
San Francisco County Veterans Service Office	875 Stevenson St. Suite 250 San Francisco, CA 94103	(415) 554-7100
San Francisco Veterans Affairs Commission	876 Stevenson St. Suite 250 San Francisco, CA 94103	(415) 554-7100
Veterans Affairs Commission	1390 Market St, 7th Floor San Francisco, CA 94102	(415) 554-6036

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TABLE 4-4

RADIONUCLIDES IDENTIFIED IN THE HISTORICAL RECORD FOR FORMER NAVWPNSTA CONCORD

Radionuclide	Half-Life	Radiation Emitted
americium-241	432.6 years	alpha and gamma
barium-133	10.5 years	$beta^-$ and gamma
cadmium-109	461.4 days	gamma
cesium-137	30.07 years	$beta^-$ and gamma
cobalt-57	271 days	gamma
cobalt-60	23.7 days	gamma
chromium-51	23.7 days	$beta^-$
hydrogen-3 (tritium)	59.4 days	$beta^-$
iodine-125	73.8 days	$beta^-$ and gamma
iridium-192	73.8 days	$beta^-$ and gamma
manganese-54	2.6 years	$beta^-$ and gamma
sodium-22	100 years	$beta^-$
nickel-63	100 years	$beta^-$
promethium-147	138.4 days	alpha
polonium-210	138.4 days	alpha
plutonium-239	1,599 years	alpha and gamma
radium-226	115.1 days	$beta^-$ and gamma
strontium-85	64.9 years	gamma
strontium-90	28.78 years	$beta^-$
tellurium-123 metastable	119.7 days	gamma
thorium-230	7.54×10^4 years	alpha
tin-113	115.1 days	$beta^-$ and gamma
uranium-235	7.04×10^8 years	alpha and gamma
uranium-238	106.7 days	$beta^-$ and gamma
yttrium-88	106.7 days	$beta^-$ and gamma

References:

HRA-326, HRA-370, HRA-618

TABLE 4-4

RADIONUCLIDES IDENTIFIED IN THE HISTORICAL RECORD FOR FORMER NAVWPNSTA CONCORD

Notes:

This table of radionuclides was compiled based on information in the historical record. The table includes isotopes used in instrument check sources, gamma radiography devices, other nondestructive examination instruments, DU munitions, and materials sent to former NAVWPNSTA Concord for storage and disposal from other sites.

The record is not precise on the actual locations of these radionuclides. Since their use in the former NAVWPNSTA Concord could not be corroborated in all instances, all the references identified were included in this table.

Abbreviations and Acronyms:

DU – depleted uranium
NAVWPNSTA – Naval Weapons Station

TABLE 4-5

RADIONUCLIDES OF CONCERN AT FORMER NAVWPNSTA CONCORD

Radionuclide	Half-Life	Radiation Emitted	Use	Impacted Buildings
americium-241	432.6 years	alpha and gamma	Instrument calibration, X-ray nondispersive spectroscopy	IA-21A, IA-58
cesium-137	30.07 years	beta$^-$ and gamma	Check sources, potential waste material	IA-58
cobalt-60	5.3 years	beta$^-$ and gamma	Gamma radiography	IA-21, IA-58, 81, 87
hydrogen-3 (tritium)	12.3 years	beta$^-$	Special weapons	81, 87, special weapons magazines
nickel-63	100 years	beta$^-$	Electron capture detector	IA-21, IA-22
plutonium-239	2.41×10^4 years	alpha and gamma	Special weapons	81, 87, special weapons magazines
radium-226	1,599 years	alpha and gamma	Radioluminescent paint	IA-20, IA-21, IA-58
strontium-90	28.8 years	beta$^-$	Check sources, potential waste material	IA-58
uranium-235	7.04×10^8 years	alpha and gamma	Fission chamber from neutron density gauge Special weapons	IA-58 81, 87, special weapons magazines
uranium-238	7.04×10^8 years	alpha and gamma	Depleted uranium munitions X-ray machine shielding	IA-20, IA-21, IA-22, IA-58, depleted uranium storage magazines

Abbreviations and Acronyms:

NAVWPNSTA – Naval Weapons Station

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TABLE 5-1

ATOMIC ENERGY COMMISSION LICENSES ASSOCIATED WITH FORMER NAVWPNSTA CONCORD SORTED BY LICENSEE

AEC License No.	Licensee	Dates of Issuance and Termination	Licensed Radionuclide(s)	Maximum Allowable Quantity	Purpose of Use
SNM-1850	DON/Naval Weapons Station Concord	Issued February 26, 1979 Converted to NRMP No. 04-60036-H1NP May 18, 1987	Uranium-235	1.3 grams	Reuter-Stokes Fission Counter Chamber
SUB-1190	DON/Naval Sea Systems Command	November 17, 1974 Termination Unknown	Uranium-238	Variable quantities to a maximum of 16,500 pounds as penetrators in ammunition rounds	Storage and test firing of depleted uranium ammunition at various DON facilities within the state of California including Concord
SUB-1209	DON/Naval Weapons Station Concord	Issued July 19, 1974 Converted to NRMP No. 04-60036-L1NP April 1, 1987	Uranium-238	Variable quantities, originally 300 pounds	Storage and examination of depleted uranium ammunition
04-03141-01	BUSHIPS/DON/ Naval Weapons Station Concord	Issued 1959 Converted to NRMP No. 04-60036-A1NP April 1, 1987	Cobalt-60	Variable quantities to 2,000 curies	By-product isotopes used in various gamma radiography devices
			Iridium-192	Variable quantities to 100 curies	
04-03141-02	DON/Naval Weapons Station Concord	Issued February 27, 1968 Terminated February 6, 1978	Americium-241	4 millicuries	Used in X-ray Non-Dispersive Spectroscopy System
			Iodine-125	8 millicuries	
			Polonium-210	6 millicuries	

TABLE 5-1

ATOMIC ENERGY COMMISSION LICENSES ASSOCIATED WITH FORMER NAVWPNSTA CONCORD SORTED BY LICENSEE

AEC License No.	Licensee	Dates of Issuance and Termination	Licensed Radionuclide(s)	Maximum Allowable Quantity	Purpose of Use
NRMP No. 04-60036-A1NP	DON/Naval Weapons Station Concord	Issued April 1, 1987 Terminated August 27, 1990	Cobalt-60	Variable quantities to 2,000 curies	By-product isotopes used in various gamma radiography devices
			Iridium-192	Variable quantities to 100 curies	
NRMP No. 04-60036-B1NP	DON/Naval Weapons Station Concord	Issued August 21, 1989 Terminated August 6, 2008	Americium-241	15 microcuries per solid disk source	Americium-241 sources to be used for research and development Radium-226 source for storage in Building IA-58 pending disposal
			Americium-241	20 microcuries total in epoxy matrix	
			Radium-226	1 millicurie	
NRMP No. 04-60036-C1NP	DON/Naval Weapons Station Concord	Issued November 1, 1994 Terminated December 12, 1995	Americium-241	Not to exceed 30 curies	Storage of sources in two calibrators in Building IA-58
			Cesium-137	Not to exceed 130 millicuries	
NRMP No. 04-60036-H1NP	DON/Naval Weapons Station Concord	Issued May 18, 1987 Terminated August 2, 1994	Uranium-235	1.3 grams	Reuter-Stokes Fission Counter Chamber
NRMP No. 04-60036-L1NP	DON/Naval Weapons Station Concord	Issued January 4, 1989 Terminated August 16, 2001	Uranium-238	250 kilograms	Examination and storage of depleted uranium ammunition

Abbreviations and Acronyms:

AEC – Atomic Energy Commission
BUSHIPS – DON Bureau of Ships
DON – Department of the Navy
NRMP – Navy Radioactive Material Permit

TABLE 6-1

SPECIAL WEAPONS FACILITIES AT THE FORMER NAVWPNSTA CONCORD

Facility	Facility Function at Time of Base Closure
Magazine 2AC-61	Magazine Special Weapons – Bulk
Magazine 2AC-62	Magazine Special Weapons – RI[1]
Magazine 2AC-63	Magazine Special Weapons – RI
Magazine 2AC-64	Magazine Special Weapons – RI
Magazine 2AC-65	Magazine Special Weapons – RI
Magazine 2AC-66	Magazine Special Weapons – RI
Magazine 2AC-67	Magazine Special Weapons – RI
Magazine 2AC-68	Magazine Special Weapons – RI
Magazine 2AC-69	Magazine Special Weapons – RI
Magazine 2AC-70	Magazine Special Weapons – RI
Magazine 2AC-71	Magazine Special Weapons – RI
Magazine 2AC-78	Magazine Special Weapons – RI
Magazine 2AT-5	Special Weapons Magazine – Bulk
Magazine 2AT-6	Special Weapons Magazine – Bulk
Magazine 2AT-7	Special Weapons Magazine – Bulk
Magazine 2AT-8	Special Weapons Magazine – Bulk
Magazine 2AT-9	Special Weapons Magazine – Bulk
Magazine 2AT-10	Special Weapons Magazine – Bulk
Magazine 2AT-11	Special Weapons Magazine – Bulk
Magazine 2AT-12	Special Weapons Magazine – Bulk
Magazine 2AT-13	Special Weapons Magazine – Bulk
Magazine 2AT-14	Special Weapons Magazine – Bulk
Magazine 2AT-15	Special Weapons Magazine – Bulk
Magazine 2AT-16	Special Weapons Magazine – Bulk
Magazine 2AT-17	Special Weapons Magazine – Bulk
Magazine 2AT-18	Special Weapons Magazine – Bulk
Magazine 2AT-19	Special Weapons Magazine – Bulk
Magazine 2AT-20	Special Weapons Magazine – Bulk
Magazine 2AT-72	Magazine Special Weapons – RI

TABLE 6-1

SPECIAL WEAPONS FACILITIES AT THE FORMER NAVWPNSTA CONCORD

Facility	Facility Function at Time of Base Closure
Magazine 2AT-73	Magazine Special Weapons – RI
Magazine 2AT-74	Magazine Special Weapons – RI
Magazine 2AT-75	Magazine Special Weapons – RI
Magazine 2AT-76	Magazine Special Weapons – RI
Magazine 2AT-77	Magazine Special Weapons – RI
Magazine 2HT-14	Special Weapons Magazine

Source:

Weston Solutions, Inc. 2005 (HRA-665)

Notes:

[1] RI – typically stands for "receipt inspection"; unable to confirm

Abbreviations and Acronyms:

NAVWPNSTA – Naval Weapons Station

TABLE 8-1

IMPACTED FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.	Facility Function at Time of Base Closure	Other Facility Functions
IA-20	Evaluation Laboratory	Materials Laboratory (Hydraulic Fluids Testing)
IA-21	Quality Evaluation Laboratory	Materials Laboratory, Guided Missile Laboratory, and Computer Analysis Lab
IA-21A	Evaluation Laboratory	Storm Water Management Unit 10
IA-22	Evaluation Laboratory	Materials Laboratory
IA-58	X-Ray Building – Quality Engineering Laboratory	Materials Laboratory
81	Weapons Maintenance Building	Explosive and Toxic Laydown Area, Ordnance Maintenance and Test Building
87	Inert Storage Building	Sparrow Air Launch Interceptor Missile Integration, Maintenance and Test Facility
6LC87	Small Arms/Pyrotechnic	
6LC88	Small Arms/Pyrotechnic	
6LC96	Projectile Magazine – Bulk	
6PC44	Fixed Ammunition Magazine – RI[1]	
6LC58 Field verified as 6PCZ58	Guided Missile Magazine – RI	
6PC65 Field verified as 6PCZ65	Fixed Ammunition Magazine – RI	
2AC61	Magazine Special Weapons – Bulk	
2AC62	Magazine Special Weapons – RI	
2AC63	Magazine Special Weapons – RI	
2AC64	Magazine Special Weapons – RI	

TABLE 8-1

IMPACTED FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.	Facility Function at Time of Base Closure	Other Facility Functions
2AC65	Magazine Special Weapons – RI	
2AC66	Magazine Special Weapons – RI	
2AC67	Magazine Special Weapons – RI	
2AC68	Magazine Special Weapons – RI	
2AC69	Magazine Special Weapons – RI	
2AC70	Magazine Special Weapons – RI	
2AC71	Magazine Special Weapons – RI	
2AC78	Magazine Special Weapons – RI	
2AT5	Special Weapons Magazine – Bulk	
2AT6	Special Weapons Magazine – Bulk	
2AT7	Special Weapons Magazine – Bulk	
2AT8	Special Weapons Magazine – Bulk	
2AT9	Special Weapons Magazine – Bulk	
2AT10	Special Weapons Magazine – Bulk	
2AT11	Special Weapons Magazine – Bulk	
2AT12	Special Weapons Magazine – Bulk	
2AT13	Special Weapons Magazine – Bulk	
2AT14	Special Weapons Magazine – Bulk	
2AT15	Special Weapons Magazine – Bulk	
2AT16	Special Weapons Magazine – Bulk	
2AT17	Special Weapons Magazine – Bulk	
2AT18	Special Weapons Magazine – Bulk	

TABLE 8-1

IMPACTED FACILITIES AT THE FORMER NAVWPNSTA CONCORD BY BUILDING NUMBER

Building/ Site No.	Facility Function at Time of Base Closure	Other Facility Functions
2AT19	Special Weapons Magazine – Bulk	
2AT20	Special Weapons Magazine – Bulk	
2AT72	Magazine Special Weapons – RI	
2AT73	Magazine Special Weapons – RI	
2AT74	Magazine Special Weapons – RI	
2AT75	Magazine Special Weapons – RI	
2AT76	Magazine Special Weapons – RI	
2AT77	Magazine Special Weapons – RI	
2HT14	Special Weapons Magazine	

Source:

Weston Solutions, Inc. 2005 (HRA-665)

Notes:

[1] RI – typically stands for "receipt inspection"; unable to confirm

Abbreviations and Acronyms:

NAVWPNSTA – Naval Weapons Station

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TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Building IA-20				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{226}Ra, ^{238}U Scoping survey
Building IA-21				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{60}Co, ^{63}Ni, ^{226}Ra, ^{238}U Scoping survey
Building IA-21A				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{238}U, ^{241}Am Scoping survey
Building IA-22				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{63}Ni, ^{238}U Scoping survey
Building IA-58				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{60}Co, ^{90}Sr, ^{137}Cs, ^{226}Ra, ^{235}U, ^{238}U, ^{241}Am Scoping survey
Building 81				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{3}H, ^{60}Co, ^{235}U, ^{239}Pu Scoping survey
Building 87				✓		N	L	N	N	N	L	L	N	L	N	N	N	L	L	^{3}H, ^{60}Co, ^{235}U, ^{239}Pu Scoping survey
Depleted Uranium Munitions Magazine 6LC87				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{238}U Scoping survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Depleted Uranium Munitions Magazine 6LC88				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{238}U Scoping survey
Depleted Uranium Munitions Magazine 6LC96				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{238}U Scoping survey
Depleted Uranium Munitions Magazine 6PC44				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{238}U Scoping survey
Depleted Uranium Munitions Magazine 6PCZ65				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{238}U Scoping survey
Depleted Uranium Munitions Magazine 6PCZ58				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{238}U Scoping survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Special Weapons – Bulk Magazine 2AC61				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT5				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT6				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT7				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT8				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT9				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT10				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Special Weapons – Bulk Magazine 2AT11				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT12				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT13				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT14				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT15				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT16				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT17				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping Survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Special Weapons – Bulk Magazine 2AT18				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT19				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – Bulk Magazine 2AT20				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC62				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC63				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC64				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC65				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Special Weapons – RI Magazine 2AC66				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC67				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC68				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC69				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC70				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC71				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC72				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Building No. or Area	Contamination Potential					Contaminated Media							Potential Migration Pathways							Radionuclides of Concern and Recommended Actions
	Known-Restricted Access	Known-Continued Access	Likely	Unlikely	Unknown	Surface Soil	Subsurface Soils	Surface water	Groundwater	Air	Structures	Drainage System	Surface Soil	Subsurface Soil	Surface Water	Groundwater	Air	Structures	Drainage System	
Special Weapons – RI Magazine 2AC73				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC74				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC75				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC76				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC77				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons – RI Magazine 2AC78				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey
Special Weapons Magazine 2HT-14				✓		N	N	N	N	N	L	N	N	N	N	N	N	N	N	^{3}H, ^{235}U, ^{239}Pu Scoping survey

TABLE 8-2

IMPACTED SITE ASSESSMENT AND CLASSIFICATION

Notes:

L – Low = The potential for contamination in the type of media or migration pathway is remote.
N – None = Evidence of contamination in the specific media or migration pathway has not been found, or known contamination has been removed, and surveys indicate that the media or migration pathway meet today's release criteria.
RI – typically stands for "receipt inspection"; unable to confirm.

Abbreviations and Acronyms:

^{241}Am – americium-241
^{60}Co – cobalt-30
^{137}Cs - cesium-137
^{3}H – hydrogen-3 (tritium)
^{63}Ni – nickel-63
^{239}Pu – plutonium-239
^{226}Ra – radium-226
^{90}Sr – strontium-90
^{235}U – uranium-235
^{238}U – uranium-238

FIGURES

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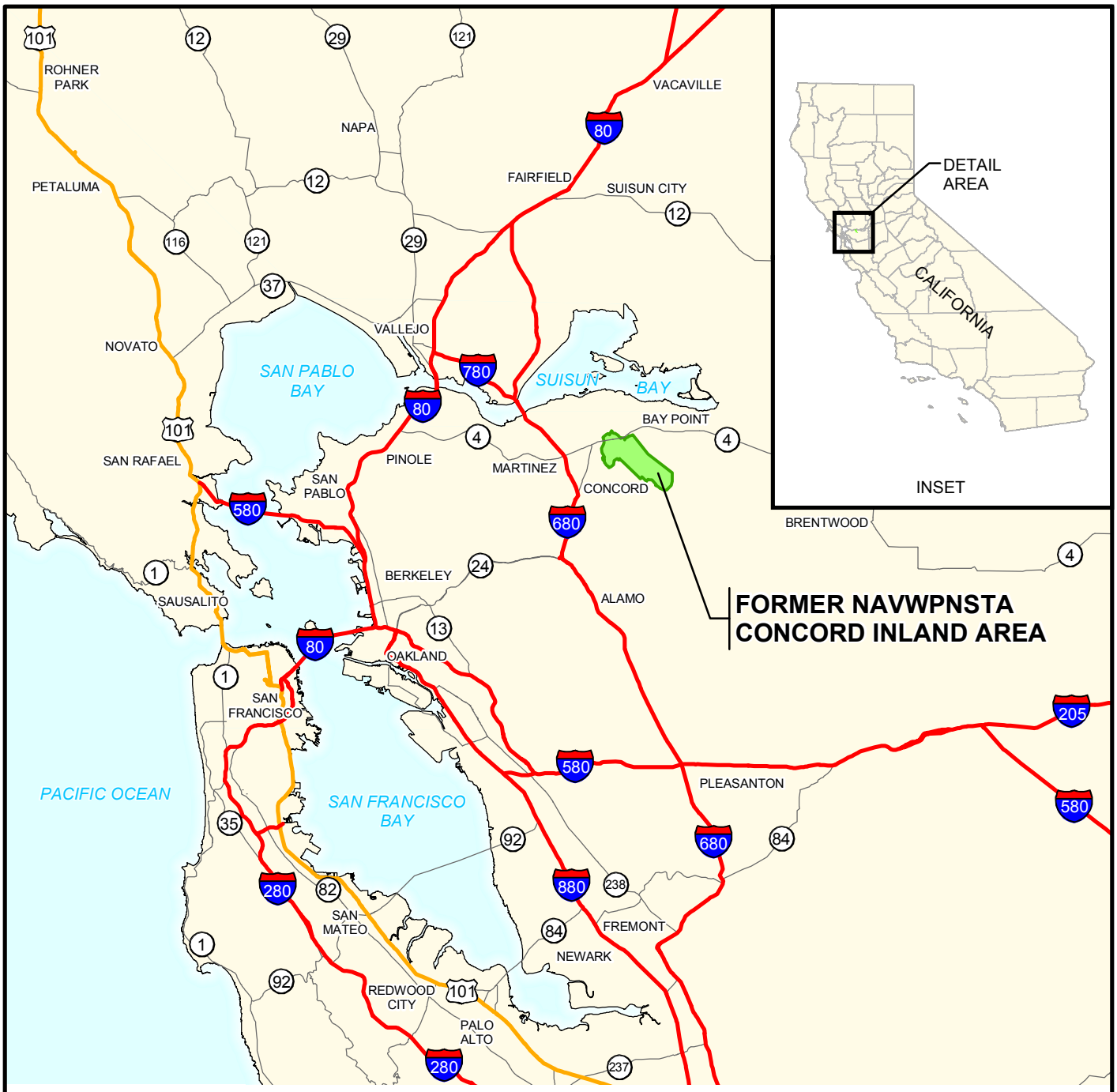


LEGEND

- STATE HIGHWAY
- US HIGHWAY
- INTERSTATE HIGHWAY
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- WATER

5 0 5 10 Miles

N

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

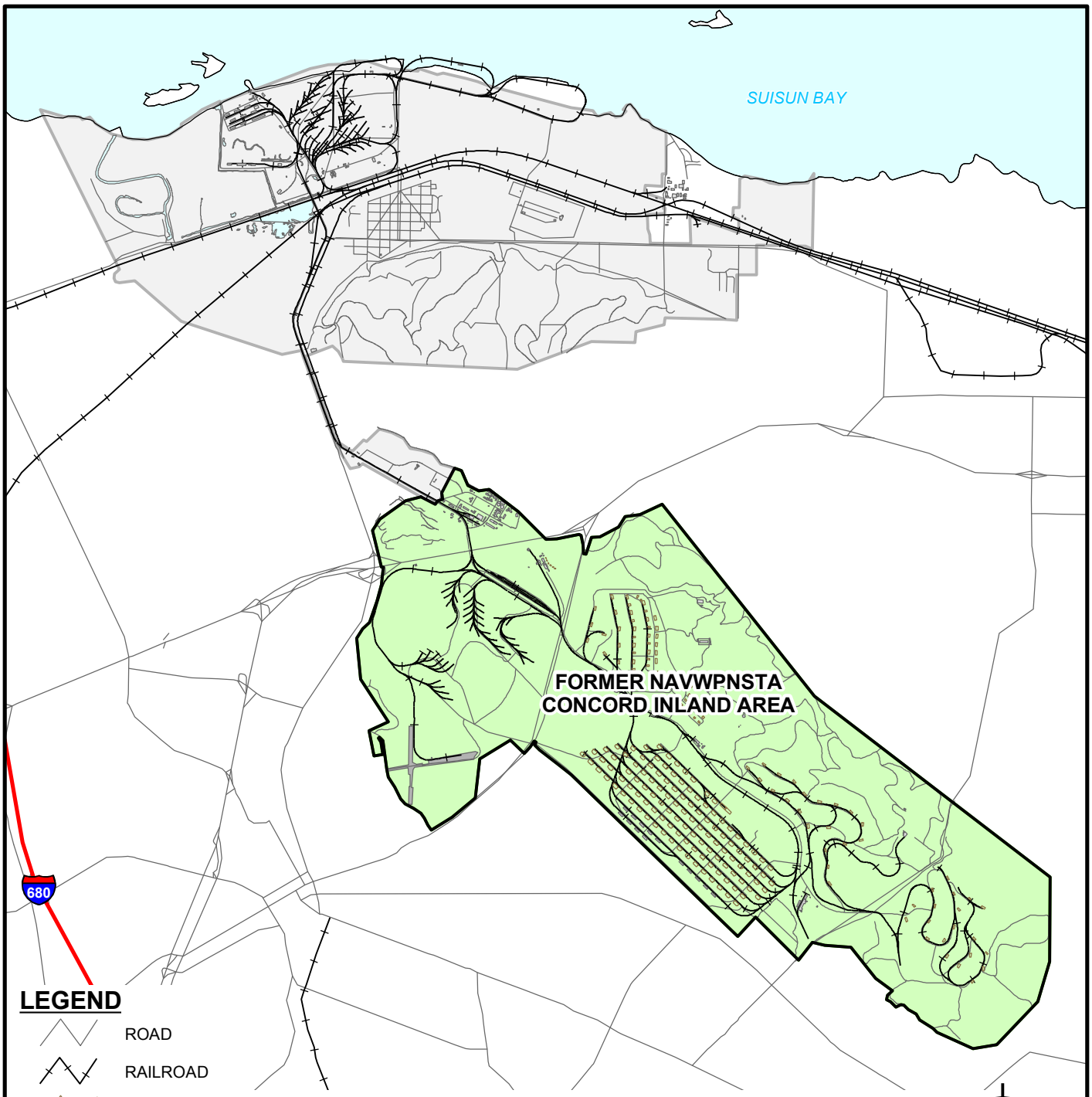
FIGURE 2-1

REGIONAL LOCATION MAP

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401R4528.mxd

TETRA TECH EC, INC.



LEGEND

- ROAD
- RAILROAD
- AMMUNITION MAGAZINE
- INTERSTATE HIGHWAY
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- CONCORD TIDAL AREA BOUNDARY
- RUNWAY
- WATER

0.5 0 0.5 1 Miles

N

NOTES:

A 115-ACRE SECTION OF THE NORTHWESTERN PART OF FORMER NAVWPNSTA CONCORD IS CURRENTLY AN ACTIVE U.S. DEPARTMENT OF THE ARMY INSTALLATION.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

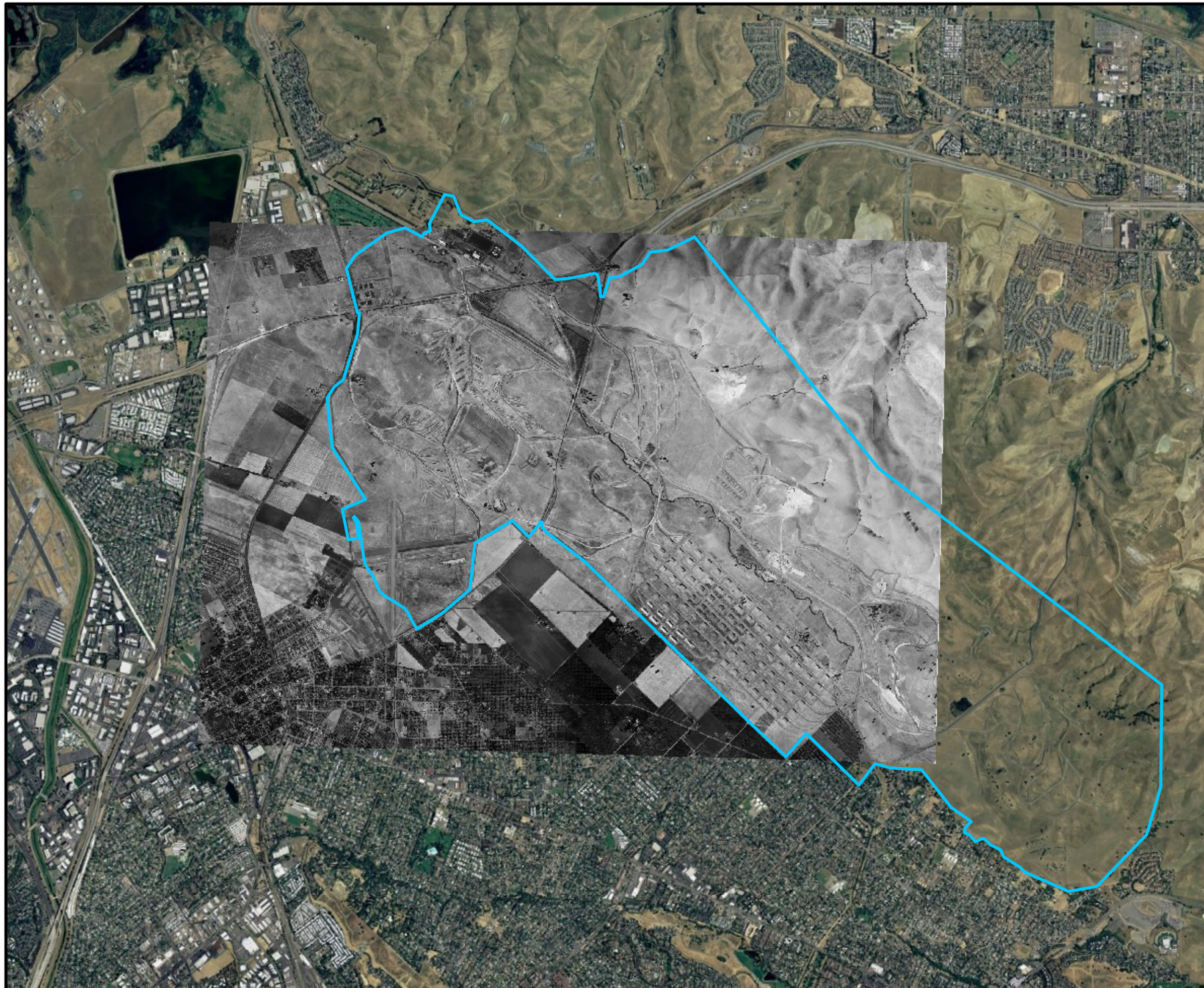
FIGURE 2-2

SITE LOCATION MAP

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401S4529.mxd

TETRA TECH EC, INC.



LEGEND

FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

NOTE:

HISTORICAL IMAGERY IS PROVIDED FOR THE AREAS WHERE THE IMPACTED SITES ARE LOCATED. CURRENT IMAGERY (JUNE 15, 2006) IS PROVIDED AS REFERENCE.

N

1,500 0 1,500 3,000 Feet

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

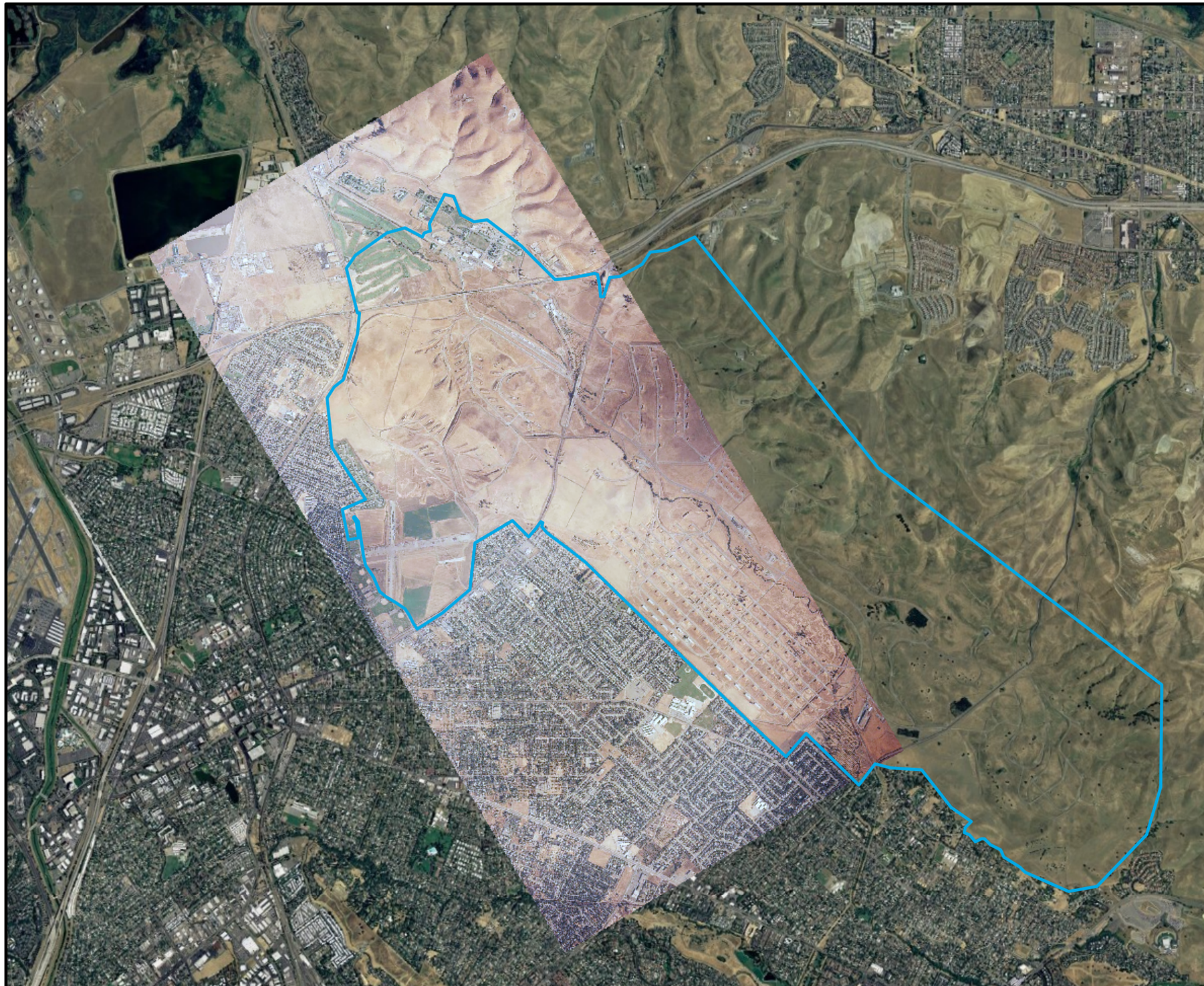
FIGURE 3-1

CONCORD AERIAL IMAGE 1946

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4530.mxd

TETRA TECH EC, INC.



LEGEND

FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

NOTE:

HISTORICAL IMAGERY IS PROVIDED FOR THE AREAS WHERE THE IMPACTED SITES ARE LOCATED. CURRENT IMAGERY (JUNE 15, 2006) IS PROVIDED AS REFERENCE.

N

1,500 0 1,500 3,000 Feet

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

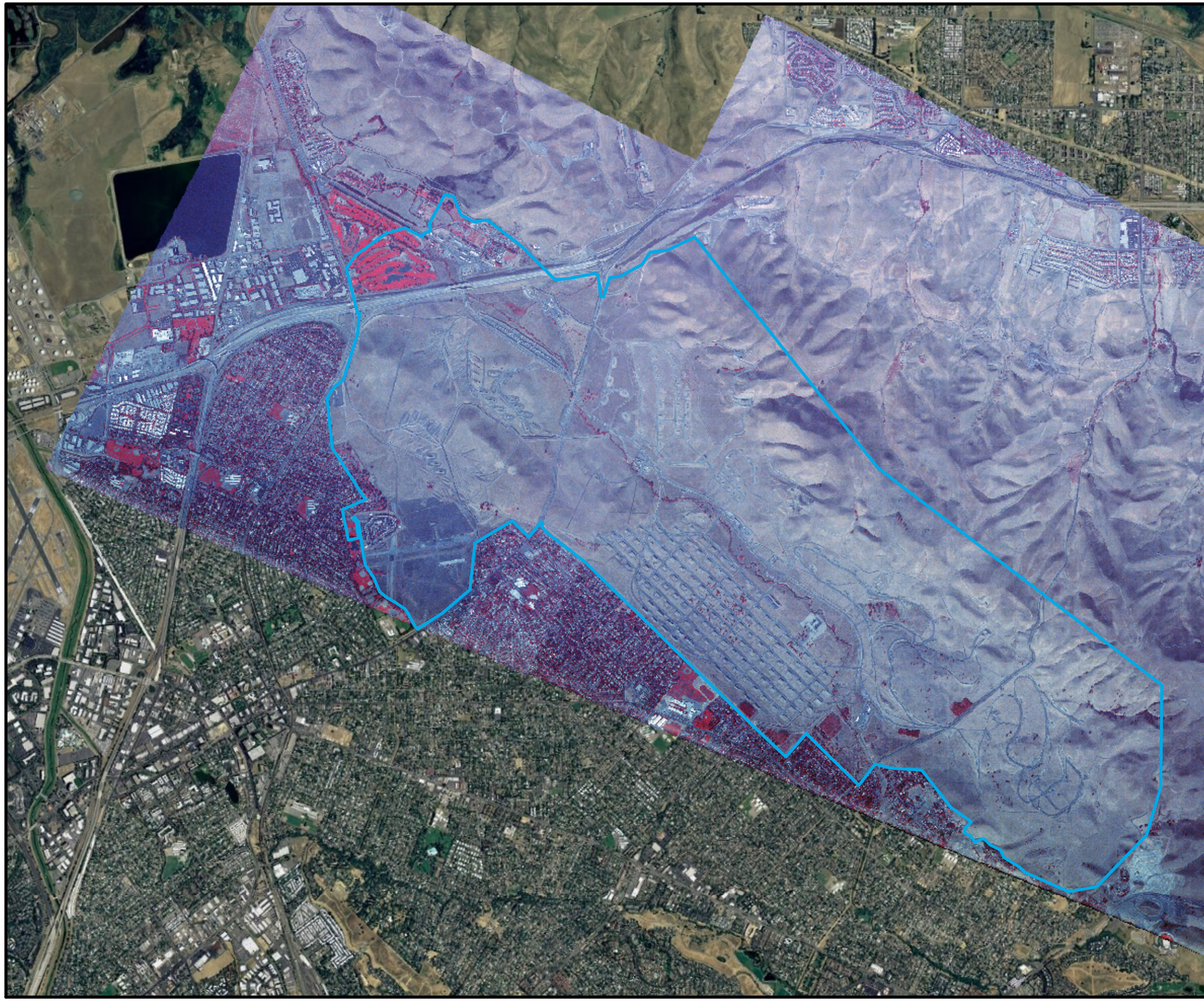
FIGURE 3-2

CONCORD AERIAL IMAGE 1973

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4531.mxd

TETRA TECH EC, INC.



LEGEND

FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

N

1,500 0 1,500 3,000 Feet

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 3-3

CONCORD AERIAL IMAGE 1991

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4532.mxd

TETRA TECH EC, INC.

LEGEND

FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

N

1,500 0 1,500 3,000 Feet

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

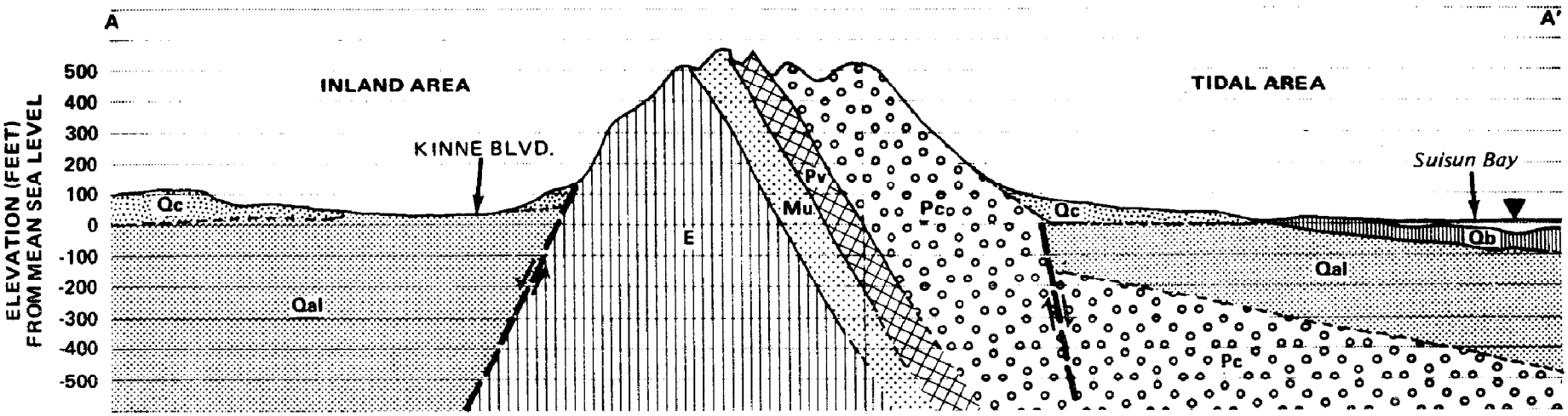
FIGURE 3-4

CONCORD AERIAL IMAGE 2006

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4533.mxd

TETRA TECH EC, INC.



VERTICAL EXAGGERATION = 5x

LEGEND

- Qb — Bay Mud
- Qal — Alluvium
- Qc — Terrace Deposits - Montezuma Formation
- Pc' — Volcanic Tuffs - Orinda Formation
- Pv — Volcanic Lavas - Moraga Formation
- Mu — Marine Conglomerates - San Pablo Group
- E — Undifferentiated Marine Sandstones and Shales

SOURCE:

ADAPTED FROM CONTRA COSTA COUNTY - GEOLOGIC MAP SHOWING MINES, QUARRIES, AND GAS WELLS, 1958, CALIFORNIA DIVISION OF MINES AND GEOLOGY.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

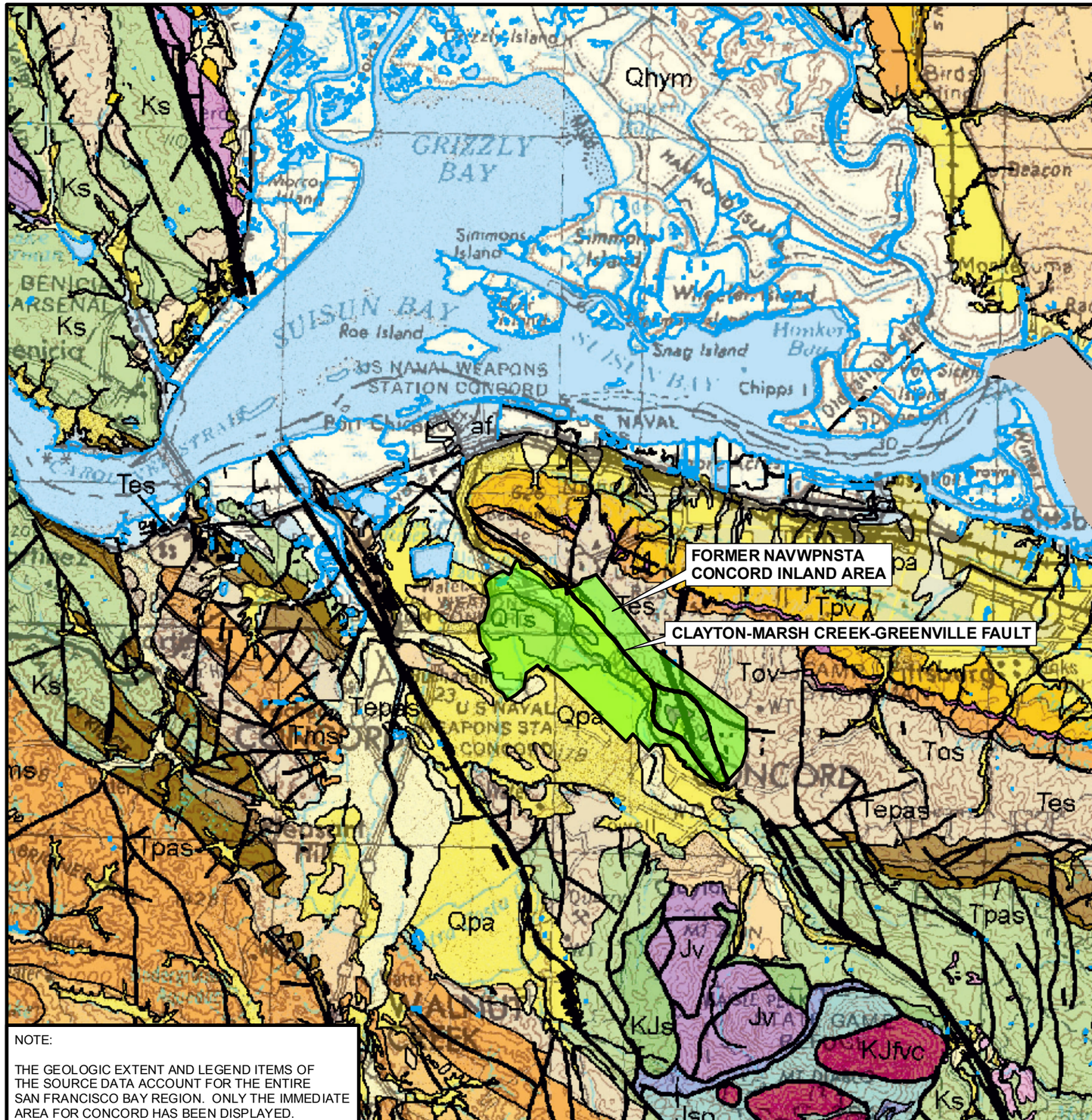
FIGURE 3-5

GEOLOGIC CROSS SECTION SHOWING MAJOR FORMATIONS

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4534.mxd

TETRA TECH EC, INC.



NOTE:

THE GEOLOGIC EXTENT AND LEGEND ITEMS OF THE SOURCE DATA ACCOUNT FOR THE ENTIRE SAN FRANCISCO BAY REGION. ONLY THE IMMEDIATE AREA FOR CONCORD HAS BEEN DISPLAYED.

LEGEND

SURFICIAL SEDIMENTS

af	Artificial Fill
Qhym	Mud deposits (late Holocene)
Qhy	Alluvium (late Holocene)
Qha	Alluvium (Holocene)
Qs	Beach and dune sand (Quaternary)
Qsl	Hillslope Deposits (Quaternary)
Qpa	Alluvium (Pleistocene)
Qt	Marine terrace deposits (Pleistocene)
Qoa	Alluvium (early Pleistocene)

N

1 0 1 2 Miles

OVERLYING ROCKS

QTs	Sediments (early Pleistocene and (or) Pliocene)
QTv	Volcanic rocks (early Pleistocene and (or) Pliocene)
Tps	Sedimentary rocks (Pliocene)
Tpv	Volcanic rocks (Pliocene)
Tpms	Sedimentary rocks (Pliocene and early Miocene)
Tpmv	Volcanic rocks (Pliocene and early Miocene)
Tms	Sedimentary rocks (Miocene)
Tmv	Volcanic rocks (Miocene)
Tmos	Sedimentary rocks (Miocene and (or) Oligocene)
Tmov	Volcanic rocks (Miocene and/or Oligocene)
Tmoes	Sedimentary rocks (Miocene, Oligocene, and (or) Eocene)
Tos	Sedimentary rocks (Oligocene)
Tov	Volcanic rocks (Oligocene)
Toes	Sedimentary rocks (Oligocene and (or) Eocene)
Tes	Sedimentary rocks (Eocene)
Tepas	Sedimentary rocks (Eocene and (or) Paleocene)
Tpas	Sedimentary rocks (Paleocene)
TKs	Sedimentary rocks (Paleocene and (or) Late Cretaceous)

BASEMENT COMPLEX ROCKS

TKfs	Franciscan Complex sedimentary rocks (Eocene, Paleocene, and (or) Late Cretaceous)
fsr	Franciscan Complex mélange (Eocen, Paleocent, and (or) Late Cretaceous)
TKfv	Franciscan Complex volcanic rocks (Paleocene and (or) Late Cretaceous)
Ks	Great Valley complex sedimentary rocks (Cretaceous)
Kfs	Franciscan Complex sedimentary rocks (Cretaceous)
Kfv	Franciscan Complex volcanic rocks (Cretaceous)
Kfm	Franciscan Complex metamorphic rocks (Cretaceous)
Kgr	Salinian complex plutonic (granite) rocks (Cretaceous)
KJs	Great Valley complex sedimentary rocks (Early Cretaceous and (or) Late Jurassic)
KJv	Franciscan or Great Valley complex volcanic rocks (Early Cretaceous and (or) Late Jurassic)
KJfs	Franciscan Complex sedimentary rocks (Early Cretaceous and (or) Late Jurassic)
KJfc	Franciscan Complex chert (Early Cretaceous and (or) Late Jurassic)
KJfv	Franciscan Complex volcanic rocks (Early Cretaceous and (or) Late Jurassic)
KJfm	Franciscan Complex metamorphic rocks (Early Cretaceous and (or) Late Jurassic)
KJfvc	Franciscan Complex volcanic rocks and chert (Early Cretaceous and (or) Late Jurassic)
KJfvs	Franciscan Complex volcanic and sedimentary rocks (Early Cretaceous and (or) Late Jurassic)
Jv	Great Valley complex volcanic rocks (Jurassic)
Ji	Great Valley complex plutonic rocks (Jurassic)
Jsp	Great Valley complex serpentinite (Jurassic)
Jfv	Franciscan Complex volcanic rocks (Jurassic)
Jhg	Salinian complex plutonic rocks (Jurassic)
MzPzm	Salinian complex metamorphic rocks (Mesozoic and (or) Paleozoic)

FAULT

FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

WATER

SOURCE:

U.S. GEOLOGICAL SURVEY

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 3-6

CONTRA COSTA COUNTY GEOLOGIC MAP

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4535.mxd

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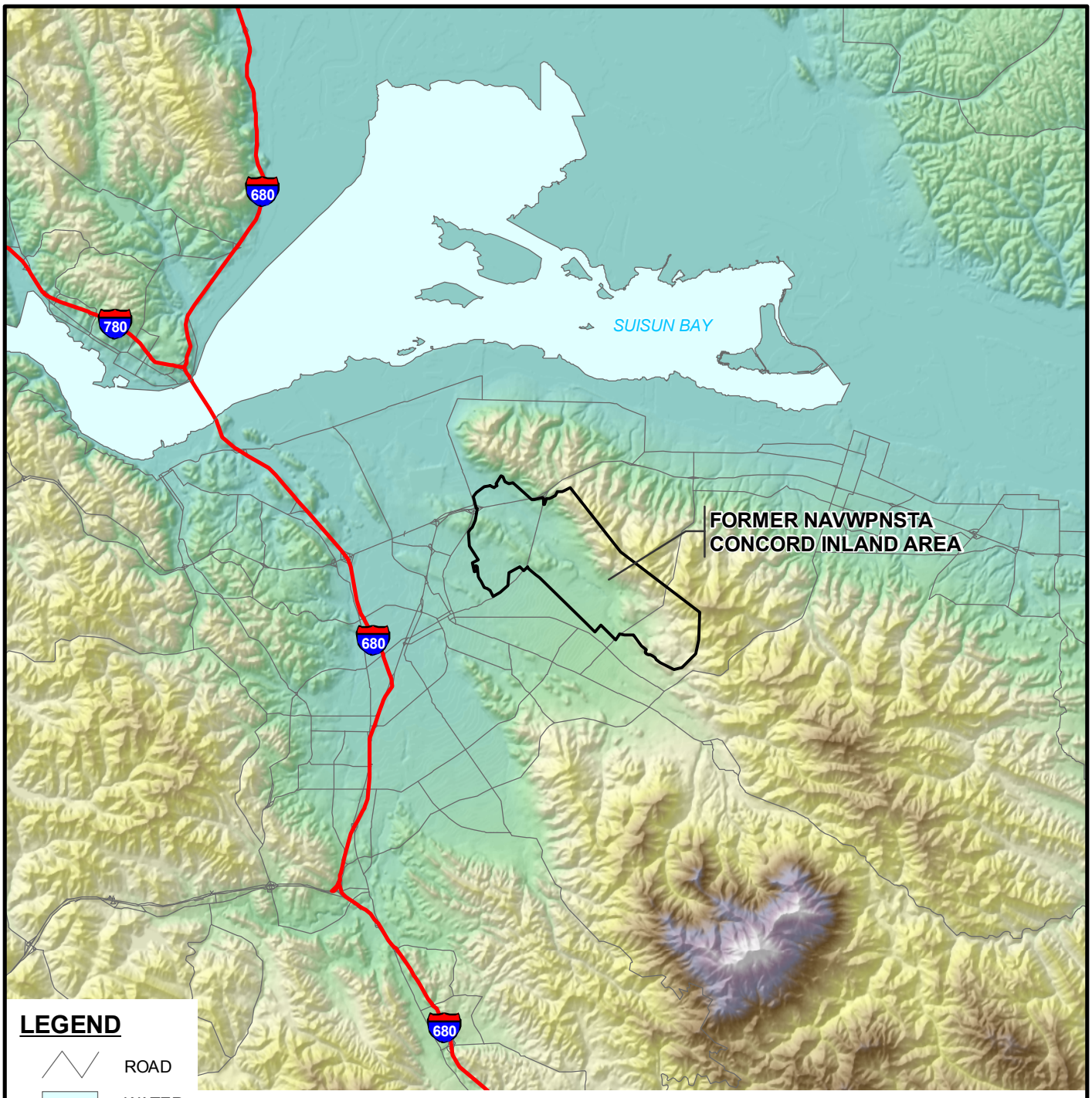


LEGEND

ROAD

WATER

FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

680 INTERSTATE HIGHWAY

HIGH ELEVATION : 1000 FT

LOW ELEVATION : 0 FT

1.5 0 1.5 3 Miles

N

NOTES:

A 115-ACRE SECTION OF THE NORTHWESTERN PART OF FORMER NAVWPNSTA CONCORD IS CURRENTLY AN ACTIVE U.S. DEPARTMENT OF THE ARMY INSTALLATION.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

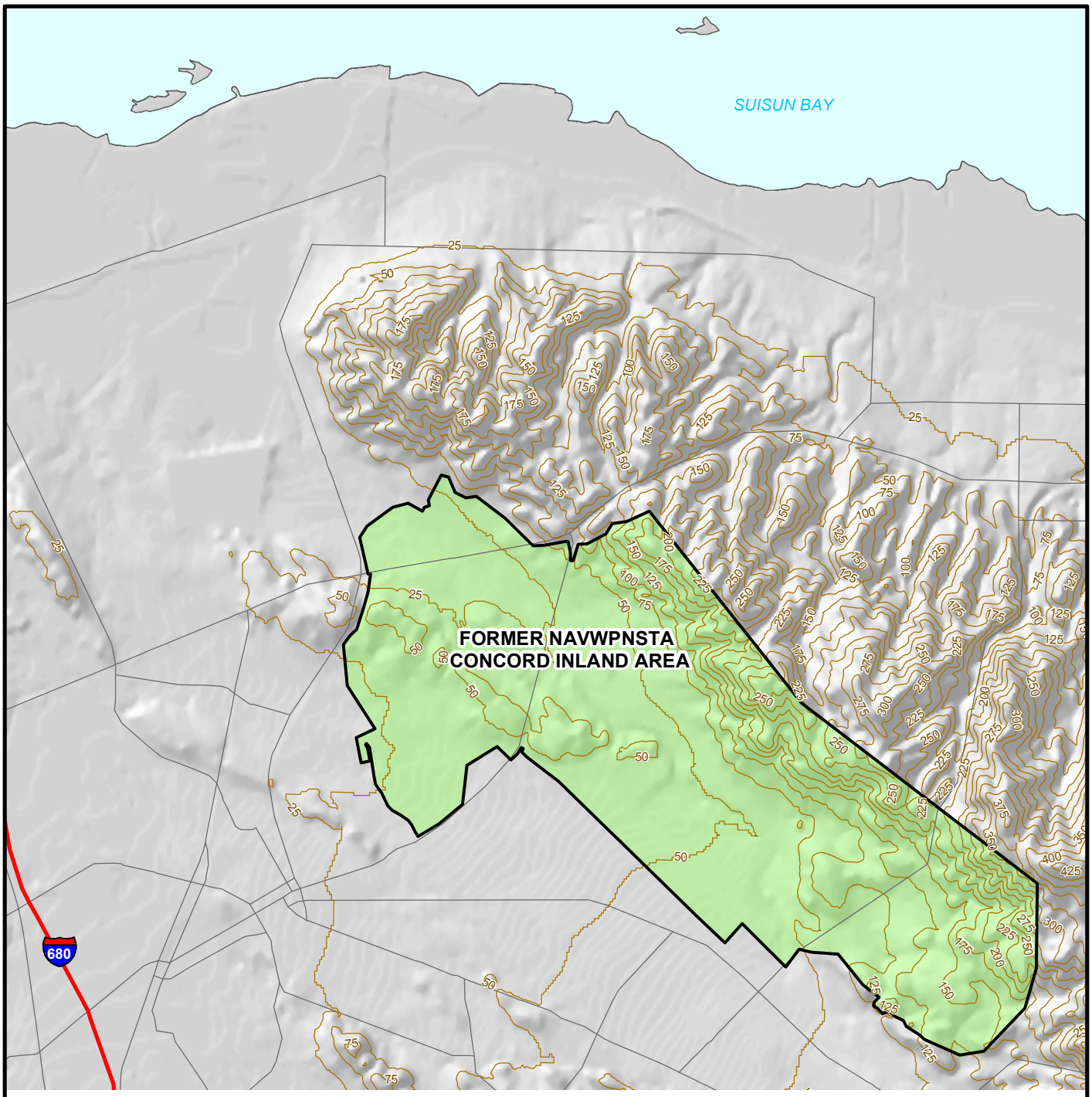
FIGURE 3-7

CONTRA COSTA COUNTY ELEVATION MAP

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4536.mxd

TETRA TECH EC, INC.



LEGEND

- CONTOUR AND ELEVATION (25-FOOT INTERVAL)
- ROAD
- INTERSTATE HIGHWAY
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- WATER

N

0.5 0 0.5 1 Miles

NOTES:

A 115-ACRE SECTION OF THE NORTHWESTERN PART OF FORMER NAVWPNSTA CONCORD IS CURRENTLY AN ACTIVE U.S. DEPARTMENT OF THE ARMY INSTALLATION.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

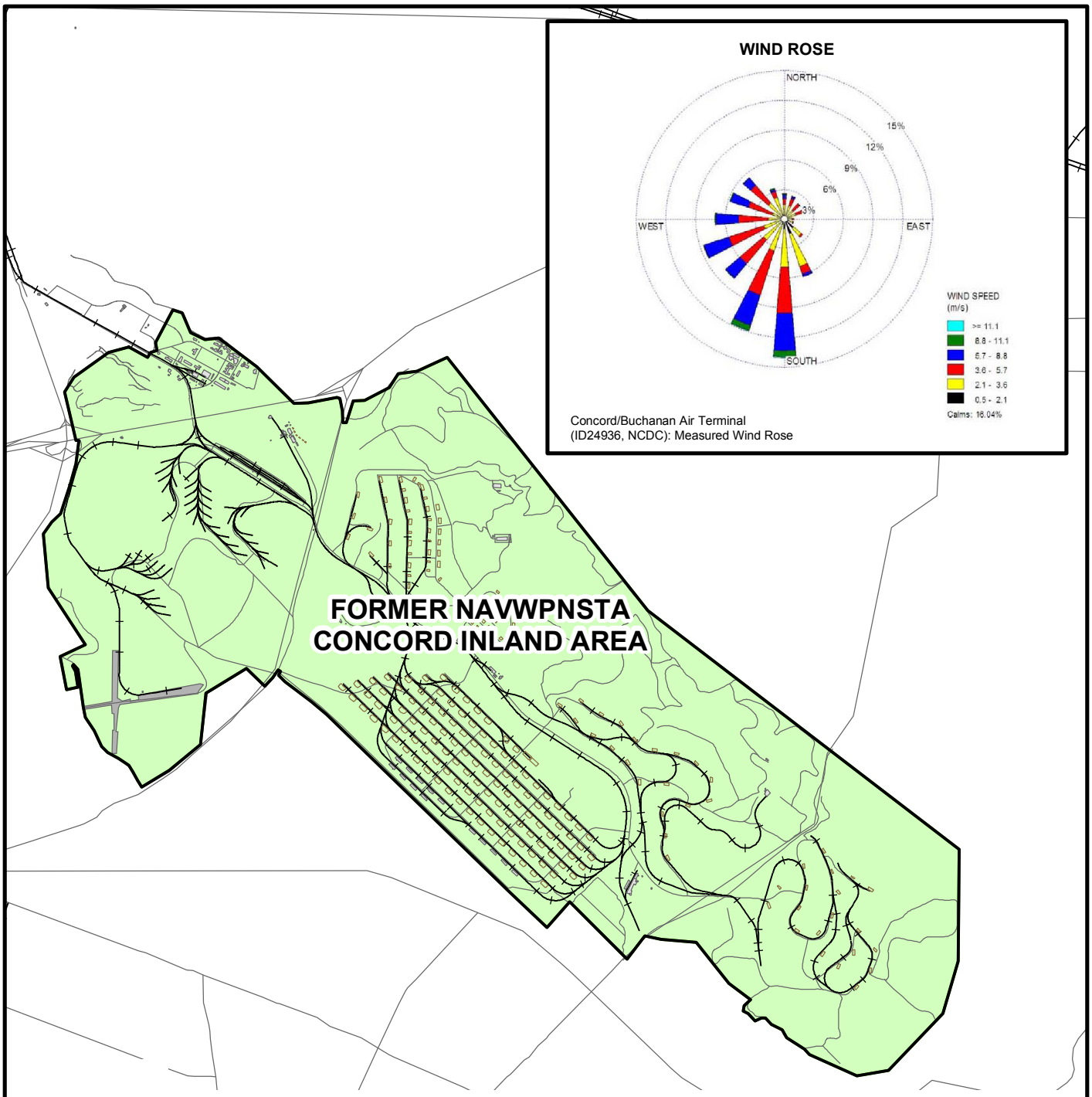
FIGURE 3-8

FORMER NAVWPNSTA CONCORD TOPOGRAPHIC MAP

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4537.mxd

TETRA TECH EC, INC.



LEGEND

- ROAD
- RAILROAD
- AMMUNITION MAGAZINE
- RUNWAY
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY

N

2,000 0 2,000 4,000
Feet

NOTES:

A 115-ACRE SECTION OF THE NORTHWESTERN PART OF FORMER NAVWPNSTA CONCORD IS CURRENTLY AN ACTIVE U.S. DEPARTMENT OF THE ARMY INSTALLATION.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 4-1

HISTORICAL RADIOLOGICAL ASSESSMENT - PHYSICAL BOUNDARY

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4538.mxd

TETRA TECH EC, INC.

LEGEND

- ROAD
- AMMUNITION MAGAZINE
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- BUILDING
- RUNWAY

50 0 50 100 Feet

N

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

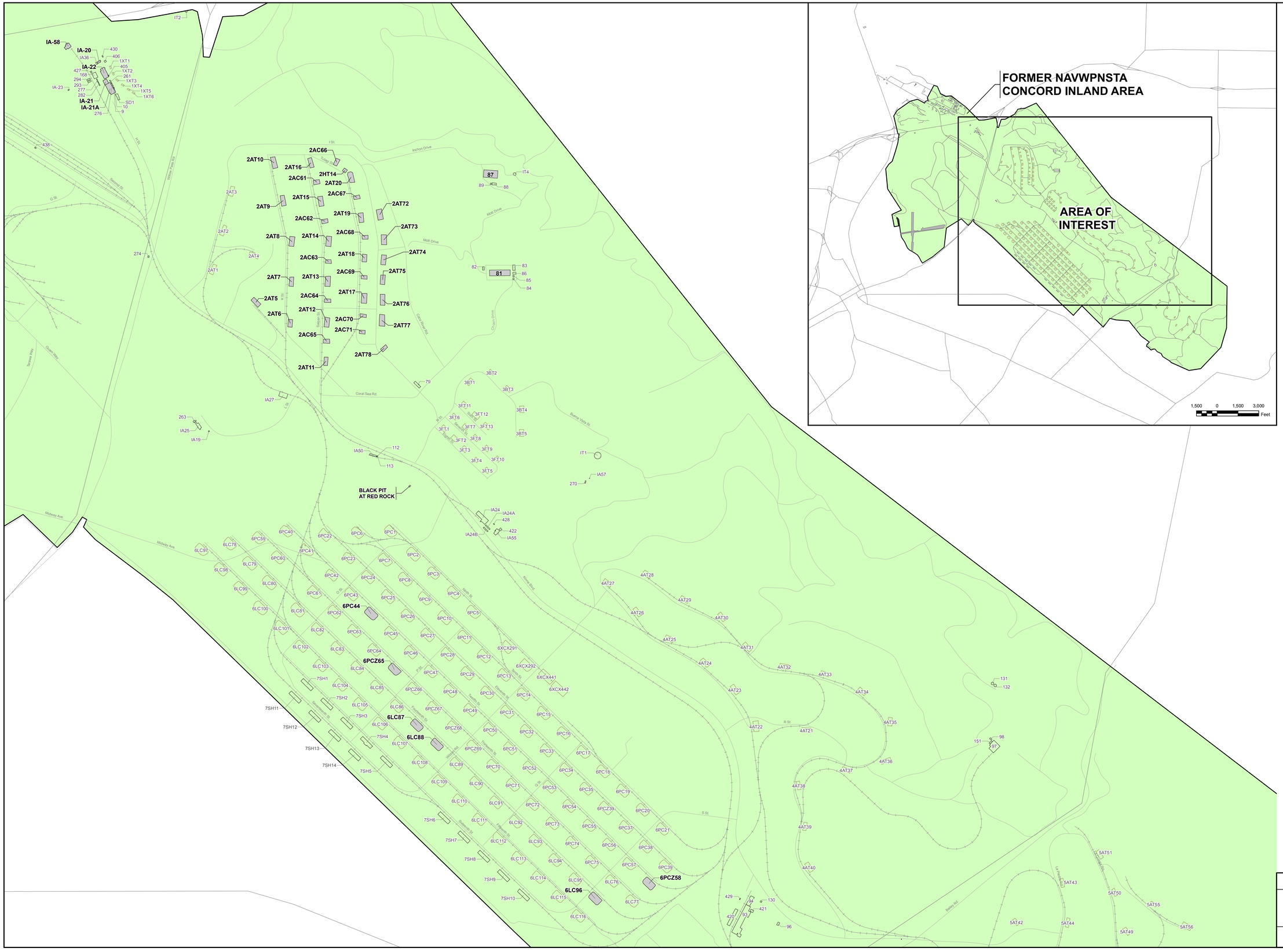
FIGURE 6-1

BLACK PIT AT RED ROCK

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: C
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4539.mxd

TETRA TECH EC, INC.



LEGEND

- ROAD
- RAILROAD
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- 81 IMPACTED SITE
- 6PC1 AMMUNITION MAGAZINE
- 83 BUILDING

NOTES:

A 115-ACRE SECTION OF THE NORTHWESTERN PART OF NAVWPNSTA CONCORD INLAND AREA IS CURRENTLY AN ACTIVE U.S. DEPARTMENT OF THE ARMY INSTALLATION.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-1

IMPACTED SITES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: C
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4540.mxd

TETRA TECH EC INC.

LEGEND

- ROAD
- RAILROAD
- AMMUNITION MAGAZINE
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- BUILDING
- RUNWAY

N

50 0 50 100 Feet

NOTE:

ONLY THE SITES CALLED OUT IN SECTION 8.0 ARE CONSIDERED IMPACTED FOR THE PURPOSE OF THIS HISTORICAL RADIOLOGICAL ASSESSMENT.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

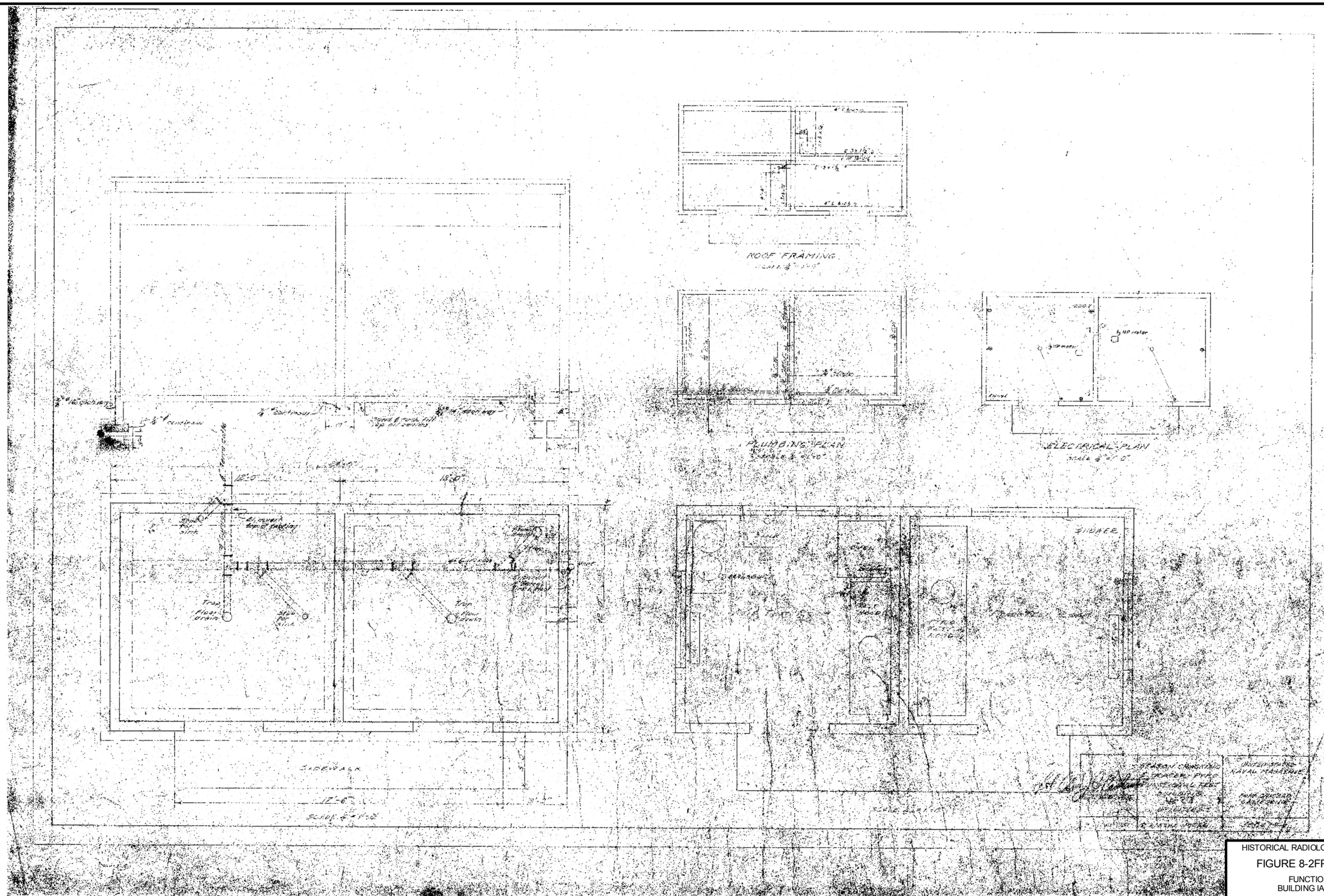
FIGURE 8-2

BUILDINGS IA-20, IA-21, IA-21A, AND IA-22

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4541.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

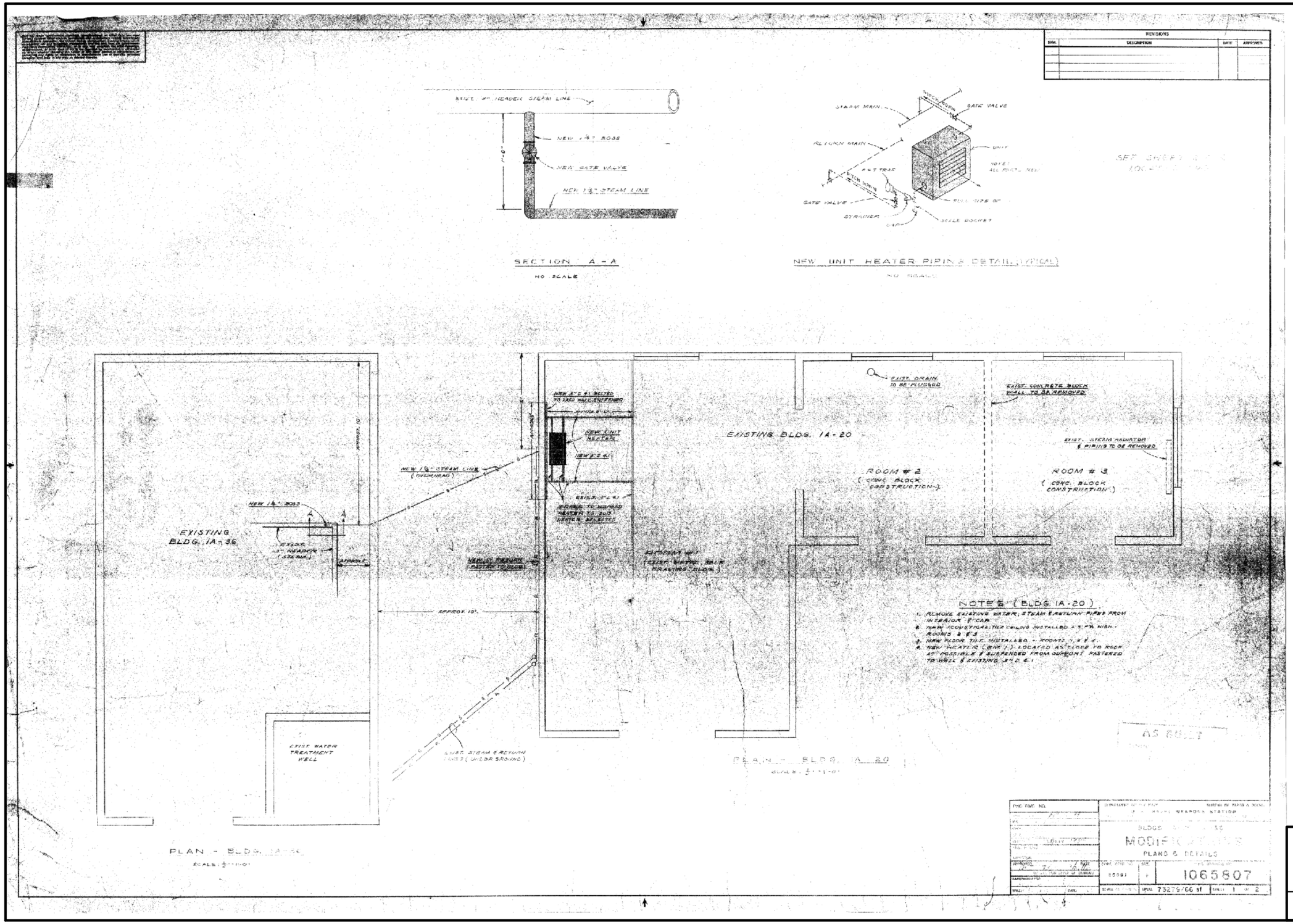
FIGURE 8-2FP BLDG IA-20a

FUNCTIONAL TEST
BUILDING IA-20 UTILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011L4542.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

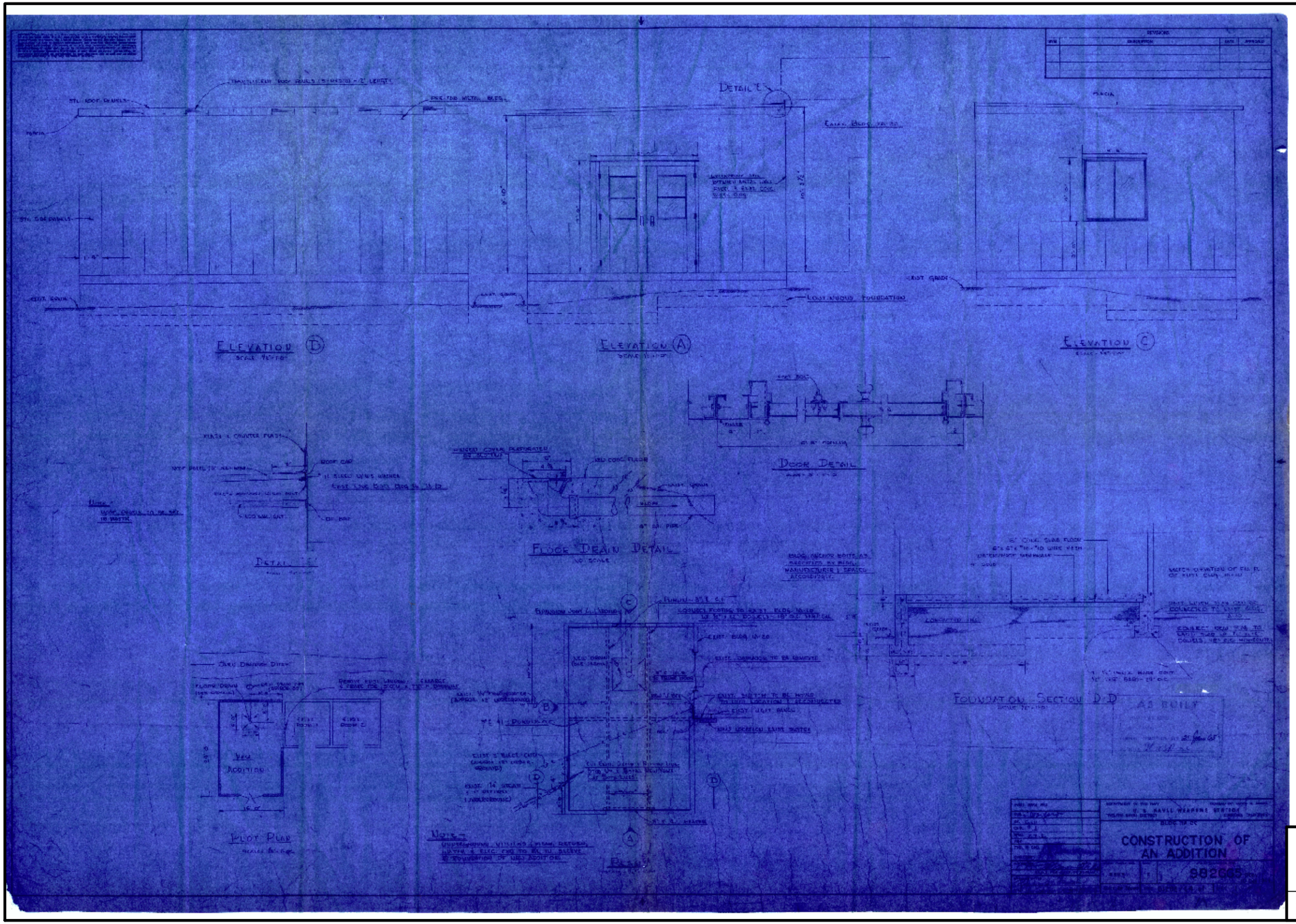
FIGURE 8-2FP BLDG IA-20b

IA-20 A-36 MODIFICATIONS PLANS AND DETAILS
SHEET 1 OF 2

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4543.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

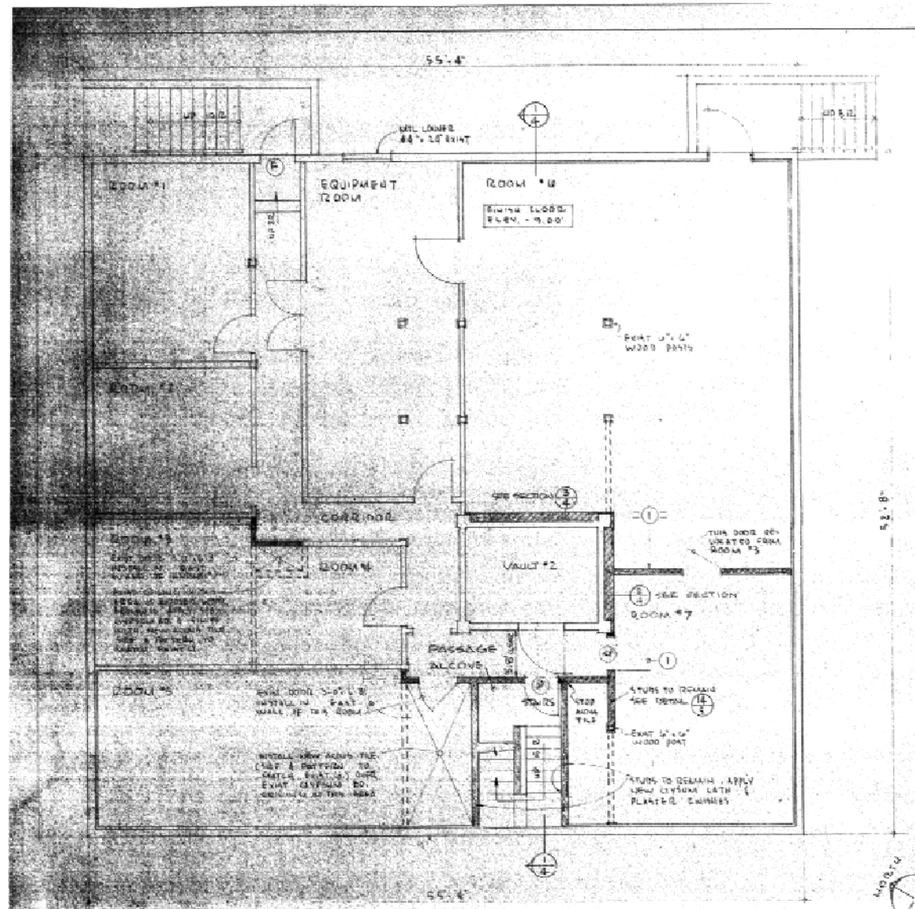
FIGURE 8-2FP BLDG IA-20c

IA-20 CONSTRUCTION OF AN ADDITION

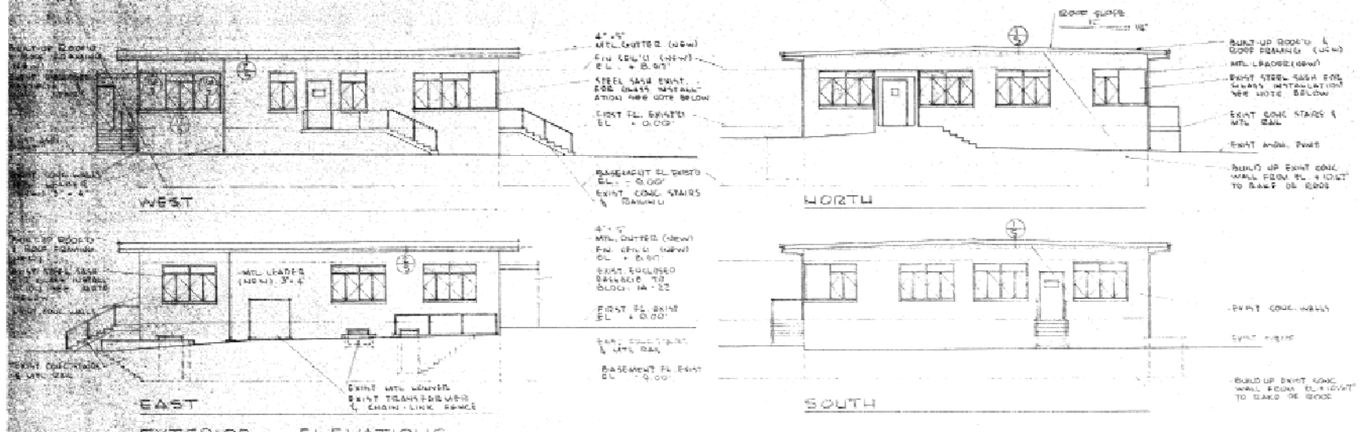
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD3211-0005-0004
FILE NUMBER: 090401L4544.mxd

TETRA TECH



BASEMENT PLAN (SUBJECT REMARKS & REVISIONS) SCALE 1/8" = 1'-0"



EXTERIOR ELEVATIONS SCALE 1/8" = 1'-0"

NOTE: SHADED AREAS OF STEEL SASH INDICATE GLASS IS UNAVAILABLE. ALL OTHER SASH UNITS CONTAIN BROKEN GLASS WHICH SHALL BE REPLACED WITH NEW, CLEAR GLASS EXCEPT IN EAST WALL OF CHEMISTS & ELECTRONICS ENGINEERS OFFICES WHICH REQUIRE CLEAR, WIRE GLASS.

SCHEDULE OF FINISHES

ROOM	EXISTING FINISHES: FLOOR	BASE	WALL	CEILING	NEW WORK REQUIRED
ROOMS #1 & #2	ASPH. TILE	RUBBER TILE	GYPSUM BD CONCRETE	ACOUS. TILE SUSPENDED	CLEAN & WAX ASPH. TILE FLOORING. REMOVE LOOSE ACOUS. TILE UNITS, APPLY NEW ADHESIVE & SECURELY CEMENT TILE UNITS TO EXIST'G GYPSUM BD. BACKING. SET UNITS FLUSH & LEVEL WITH ADJACENT TILE. CLEAN & PAINT ALL ACOUS. TILE UNITS.
ROOMS #3 & #4	ASPH. TILE	RUBBER TILE	GYPSUM OR CONCRETE	ACOUS. TILE SUSPENDED	CLEAN & WAX ASPH. TILE FLOORING. WHERE WALL REMOVALS OCCUR: PATCH FLOOR, WALL & CEILING SURFACES WITH NEW MATERIALS SIMILAR TO EXIST'G. PAINT ALL EXIST. & NEW ACOUS. TILE UNITS.
ROOM #5	ASPH. TILE	WOOD	GYPSUM BD.	ACOUS. TILE CANE FIBER	CLEAN & WAX ASPH. TILE FLOORING. REMOVE LOOSE ACOUS. TILE UNITS. REPLACE UNITS OR MISSING TO EXIST'G. FURRING STRIPS. SET UNITS FLUSH & LEVEL WITH ADJACENT TILE. CLEAN & PAINT ALL ACOUS. TILE UNITS. WHERE WALL REMOVALS OCCUR: PATCH FLOOR, WALL & CEILING SURFACES WITH NEW MATERIALS SIMILAR TO EXIST'G.
ROOM #6 & #7	ASPH. TILE	WOOD	GYPSUM BD WITH ACOUS. TILE CEMENTED TO UPPER HALF	ACOUS. TILE CANE FIBER	CLEAN & WAX ASPH. TILE FLOORING. REPLACE DAMAGED ASPH. TILE WITH NEW TILE SIMILAR TO EXIST'G. CLEAN & PAINT EXIST'G. ACOUS. TILE UNITS. FOR ELEVATIONS OF NEW WALL SURFACES SEE 1 & D DRWGS. (ROOM #7). PATCH FLOORS, WALL & CEILING SURFACES WITH NEW MATERIALS SIMILAR TO EXIST'G. INSTALL NEW ACOUS. TILE ON UPPER HALF OF NEW WALLS, MOD & PATTERN TO MATCH EXIST'G.
CORRIDOR	ASPH. TILE	WOOD	GYPSUM BD	WOOD FRAMING EXPOSED	CLEAN & WAX ASPH. TILE FLOORING.
PASSAGE	ASPH. TILE	WOOD	GYPSUM BD CONCRETE	GYPSUM BD	CLEAN & WAX ASPH. TILE FLOORING.
STAIRS & ALCOVE	WOOD ASPH. TILE	WOOD	PLASTER	PLASTER	SEE INTERIOR ELEVATIONS 1 & 3 DRWG. (ROOM #7). CLEAN & WAX ASPH. TILE FLOORING (ALCOVE). INSTALL NEW ASPH. TILE & MTL. NOSINGS ON STAIR TREADS & LANDINGS.
EQUIPMENT RM. & VAULT #2	NO WORK REQUIRED				

LEGEND

- EXIST'G CONCRETE WALLS
- EXIST'G WOOD STUD & GYPSUM BD WALLS
- REMOVE EXIST'G WALLS (WOOD STUD & GYPSUM BD)
- NEW WALLS (WOOD STUD & 1/2" GYPSUM BD EXCEPT STAIR & ALCOVE WALLS TO BE GYPSUM LATH & PLASTER ON STAIRWELL SIDE & 5/8" GYPSUM BD. ON OTHER SIDE)

BEAND DRAWING

GRAPHIC SCALES

SYMBOL	DESCRIPTION	DATE	APPROVAL
	REVISIONS		

ARCHITECT'S JOB No.
ARCHITECT'S DWG. No.
DEPARTMENT OF THE NAVY — DISTRICT PUBLIC WORKS OFFICE — BUREAU OF YARDS & DOCKS — 12TH NO SAN BRUNO, CAL
NISHKIAN & MINTON, ARCHITECTS & ENGINEERS — 1090 SANSOME ST., SAN FRANCISCO, CALIF.

DESIGN BY J. KUMUSGR
DRAWN BY
CHECKED BY J. MINTON

NAVAL AMMUNITION DEPOT
CONCORD CALIFORNIA
REHABILITATION OF QUALITY EVALUATION LABORATORY OFFICE. BUILDING IA-21

BASEMENT PLAN, FINISH SCHEDULE EXTERIOR ELEVATIONS.

DPWO DRAWING No. B- 58477

SATISFACTORY TO
DATE TITLE
SUBMITTED BY NISHKIAN & MINTON
SIGNATURE AND TITLE
DATE

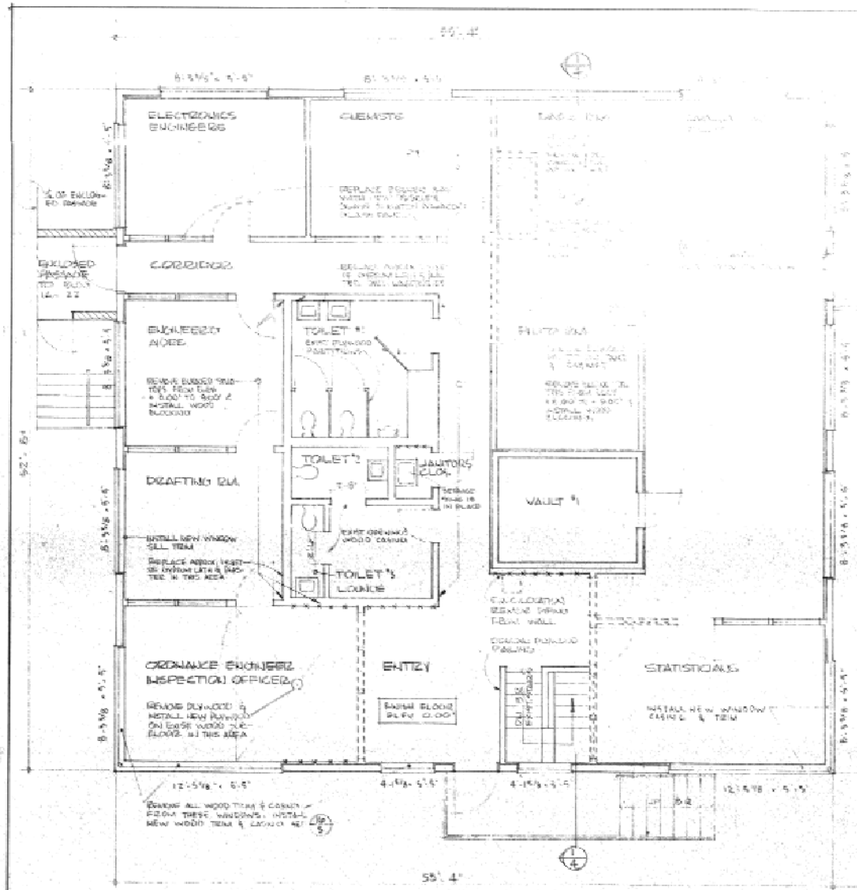
APPROVED RESIDENT OFFICER IN CHARGE (A&E CONTRACTS) DATE
APPROVED FOR BUREAU OF YARDS & DOCKS
FOR DPWO
CHIEF OF BUREAU
DATE

SCALE AS SHOWN SPEC. 29200 60
SHEET 2 OF 10 Mfg. 29200
V&D DRAWING No. 7606627

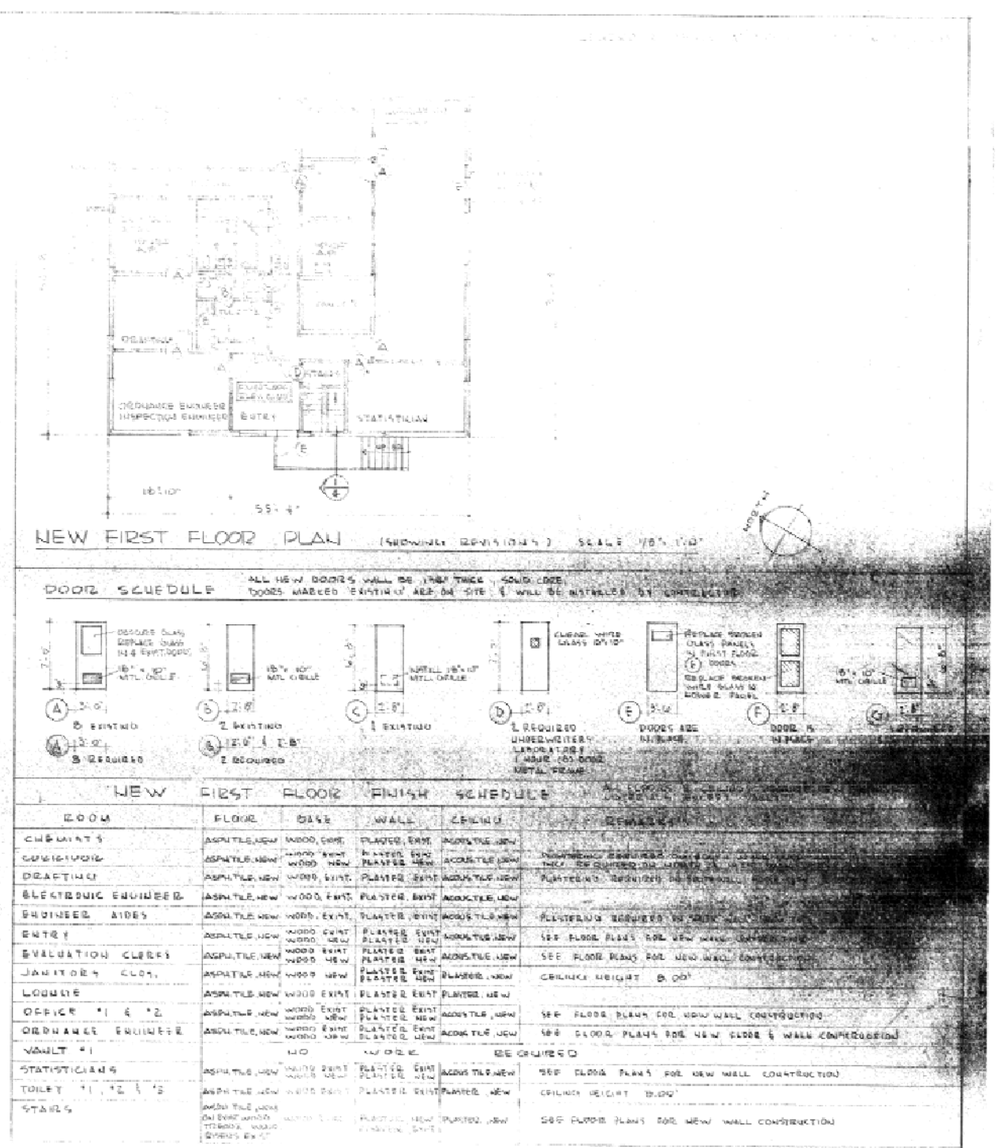
HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-2FP BLDG IA-21a
REHABILITATION OF QUALITY EVALUATION LAB OFFICE BUILDING IA-21 - BASEMENT PLAN FINISH SCHEDULE EXTERIOR ELEVATIONS
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011L4545.mxd

TETRA TECH EC, INC.



EXISTING FIRST FLOOR PLAN (SHOWING REMOVALS & REPLACEMENTS) SCALE 1/8" = 1'-0"



NEW FIRST FLOOR PLAN (SHOWING REMOVALS & NEW WORK) SCALE 1/8" = 1'-0"

LEGEND & ABBREVIATIONS :

- EXISTING CONCRETE WALLS
- EXISTING WOOD STUD & PLASTER WALLS
- EXISTING OBSCURE GLASS PANELS 42" WIDE
- REMOVE PLASTER & GYPSUM LATH FROM FLOOR TO CEILING & REPLACE WITH NEW PLASTER & GYPSUM LATH, IN ORDNANCE ENGINEER OFFICE ALSO REPLACE WALL STRIPPING
- REMOVE EXISTING WALLS (WOOD STUD, GYPSUM LATH PLASTER & GLASS PANELS)
- NEW WALLS TO BE INSTALLED (WOOD STUDS, GYPSUM LATH, PLASTER & GLASS PANELS)
- DOORS WHICH HAVE BEEN REMOVED FROM OPENINGS (UNLESS REMAIN ON THE LIST) SEE DOOR SCHEDULE FOR EXISTING DOORS WHICH ARE ON THE LIST
- A.P. ACCESS PANEL IN CEILING
- W.C. WATER CLOSET
- E.W.C. ELECTRIC WATER COOLER
- DETAIL NUMBER / SHEET NUMBER
- (A) DOOR SCHEDULE NUMBER (EXISTING)
- (B) DOOR SCHEDULE NUMBER (NEW)

GENERAL NOTES :

REPAIR PLASTER WALLS & CEILING WITH NEW MATERIALS [illegible]

REMOVE ASPHALT TILE FLOORING [illegible]

THE TOILET FIXTURES & SINKS [illegible] CONTRACTOR. THE TOILET FIXTURES [illegible] FURNISHED & INSTALLED BY THE [illegible] STEEL SASH REPLACEMENT [illegible] GLASS REPLACEMENT IN STEEL [illegible] MENT IN INTERIOR WALLS AS SHOWN [illegible] DOOR SCHEDULE ABOVE

ALL WINDOW VENTS REQUIRE NEW [illegible] ATTACHING DEVICES FOR THE [illegible]

DOOR SCHEDULE

ALL NEW DOORS WILL BE 1 HR FIRE SOLID CORE.
DOORS MARKED "EXISTING" ARE ON SITE & WILL BE INSTALLED AS CONDITIONS PERMIT.

NEW FIRST FLOOR FINISH SCHEDULE

ROOM	FLOOR	BASE	WALL	CEILING	REMARKS
CHEMISTS	ASPHALT TILE, NEW	WOOD, EXIST.	PLASTER, EXIST.	ACOUSTIC, NEW	
CORRIDORS	ASPHALT TILE, NEW	WOOD, EXIST. WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	ACOUSTIC, NEW	[illegible]
DRAFTING	ASPHALT TILE, NEW	WOOD, EXIST.	PLASTER, EXIST.	ACOUSTIC, NEW	PLASTERING REQUIRED ON WALLS
ELECTRONIC ENGINEER	ASPHALT TILE, NEW	WOOD, EXIST.	PLASTER, EXIST.	ACOUSTIC, NEW	
ENGINEER AIDES	ASPHALT TILE, NEW	WOOD, EXIST.	PLASTER, EXIST.	ACOUSTIC, NEW	PLASTERING REQUIRED ON WALLS
ENTRY	ASPHALT TILE, NEW	WOOD, EXIST. WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	ACOUSTIC, NEW	SEE FLOOR PLANS FOR NEW WALL CONSTRUCTION
EVALUATION CLERKS	ASPHALT TILE, NEW	WOOD, EXIST. WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	ACOUSTIC, NEW	SEE FLOOR PLANS FOR NEW WALL CONSTRUCTION
JANITOR'S CLOS.	ASPHALT TILE, NEW	WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	PLASTER, NEW	CEILING HEIGHT 8'-00"
LOUNGE	ASPHALT TILE, NEW	WOOD, EXIST.	PLASTER, EXIST.	PLASTER, NEW	
OFFICE #1 & #2	ASPHALT TILE, NEW	WOOD, EXIST. WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	ACOUSTIC, NEW	SEE FLOOR PLANS FOR NEW WALL CONSTRUCTION
ORDNANCE ENGINEER	ASPHALT TILE, NEW	WOOD, EXIST. WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	ACOUSTIC, NEW	SEE FLOOR PLANS FOR NEW FLOOR & WALL CONFIGURATION
VAULT #1	NO WORK REQUIRED				
STATISTICIANS	ASPHALT TILE, NEW	WOOD, EXIST. WOOD, NEW	PLASTER, EXIST. PLASTER, NEW	ACOUSTIC, NEW	SEE FLOOR PLANS FOR NEW WALL CONSTRUCTION
TOILET #1, #2 & #3	ASPHALT TILE, NEW (ASPHALT TILE OVER EXIST. WOOD FLOORS EXIST.)	WOOD, EXIST.	PLASTER, EXIST.	PLASTER, NEW	CEILING HEIGHT 8'-00"
STAIRS	[illegible]	WOOD, EXIST.	PLASTER, NEW PLASTER, EXIST.	PLASTER, NEW	SEE FLOOR PLANS FOR NEW WALL CONSTRUCTION

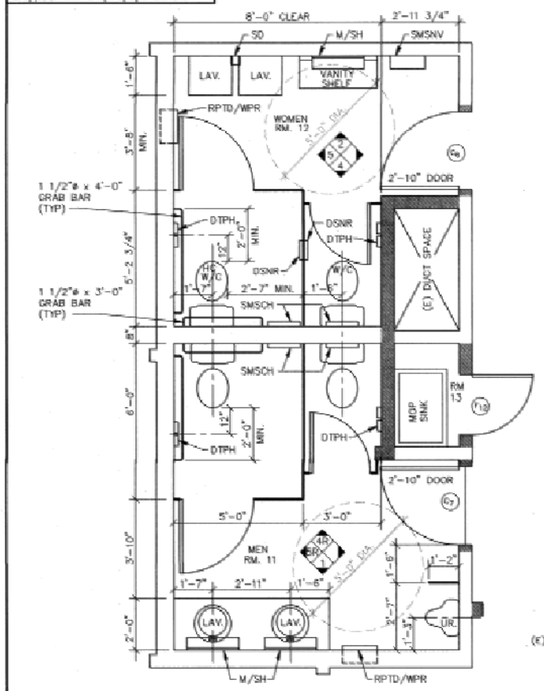
DATE	APPROVAL

DESIGN OF TARING & COOPER
[illegible] SAN BRUNO, CAL.
[illegible] ENGINEERS

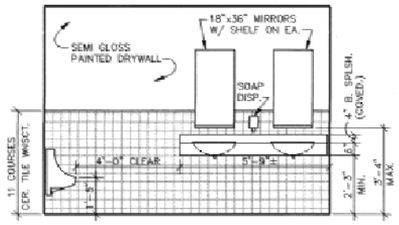
HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-2FP BLDG IA-21b
REHABILITATION OF QUALITY EVALUATION LAB OFFICE BUILDING IA-21 - FIRST FLOOR PLAN AND SCHEDULES
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4546.mxd

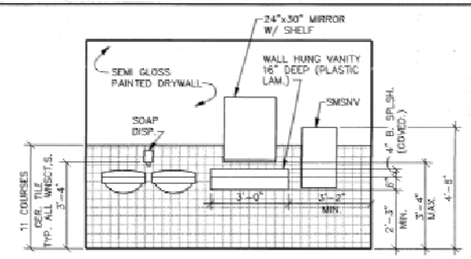
TETRA TECH EC, INC.



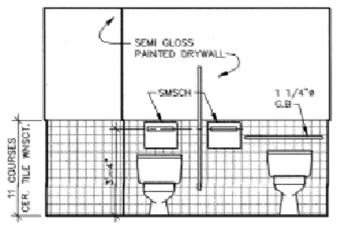
3 ENLARGED PLAN
A-3 A-3 SCALE: 1/2" = 1'-0"



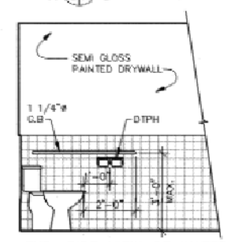
1 MEN'S TOILET RM. NO. 11 ELEVATION
A-3 A-3 SCALE: 1/2" = 1'-0"



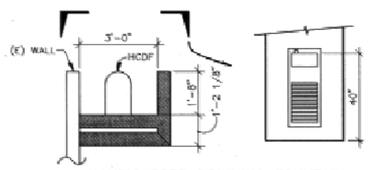
2 WOMEN'S TOILET RM. NO. 12 ELEVATION
A-3 A-3 SCALE: 1/2" = 1'-0"



4 WOMEN'S TOILET RM. NO. 12 ELEVATION
A-3 A-3 MEN'S TOILET RM. NO. 11 ELEVATION 3R
(SAME AS WOMEN'S TOILET RM. EXCEPT REVERSED)
SCALE: 1/2" = 1'-0"



5 TYP. SIDE VIEW OF WATER CLOSET
(SHOWING GRAB BAR & TOILET PAPER HOLDER)
A-3 A-3 SCALE: 1/2" = 1'-0"



6 HANDICAPPED DRINKING FOUNTAIN
PLAN AND ELEVATION
A-3 A-3 SCALE: 1/2" = 1'-0"

REVISIONS

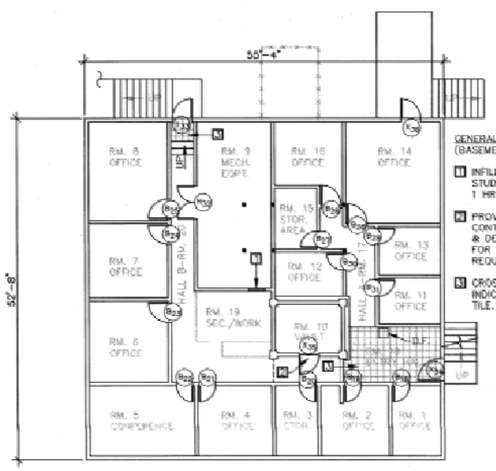
SYM.	DESCRIPTION	DATE	APPROVED

FINISH SCHEDULE – BLDG. 21(NW) BASEMENT

NO.	ROOM NAME	FLOOR: CARPET	FLOOR: CONCRETE	FLOOR: VCT	BASE: VCT	BASE: CONCRETE	WALL: PAINTED-SMOOTH (C) N	WALL: WOOD PANELING	WALL: CONCRETE	WALL: CERAMIC TILE	CEILING: ACOUSTICAL TILE	CEILING: PAINTED-SMOOTH (C) N	CEILING: CONCRETE	CEILING: PAINTED-SMOOTH (C) W RATED	CEILING: HEIGHT	REMARKS
1	OFFICE	●			●		●				●				8	1. ALL WALLS ARE (E): PATCH, REPAIR & PAINT AS NECESSARY. SEE NOTE 4 2. ALL CEILINGS SHALL BE: NEW: –ACOUSTICAL TILE REPAIR: –HARD SURFACE: PATCH/REPAIR & PAINT 3. ALL (E) CARPET REMOVE FOR INST. OF (N) CARPET 4. ACOUSTICAL TILE ON WALLS OF OFFICES & ROOMS. AROUND CORRIDORS SHALL BE REMOVED & WALLS SHALL BE PATCHED AND REPAINTED. ● =(E)&(N) SURFACES TO BE PAINTED, OR (N) MATERIAL ADDED.
2	OFFICE	●			●		●				●				8	
3	STORAGE		●		●		●				●				8	
4	OFFICE	●			●		●				●				8	
5	CONFERENCE	●			●			●			●				8	
6	OFFICE	●			●		●				●				8	
7	OFFICE	●			●		●				●				8	
8	OFFICE	●			●		●				●				8	
9	MECH EQM'T	●			●			●					●	●	8	
10	VAULT	●				●			●				●	●	8	
11	OFFICE	●			●		●				●				8	
12	OFFICE	●			●		●				●				8	
13	OFFICE	●			●		●				●				8	
14	OFFICE	●			●		●				●				8	
15	STORAGE		●		●		●				●				8	
16	OFFICE	●			●		●				●				8	
17	HALL A	●			●		●				●				7'7"	
18	ENTRY HALL		●		●		●				●				7'7"	
19	SEC/WORK AREA	●			●		●				●				8	
20	HALL B	●			●		●				●				V	VCT ON STEPS & LANDING @ ENT. DOOR

FINISH SCHEDULE – FIRST FLOOR

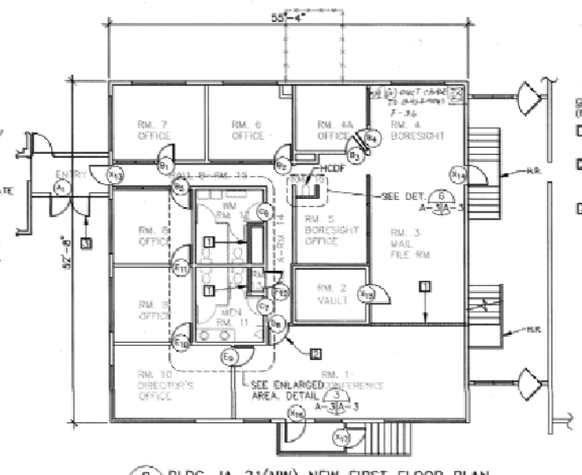
NO.	ROOM NAME	FLOOR: CARPET (N)(R)	FLOOR: VINYL TILE	FLOOR: CONCRETE	BASE: VCT	BASE: VINYL TILE	BASE: CONCRETE	WALL: EX. HARD SURF.-SMOOTH	WALL: WOOD PANELING	WALL: CONCRETE	WALL: GYPSUM DRY WALL	WALL: WAINSCOT OF 8"HIGH CERAMIC TILE	WALL: CERAMIC TILE	CEILING: ACOUSTICAL TILE	CEILING: GYPSUM DRY WALL	CEILING: CONCRETE	CEILING: HEIGHT 8'7"	REMARKS
1	CONFERENCE	●			●				●					●			●	● EXISTING CEILING HEIGHTS 8'-10 1/2" TO 8'-11 1/2" SHALL BE MAINTAINED BY INSTALLATION OF OF NEW ACOUSTICAL TILE ON (E) SPLINES. REPLACE & REPAIR THESE SPLINES AS REQUIRED. ● =(E)&(N) SURFACES TO BE PAINTED, OR (N) MATERIAL ADDED.
2	VAULT	●			●												●	NO WORK INSIDE VAULT
3	MAIL/FILE ROOM	●			●				●					●			●	
4	BORESIGHT	●			●				●					●			●	
4A	OFFICE	●			●				●					●			●	
5	BORESIGHT OFFICE	●			●				●					●			●	
6	OFFICE	●			●				●					●			●	
7	OFFICE	●			●				●					●			●	
8	OFFICE	●			●				●					●			●	
9	OFFICE	●			●				●					●			●	
10	DIRECTOR'S OFF.	●			●				●					●			●	
11	MEN'S TOILET	●				●					●	●			●		8	
12	WOMEN'S TOILET	●				●					●	●			●		8	
13	MOP ROOM	●				●					●				●		8	
14	HALL A	●				●					●				●		8	
15	HALL B	●				●					●				●		8	
16	M.C./D.F. RECESS	●				●					●	●			●			



7 BLDG. IA-21(NW) NEW BASEMENT FLOOR PLAN
A-3 A-3 SCALE: 1/8" = 1'-0"

GENERAL NOTES
(BASEMENT LEVEL)

1. INFILL (E) DOOR OPENING W/ STUDS & DRYWALL TO FORM 1 HR. F.R. WALL
2. PROVIDE (E) VAULT DOOR CONTRACT OFFICE WILL LOCATE & DELIVER TO CONTRACTOR FOR INSTALLATION UPON REQUEST.
3. CROSS HATCH FLOOR AREAS INDICATE COMPOSITION VINYL TILE.



8 BLDG. IA-21(NW) NEW FIRST FLOOR PLAN
A-3 A-3 SCALE: 1/8" = 1'-0"

GENERAL NOTES
(FIRST FLOOR LEVEL)

1. PROVIDE 1 HR. STUDWALL W/ 5/8 D.W. ON BOTH SIDES
2. PROVIDE WALL & NEW DOOR TO ENLARGED CONFERENCE ROOM NO. 1
3. PROVIDE (N) PAIR OF 3'-0"x6'-8" H.M. STEEL DOORS & FRAMES. CUT NEW OPENING IN CMU WALL TO ACCOMODATE NEW DOUBLE DOORS.

NOTE:

1. FIRE EXTINGUISHERS SHALL BE TEMPORARILY REMOVED WHILE REHABILITATION WORK IS TAKING PLACE. RE-INSTALL FIRE EXTINGUISHERS AT THEIR FORMER LOCATIONS AFTER REHABILITATION WORK HAS BEEN COMPLETED.

LEGEND:

EXISTING WALLS
NEW WALLS

IF SHEET IS LESS THAN 28" X 40"
IT IS A REDUCED PRINT–
SCALE REDUCED ACCORDINGLY

GRAPHIC SCALE

1/8" = 1'-0" 0" 2' 6' 14' 24'
1/2" = 1'-0" 0" 1' 2' 3' 4' 6'

SAI ENGINEERS, INC.
299 Santa Ana Court, Sunnyvale, Ca 94086
SAI Project No. 93116 DATE: 10/27/94

PWD DWG. NO.
DRN. WG DR. NH
DSN. WG REVD.
REC. SAFETY
ENGR. IN CHG. PB
DIRECTOR
SUPERVISORY IG
TITLE DATE
APPROVED DATE
OFFICE IN CHARGE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

REHABILITATION OF BLDGS. IA-21 & IA-22
BLDG. IA-21(NW)
FLOOR PLAN

CODE IDENT NO. 80091 SIZE F NAVFAC DRAWING NO. 6412657
SCALE AS SHOWN SPEC. 13-56-8004 SHEET 4 OF 61

A-3

HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-2FP BLDG IA-21c
REHABILITATION OF BUILDINGS IA-21 AND IA-22
BUILDING IA-21 (NW) FLOOR PLAN
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011.4547.mxd

TETRA TECH EC, INC.

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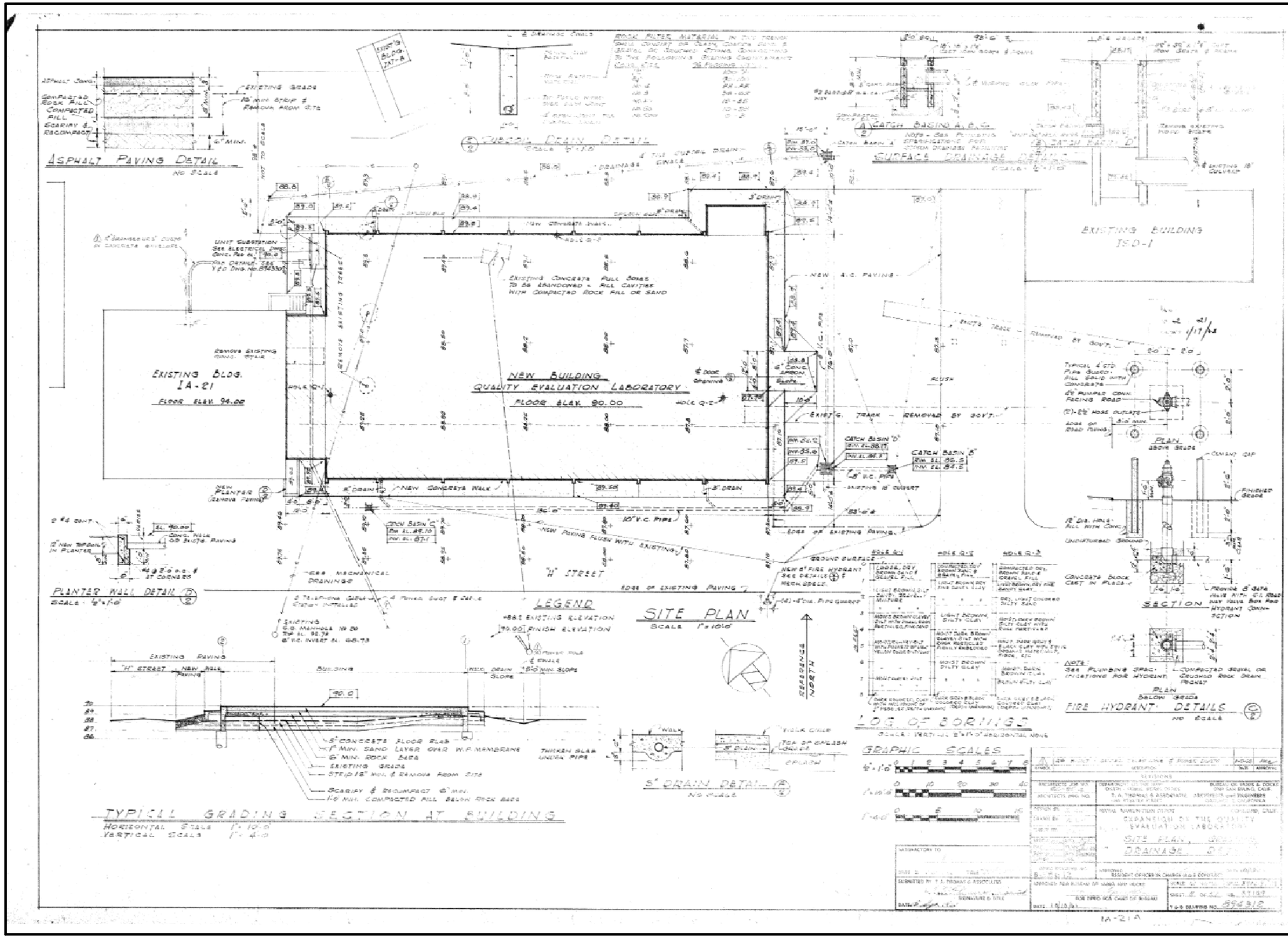


HISTORICAL RADIOLOGICAL ASSESSMENT

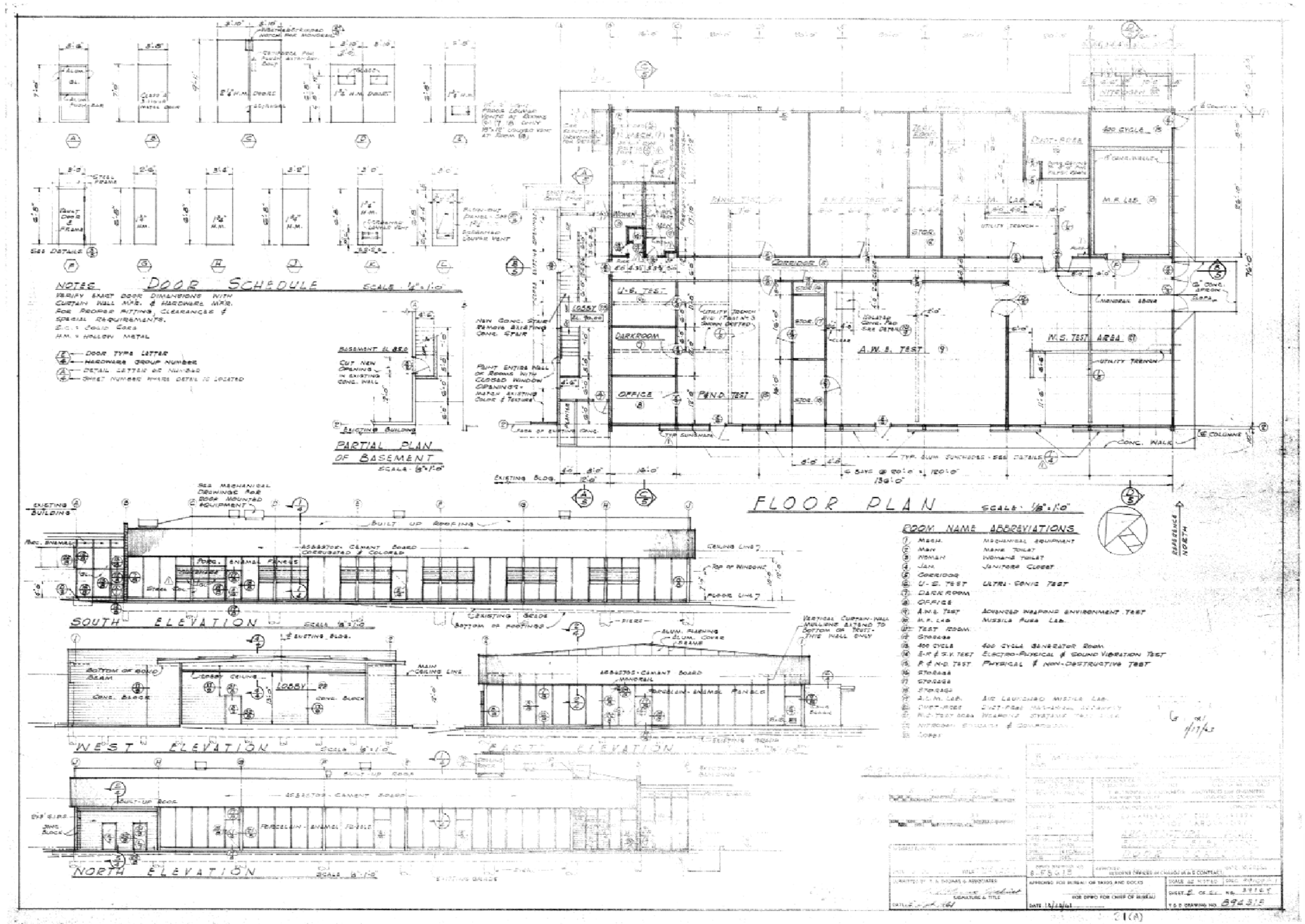
FIGURE 8-2FP BLDG IA-21Aa

EXPANSION OF THE QUALITY EVALUATION LAB
SITE PLAN GRADING DRAINAGE DETAILS

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4548.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

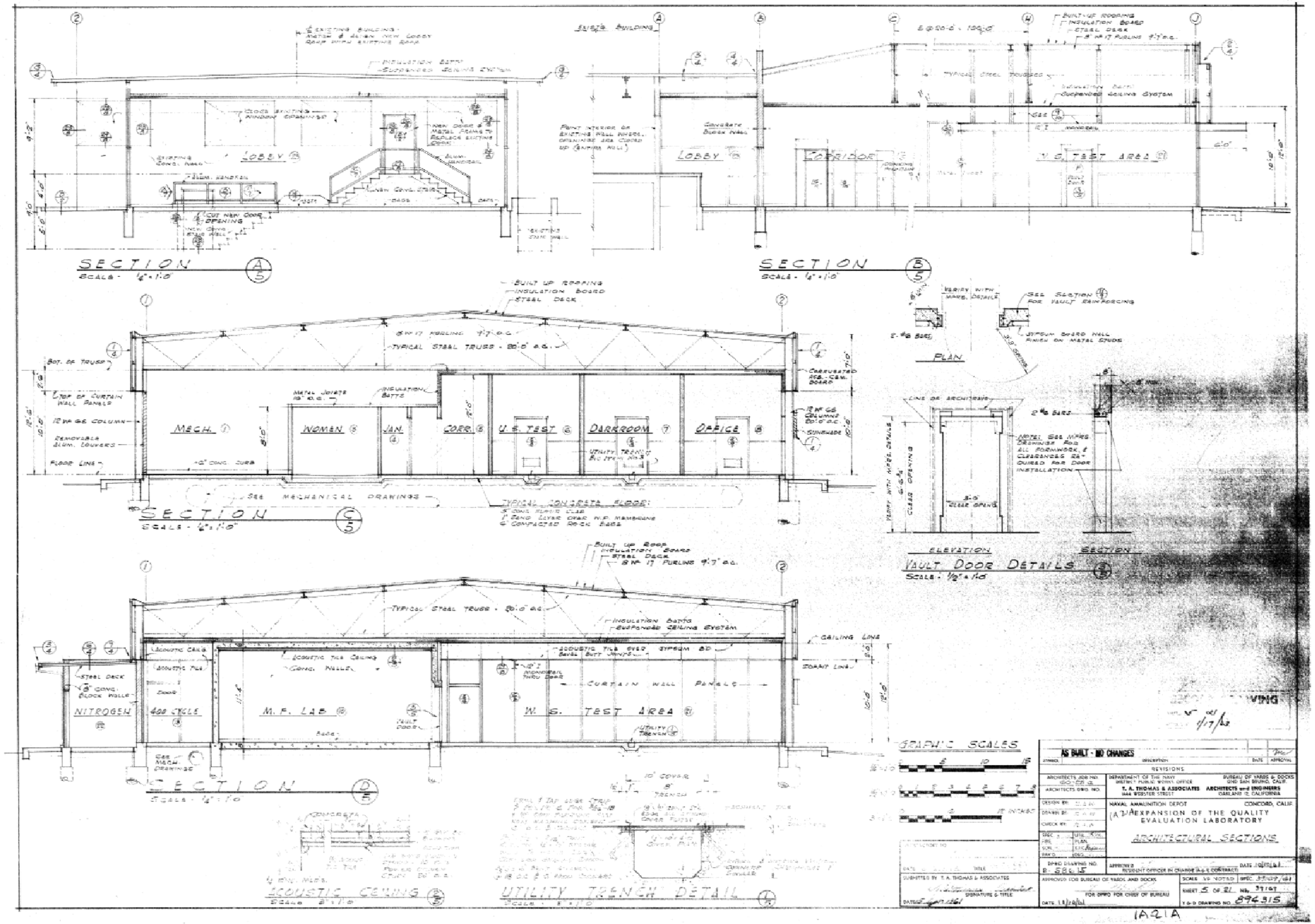
FIGURE 8-2FP BLDG IA-21Ab

IA-21A EXPANSION OF THE QUALITY EVALUATION LAB ARCHITECTURAL PLAN, EXTERIOR ELEVATIONS, DOOR SCHEDULE

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4549.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-2FP BLDG IA-21Ac

IA-21A EXPANSION OF THE QUALITY EVALUATION LAB ARCHITECTURAL SECTIONS

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4550.mxd

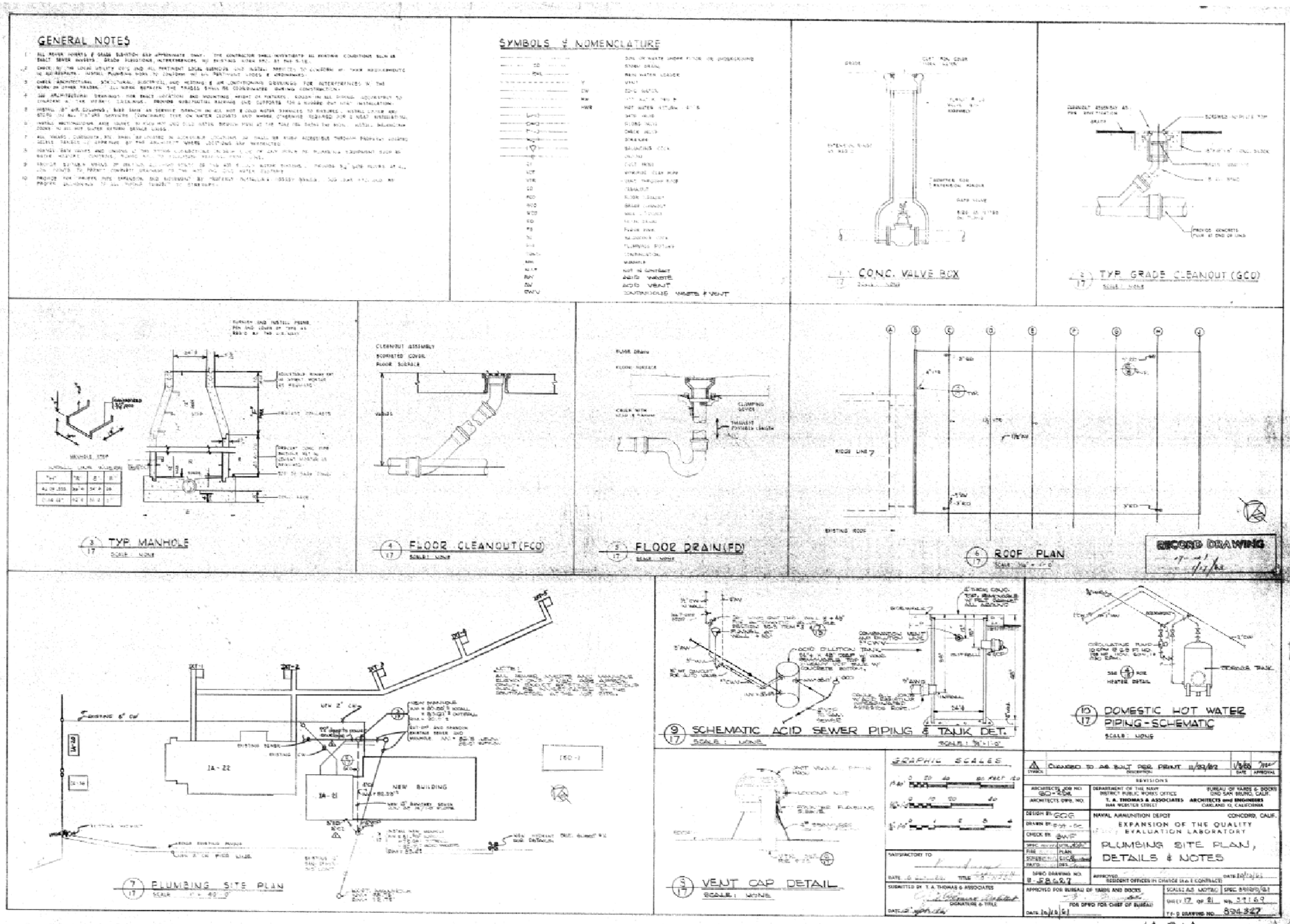
TETRA TECH EC, INC.

GENERAL NOTES

1. ALL SEWER INVERTS & GRADE ELEVATION ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL INVESTIGATE ALL EXISTING CONDITIONS SUCH AS EXACT SEWER INVERTS, GRADE ELEVATIONS, INTERFERENCES, ETC. BY EXISTING UTILITIES, ETC. BY THE SITE.
2. CHECK WITH THE LOCAL UTILITY CO'S AND ALL PERTINENT LOCAL AGENCIES AND INSTALL SERVICES TO CONFORM WITH THEIR REQUIREMENTS (& REPAIRS). INSTALL PLUMBING WORK TO CONFORM WITH ALL PERTINENT CODES & ORDINANCES.
3. CHECK ARCHITECTURAL, STRUCTURAL, ELECTRICAL, AND HEATING & AIR CONDITIONING DRAWINGS FOR INTERFERENCES W. THE WORK ON OTHER TRADES. ALL WORK REPAIRED THE TRADES SHALL BE COORDINATED DURING CONSTRUCTION.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT OF FIXTURES. CONSULT ALL DRAWINGS CONSULTANT TO COORDINATE W. THE VARIOUS DRAWINGS. PROVIDE SUBSTANTIAL BACKING (LIKE SUPPORTS FOR A HANGER PIPE WHEN INSTALLATION.
5. INSTALL 30" WIDE SCUPPERS, SIZE TRAP AS SERVICE BRANCH (AS ALL HOT & COLD WATER SERVICES TO FIXTURES. INSTALL LOCKER AND STORE ON ALL PIPING SERVICES CONSIDERED TYPE OF WATER DISTRIBUTION AND WHERE OTHERWISE REQUIRED FOR A NEAT INSTALLATION.
6. INSTALL MOTIONSENSOR AND SOLENOID ON HOT AND COLD WATER BRANCH PIPES AT THE FAUCETS BEFORE THE MIXER. INSTALL INDICATOR COCKS TO ALL HOT WATER RETURN SERVICE LINES.
7. ALL VALVES, CONTROLS, ETC. SHALL BE LOCATED IN ACCESSIBLE LOCATIONS OR SHALL BE MADE ACCESSIBLE THROUGH PROPERLY LOCATED ACCESS TANKS, ETC. OTHERWISE BY THE ARCHITECT WHERE ACCESS ARE RESTRICTED.
8. INSTALL GATE VALVES AND UNIONS (THE FITTING CONNECTIONS) AS SHOWN TO ALL OF THE DAY WORK OF PLUMBING EQUIPMENT SUCH AS WATER HEATERS, CONTROLS, PUMPS, ETC. TO FACILITATE REPAIRS AND REPLACEMENT.
9. PROVIDE SUITABLE VALVES OF ADEQUATE CAPACITY AT THE HOT & COLD WATER SYSTEMS. PROVIDE 3/4" GATE VALVES AT ALL LOW POINTS TO PERMIT COMPLETE DRAINAGE OF THE HOT AND COLD WATER SYSTEMS.
10. PROVIDE FOR THERMAL PIPE EXPANSION AND ADJUSTMENT BY PROPERLY INSTALLING ASSEMBLY BENDS, LOOP LINES ETC. AND BY PROPER ALIGNMENT OF ALL PIPING TRANSITS TO STRAIGHTS.

SYMBOLS & NOMENCLATURE

		SOIL OR WASTE (WHERE FITTED OR UNDERGROUND)
	SD	STORM DRAIN
	RWL	RAIN WATER LEADER
	V	VENT
	CW	COLD WATER
	HW	HOT WATER
	HWR	HOT WATER RETURN
		GATE VALVE
		GLOBE VALVE
		CHECK VALVE
		STRAINER
		BALANCING COCK
		UNION
	CO	CLEAN OUT
	WCR	WASHING CLEAN HOSE
	VTR	VENT THROUGH ROOF
	CO	CLEANOUT
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	SL	SLOP SINK
	LAV	LAVATORY
	CWC	CONTINUOUS
	MH	MANHOLE
	N.I.C.	NOT IN CONTRACT
	W/O	WASTE OUTLET
	AV	ACID VENT
	CWV	CONTINUOUS WASTE & VENT



HISTORICAL RADIOLOGICAL ASSESSMENT

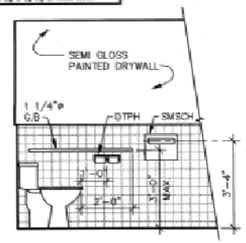
FIGURE 8-2FP BLDG IA-21Ad

EXPANSION OF THE QUALITY EVALUATION LAB PLUMBING SITE PLAN DETAILS AND NOTES

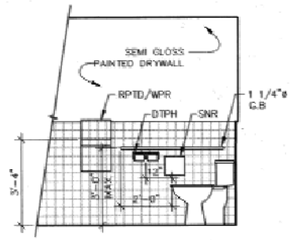
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4551.mxd

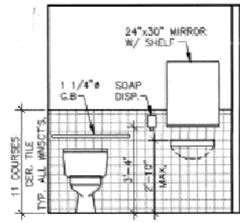
TETRA TECH EC, INC.



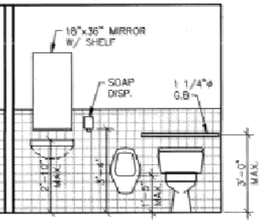
1 A-4 A-4 SIDE VIEW OF WATER CLOSET MEN'S TOILET RM. 2A
SCALE: 1/2" = 1'-0"



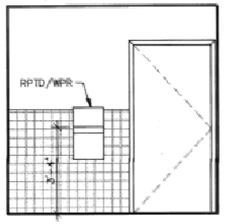
2 A-4 A-4 SIDE VIEW OF WATER CLOSET WOMEN'S TOILET RM. 2A
SCALE: 1/2" = 1'-0"



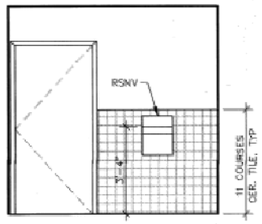
3 A-4 A-4 ELEVATION WOMEN'S TOILET RM. NO. 2B
SCALE: 1/2" = 1'-0"



4 A-4 A-4 ELEVATION MEN'S TOILET RM. NO. 2A
SCALE: 1/2" = 1'-0"



5 A-4 A-4 ELEVATION MEN'S TOILET RM. 2A
SCALE: 1/2" = 1'-0"

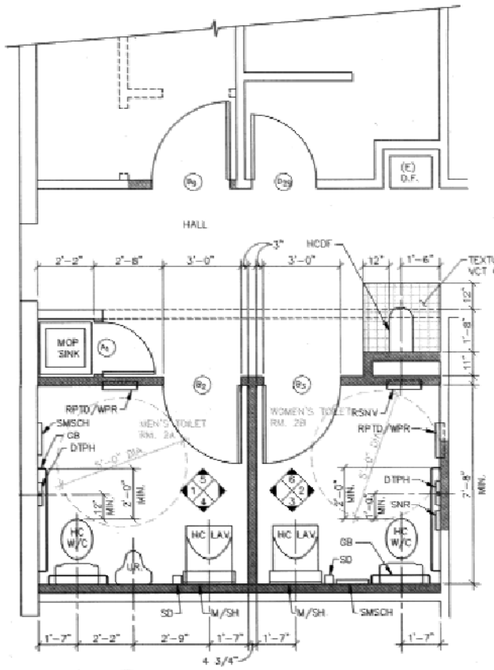


6 A-4 A-4 ELEVATION WOMEN'S TOILET RM. 2B
SCALE: 1/2" = 1'-0"

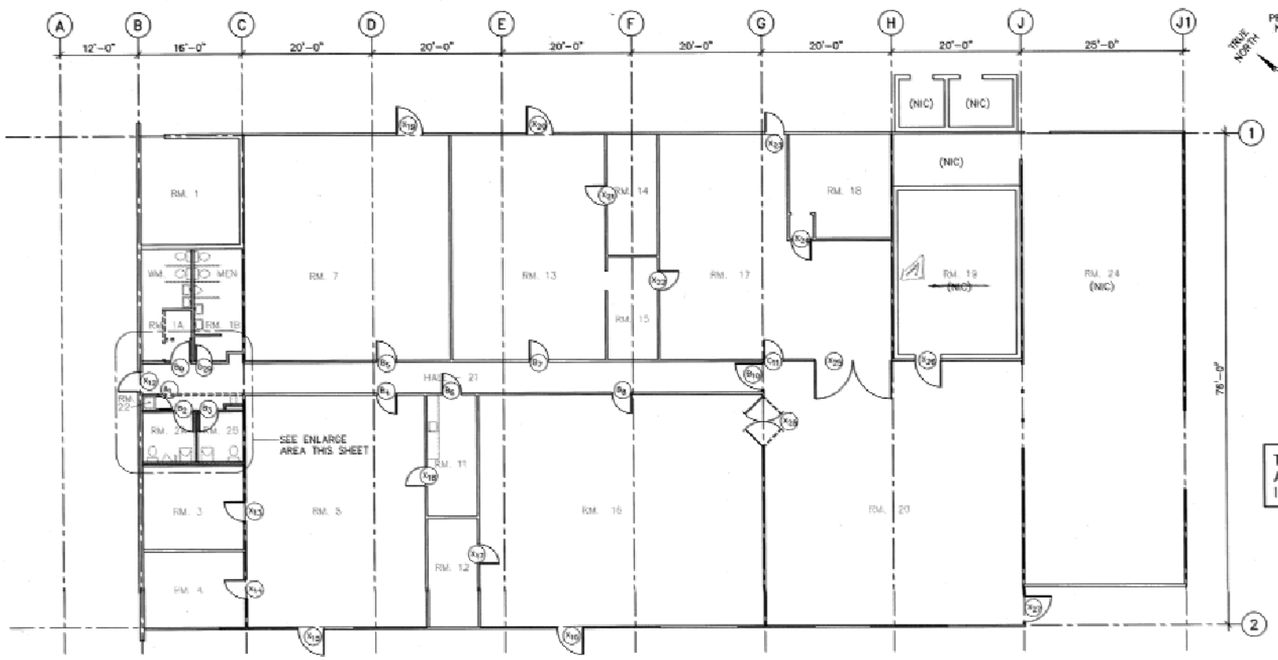
FINISH SCHEDULE

NO.	ROOM NAME	FLOOR: VINYL COVE TILE	FLOOR: VINYL WALL	FLOOR: CONCRETE	FLOOR: CERAMIC TILE	BASE: TOP SET VINYL BASE	BASE: COVED VINYL	BASE: CERAMIC TILE	WALL: GYP. DRY WALL	WALL: MAINSCOT-WALL BD.	WALL: MAINSCOT-C.T.	WALL: CMU	WALL: FRP. WALL FINIS.	WALL: CONCRETE	CEILING: ACOUSTICAL T-BAR SYSTEM	CEILING: GYP. WALL BD.	CEILING: ACOUSTICAL TILE	REMARKS
1	STORAGE/MECH.			●					●								●	● NO PAINT REQ'D. EX. FINISH REMAINS
1A	WOMEN'S TOILET						●		●						●			WAINSCOT = WHITE
1B	MEN'S TOILET				●				●						●			● NO FINISH REQUIRED
2A	MEN'S H.C. TOILET						●		●						●			● = (TBMD) SURFACES
2B	WOMEN'S H.C. T.	●					●		●						●			TO BE REMOVED OR TRY MATERIAL ADDED.
3	ADMIN. ASST. OFF.	●					●		●				●					
4	DIVERSION HEAD	●					●		●				●					
5	ORDNANCE, EVALTN.	●					●		●				●					
7	SURVEILLANCE	●					●		●				●					
11	KITCHENETTE	●					●		●									
12	MAGPV FILES	●					●		●				●					
13	TEST EQMT. DEV.	●					●		●				●					
14	OFFICE	●					●		●				●					
15	STORAGE	●					●		●									
16	MATRIX	●					●		●									
17	NON-DESTR. TSTG.	●					●		●									
18	DUST FREE-MESH ASSY	●					●		●									
19	WEAPONS SPEC TEST AREA	●					●		●									
20	FUSE LAB	●					●		●									
21	HALL	●					●		●									
22	MOP ROOM	●					●		●									

PATCH FL. @ ENTRY



7 A-4 A-4 ENLARGED AREA
SCALE: 1/2" = 1'-0"



8 A-4 A-4 BLDG. IA-21(SE) FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTE:

1. FIRE EXTINGUISHERS SHALL BE TEMPORARILY REMOVED WHILE REHABILITATION WORK IS TAKING PLACE. RE-INSTALL FIRE EXTINGUISHERS AT THEIR FORMER LOCATIONS AFTER REHABILITATION WORK HAS BEEN COMPLETED.

LEGEND:

= = = = WALLS DEMOLISHED

EXISTING WALLS

NEW WALLS

THIS ENTIRE DRAWING IS AN ADDITIVE BID ITEM AND IS NOT INCLUDED IN THE PROJECT BASE BID.

IF SHEET IS LESS THAN 28" X 40" IT IS A REDUCED PRINT– SCALE REDUCED ACCORDINGLY

GRAPHIC SCALE

1/8" = 1'-0" 0" 2' 6' 14' 24'

1/2" = 1'-0" 0" 1' 2' 3' 4' 6'

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED
01	12-06-94		

SAI ENGINEERS, INC.
235 Santa Ana Court, Sunnyvale, Ca 94086
SAI Project No. 93116 DATE: 10/27/94

Prev. Dwg. No.
DES. WC DR. NH
CHK. WC ENG.
FIELD DATE
ENGR. IN CHG.
SUPERVISOR
FACILITY NO.
TITLE DATE
APPROVED DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

REHABILITATION OF BLDGS. IA-21 & IA-22
BLDG. IA-21(SE)
FLOOR PLAN

CODE IDENT NO. 80091 SIZE F NAVFAC DRAWING NO. 641265B
SCALE AS SHOWN SPEC. 12-90-6024 SHEET 5 OF 9

A-4

16A003 12/06/94 at 12:49

HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-2FP BLDG IA-21Ae

REHABILITATION OF BUILDINGS IA-21 AND IA-22
BUILDING IA-21(SOUTHEAST) FLOOR PLAN

FORMER NAVWPNSTA CONCORD, CALIFORNIA

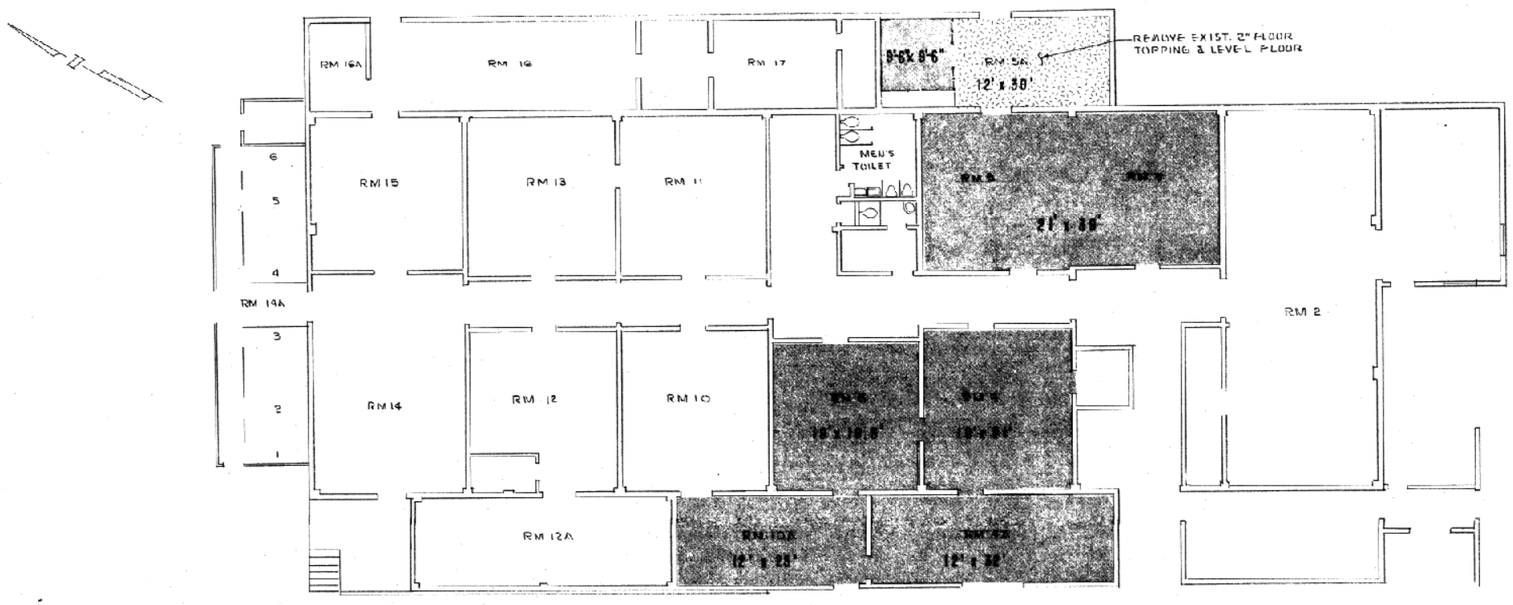
REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4552.mxd

TETRA TECH EC, INC.

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED



FLOOR PLAN
SCALE: 1/8" = 1'-0"

LEGEND

INSTALL DIELECTRIC STRENGTH FLOOR

PWD DWG. NO.	
DES. RES	DR. ERELL
CHK. RES	SPEC. RES
FIRE	SAFETY KANES
ENGR. IN CHG. RES	
DIRECTOR	
SUBMITTED BY: TITLE	DATE
APPROVED OFFICER IN CHARGE	DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

BLDG. IA-22

INSTALLATION OF DIELECTRIC STRENGTH FLOOR

CODE IDENT. NO.	SIZE	NAVFAC DRAWING NO.
80091	D	6028921

SCALE As Shown | SPEC. 6424 | SHEET 1 OF 1

HISTORICAL RADIOLOGICAL ASSESSMENT

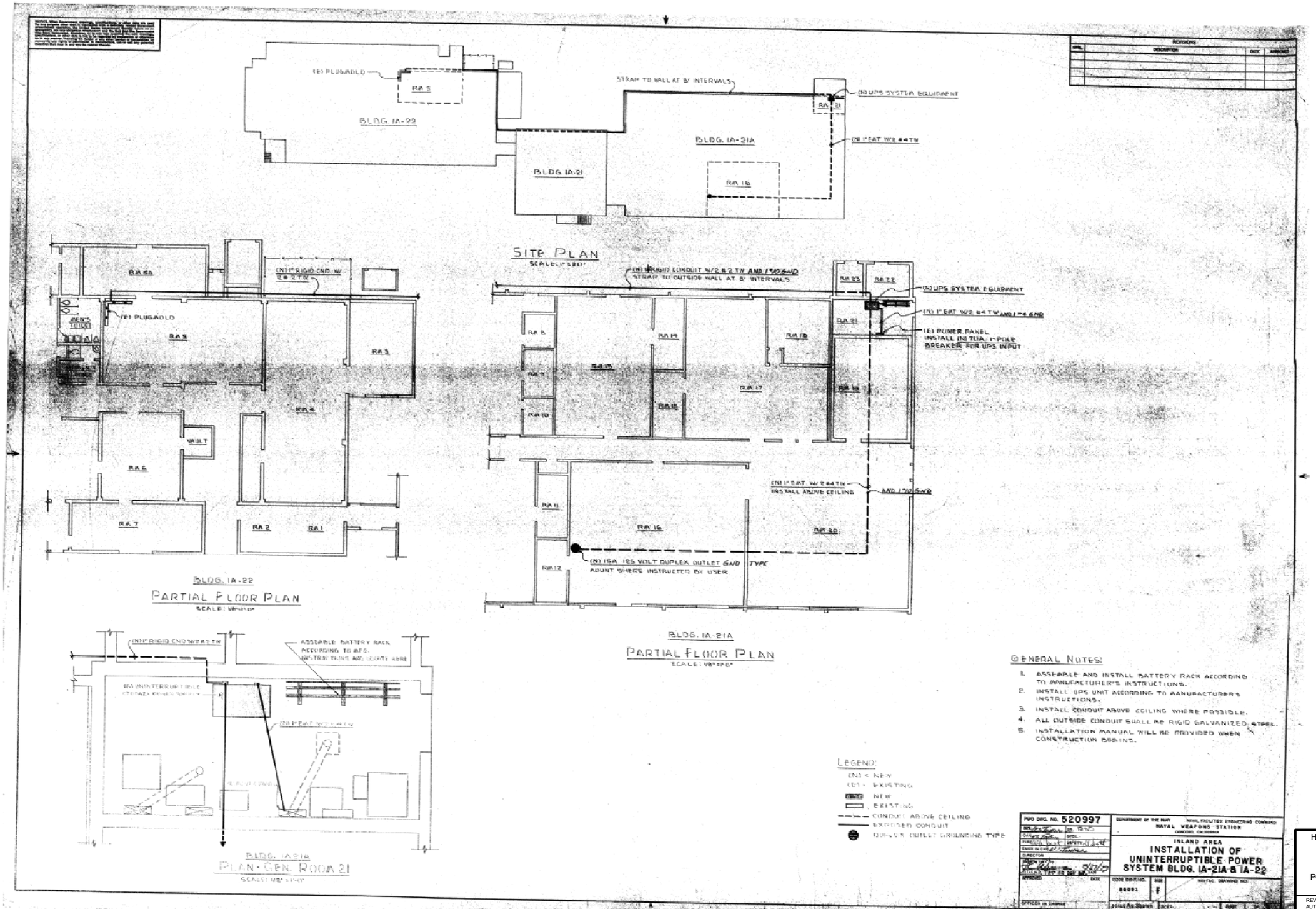
FIGURE 8-2FP BLDG IA-22a

INSTALLATION OF DIELECTRIC STRENGTH FLOOR

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DON: ECSD-3211-0005-0004
FILE NUMBER: 090401L4553.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-2FP BLDG IA-22b

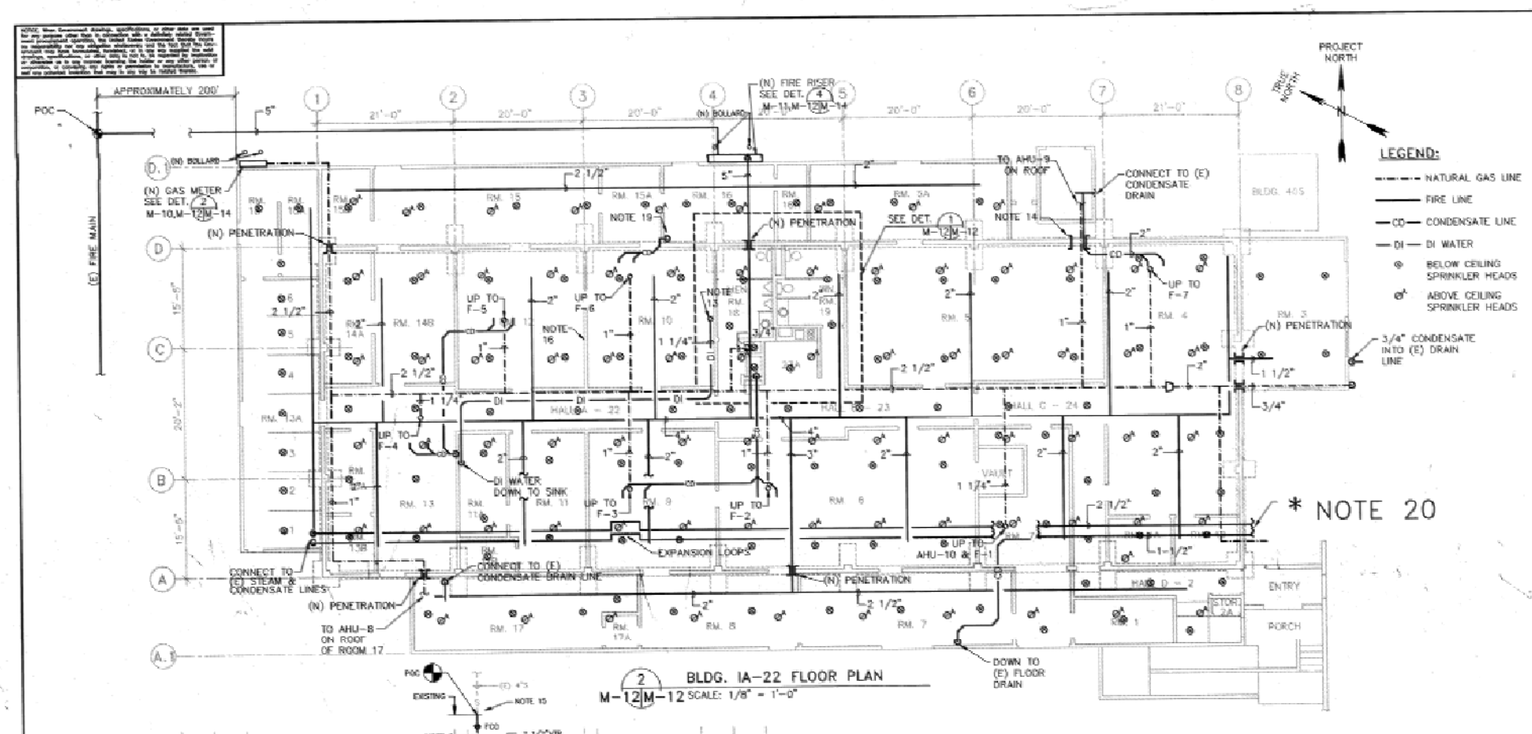
INSTALLATION OF UNINTERRUPTIBLE POWER SYSTEM BUILDING IA-21A AND IA-22

FORMER NAVWPNSTA CONCORD, CALIFORNIA

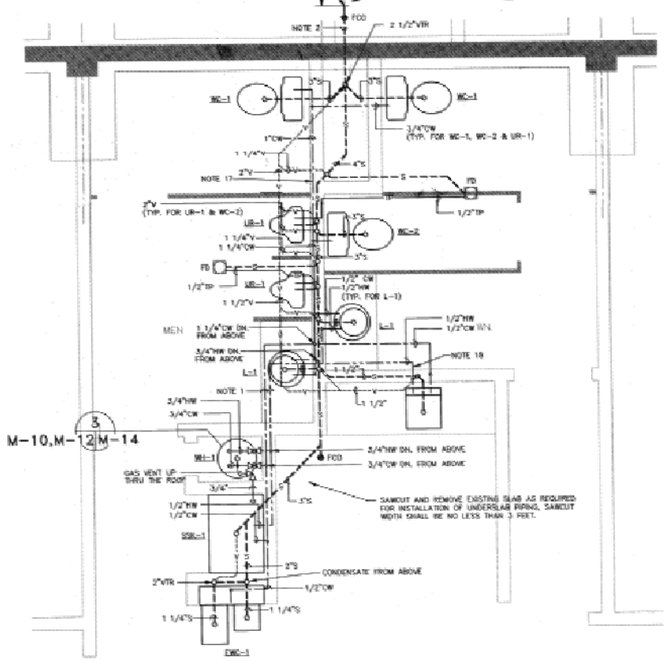
REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4554.mxd

TETRA TECH EC, INC.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



2 BLDG. IA-22 FLOOR PLAN
M-12 2 M-12 SCALE: 1/8" = 1'-0"



3 DETAIL
M-10,M-12 3 M-14
M-12 1 M-12 SCALE: 1/2" = 1'-0"

LEGEND:

- NATURAL GAS LINE
- FIRE LINE
- CD — CONDENSATE LINE
- DI — DI WATER
- BELOW CEILING SPRINKLER HEADS
- ABOVE CEILING SPRINKLER HEADS

NOTES:

1. ROUTE CW AND HW ABOVE CEILING. DROP TO FIXTURES OR GROUPING OF FIXTURES. CW SUPPLY SHALL BE FROM EXISTING 2" COPPER CW PIPE LOCATED IN THE ATTIC SPACE. INSTALL A 2" SHUTOFF VALVE AT POINT OF CONNECTION.
2. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF EXISTING SANITARY DRAIN PIPE. A NEW WALL PENETRATION WILL BE REQUIRED TO PLACE NEW UNDERFLOOR PIPING.
3. CONTRACTOR SHALL PROVIDE DOUBLE INTERLOCKING PREACTION FIRE SYSTEM.
4. CONTRACTOR SHALL PROVIDE SPRINKLER AND FIRE ALARM SYSTEM, HANGERS, CONDUITS AND SUPPORTS AS REQUIRED BY CURRENT CODES.
5. ALL SPRINKLER AND FIRE ALARM DEVICE LOCATIONS ARE FOR REFERENCE ONLY. A LICENSED FIRE PROTECTION ENGINEER SHALL FIELD VERIFY ALL LOCATIONS FOR SUITABLE INSTALLATION.
6. CONTRACTOR SHALL HYDRAULICALLY CALCULATE SYSTEM BASED ON REMOTE 3000 SQUARE FOOT AREA.
7. BUILDING CLASSIFICATION IS ORDINARY HAZARD.
8. CONTRACTOR SHALL FIELD VERIFY AND AVOID UNDERGROUND ELECTRICAL CONDUIT AND MECHANICAL PIPING INTERFERENCES WHEN INSTALLING NEW FIRE LINE.
9. EXCAVATION SHALL BE FREE FROM WATER WHILE CONSTRUCTION IS IN PROGRESS. EXCAVATE ROCKS AND OTHER UNYIELDING MATERIAL TO AN OVERDEPTH OF AT LEAT 6" BELOW THE BOTTOM OF THE PIPE. PLACE A PIPE BEDDING IN 6" MAXIMUM LAYERS TO REFILL OVERDEPTH TO THE PROPER GRADE. GRADE BOTTOM OF TRENCH ACCURATELY TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF PIPE ON BEDDING MATERIAL.
10. BACKFILL SHALL BE PLACED IN 6" MAXIMUM LAYERS. COMPACT EACH LOOSE LIFT BEFORE PACING NEXT LIFT.
11. USE ANY SUITABLE HAND OPERATED TAMPER TO COMPACT THE BACKFILL MATERIAL TO AT LEAST 90 PERCENT OF ASTM D1557 MAXIMUM RELATIVE DENSITY. AVOID DAMAGING PIPES AND PROTECTIVE PIPE COATINGS.
12. PIPE SHALL BE BURIED 24" DEEP IN TRAFFIC FREE AREAS AND 36" DEEP IN TRAFFIC AREAS.
13. CONTRACTOR TO CONNECT NEW 1/4" DI WATER LINE ABOVE CEILING FROM ROOM 10 TO ROOM 11A SINK.
14. GAS PIPING SHALL SHARE BUILDING PENETRATION WITH NEW HVAC DUCT. SEE DRAWING M-9 FOR PENETRATION LOCATION.
15. AFTER DEMOLITION OF EXISTING PLUMBING TO POC AND PRIOR TO INSTALLATION OF NEW PIPE FLUSH REMAINING PIPE. DETERMINE THAT FLOW IS UNIMPEDED BY OBSERVATION AT THE FIRST DOWNSTREAM MANHOLE.
16. PRIOR TO DEMOLITION OF INTERIOR BLOCK WALLS. DISCONNECT ALL PLUMBING FIXTURES OR PIPE FROM WALLS. DURING CONSTRUCTION OF THE NEW WALLS RE-ESTABLISH PLUMBING CONNECTION, ADDING REQUIRED PIPE AND FITTINGS TO RESTORE EXISTING SERVICES.
17. PROVIDE WATER HAMMER ARRESTOR GOOD FOR 30-40 FIXTURE UNITS.
18. PROVIDE WATER HAMMER ARRESTOR GOOD FOR 10-15 FIXTURE UNITS.
19. RUN PIPE THROUGH (N) WALL PENETRATION WITH DUCT. PIPE TO RUN EXPOSED ON WALL DOWN CORNER OF ROOM 16 AND TIE INTO (E) DRAIN.

* 20. (N) STEAM AND CONDENSTE LINES RUN UNDER EAVES ALONG BUILDINGS IA-21(NW) TO BUILDING IA-21(SE).

NOTE 20 IS PART OF THE PROJECT BASE BID. IF ADDITIVE BID WORK IS PERFORMED, THE STEAM AND CONDENSATE LINES INSTALLED AS PART OF NOTE 20 MUST BE DEMOLISHED.

IF SHEET IS LESS THAN 28" X 40" IT IS A REDUCED PRINT- SCALE REDUCED ACCORDINGLY

M-12

GRAPHIC SCALES

1/8" = 1'-0" 0" 2' 6' 14' 24'

1/2" = 1'-0" 0" 1' 2' 3' 4' 6'

SAI ENGINEERS, INC.
295 Santa Ana Court, Sunnyvale, Ca 94086
SAI Project No. 93116 DATE: 10/27/94

PWD DWG. NO.
DES. JK DR. RW
CHK. PB SPEC.
DWG. SAFETY
CHECK IN CHIEF
DIRECTOR
DISTRIBUTION TO:
TITLE DATE
APPROVED DATE
STATUS IN CLEARANCE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

REHABILITATION OF BLDGS. IA-21 & IA-22
BUILDING IA-22 INSTALLATION
PLUMBING, FIRE PROTECTION, GAS

CODE IDENT NO. 80091 SIZE F NAVFAC DRAWING NO. 6412685
SCALE 1/8" = 1'-0" SPEC. 12-90-9924 SHEET 32 OF 61

16MC07 12/06/94 at 15:59

HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-2FP BLDG IA-22c
REHABILITATION OF BUILDINGS IA-21 AND IA-22
BUILDING IA-22 INSTALLATION PLUMBING, FIRE PROTECTION, GAS
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011.4555.mxd

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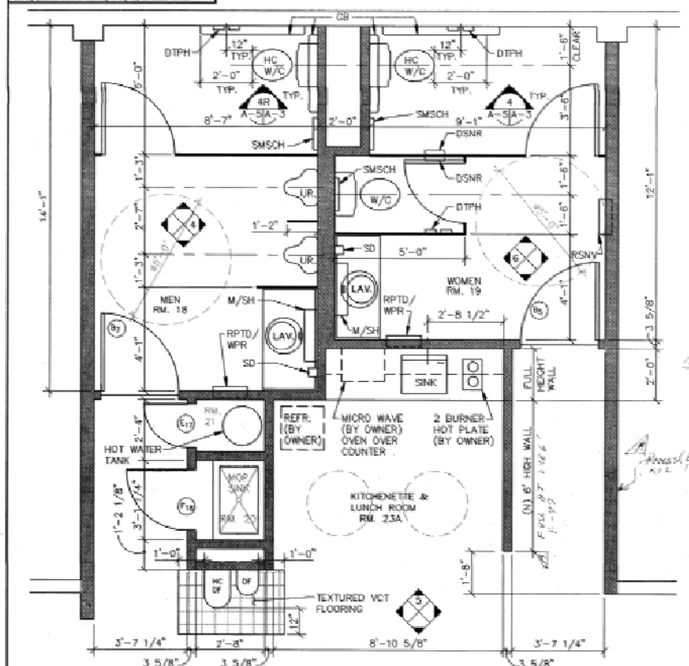
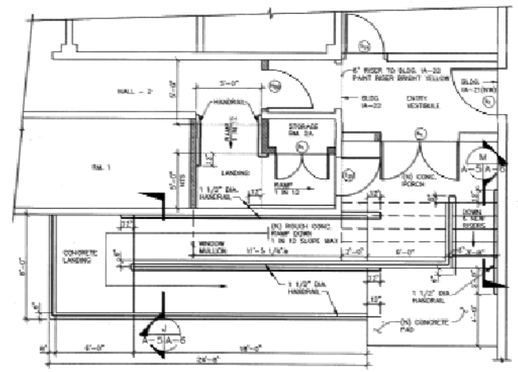
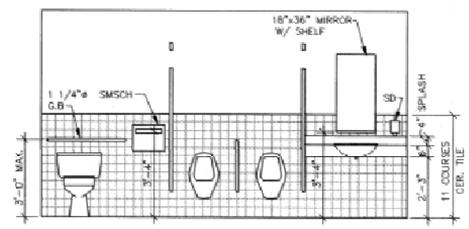


2 ENLARGED PLAN
A-5|A-5 SCALE: 1/2" = 1'-0"

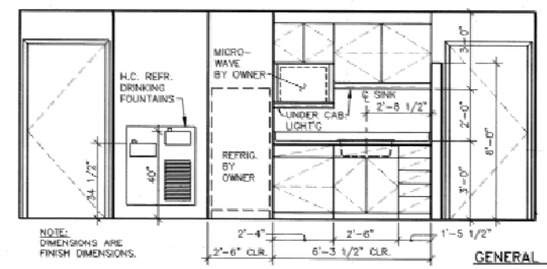
NOTE: DIMENSIONS ARE STUD TO STUD DIMENSIONS.



3 MAIN ENTRY RAMP & STEPS TO BLDGS. IA-21(NW) & IA-22
A-5|A-5 SCALE: 1/4" = 1'-0"

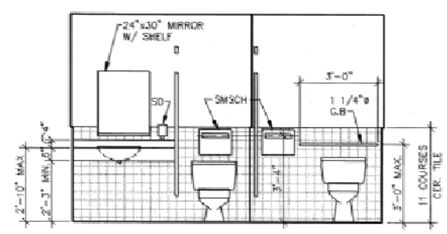


4 MEN'S TOILET RM. NO. 18 ELEVATION
A-5|A-5 SCALE: 1/2" = 1'-0"

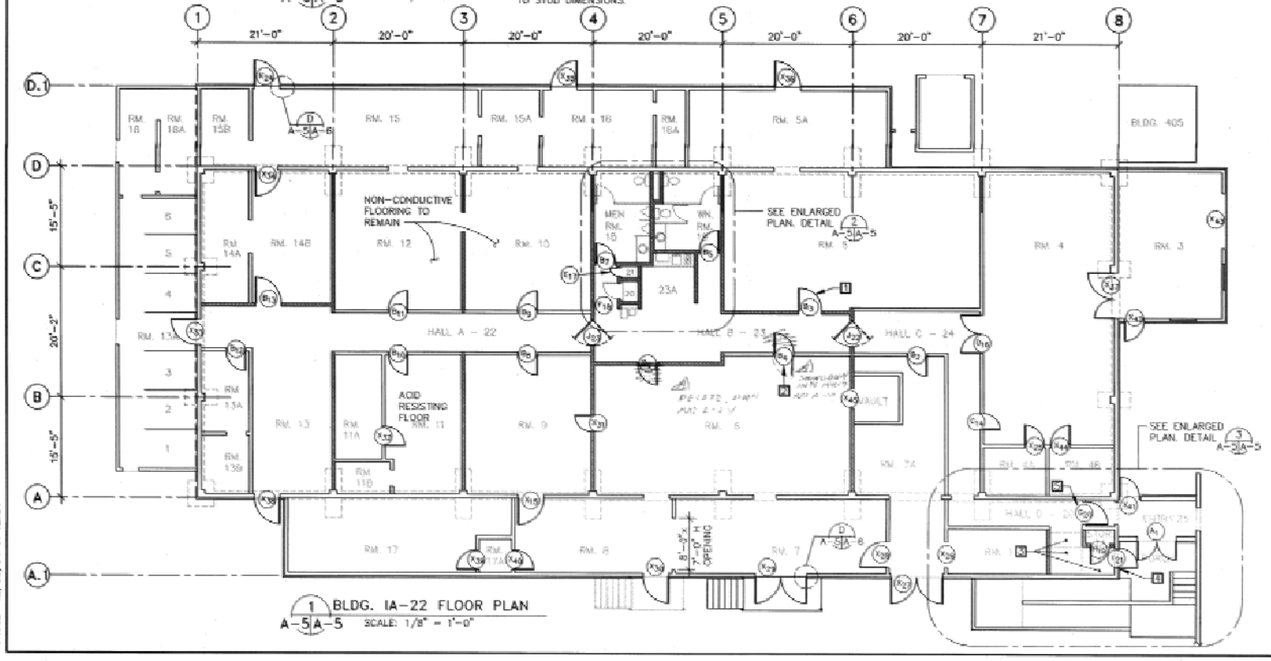


NOTE: DIMENSIONS ARE FINISH DIMENSIONS.

5 KITCHENETTE RM. NO. 23A ELEVATION
A-5|A-5 SCALE: 1/2" = 1'-0"



6 WOMEN'S TOILET RM. NO. 19 ELEVATION
A-5|A-5 SCALE: 1/2" = 1'-0"



1 BLDG. IA-22 FLOOR PLAN
A-5|A-5 SCALE: 1/8" = 1'-0"

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

FINISH SCHEDULE

NO.	ROOM NAME	FLOOR	BASE	WALL	CEILING	REMARKS
1	OFFICE					
2	HALL - D					
3	TESTING					
4						
4A	OFFICE					
4B	OFFICE					
5						
5A						9'-0" TO 9'-4"
6						
7						
7A						
8						
9						
10						
11						
11A						
11B	STORAGE					
12						
13						
13A						
13B						
14A						
14B						
15						9'-1" TO 9'-4"
15A						9'-1" TO 9'-4"
15B						9'-1" TO 9'-4"
16						9'-1" TO 9'-4"
16A						9'-0" TO 9'-4"
17						
17A						
18	MEN'S TOILET					
19	WOMEN'S TOILET					
20	MOP ROOM					
21	HOT WATER					
22	HALL - A					
23	HALL - B					
23A	KITCHENETTE/LUNCH					
24	HALL - C					
25	ENTRY					

GENERAL NOTES:

1. PROVIDE NEW 3'-0"x6'-8" 20 MINUTE FIRE RATED DOOR ASSEMBLY IN NEW WALL.
2. PROVIDE NEW 3'-0"x6'-8" 20 MINUTE FIRE RATED DOOR ASSEMBLY IN EXISTING WALL.
3. RAMP DOWN FLOOR WITH 5'-0"x5'-0" LANDING TO NEW ENTRY PORCH LEVEL AT NEW DOOR H_2
4. CUT NEW OPENING IN EXTERIOR WALL AND PROVIDE NEW 3'-0"x6'-8"x1 3/4" H.M. STEEL DOOR AND FRAME.
5. PROVIDE NEW 3'-0"x6'-8"x1 3/4" H.M. STEEL DOOR AND FRAME IN NEW WALL.
6. FIRE EXTINGUISHERS SHALL BE TEMPORARILY REMOVED WHILE REHABILITATION WORK IS TAKING PLACE. RE-INSTALL FIRE EXTINGUISHERS AT THEIR FORMER LOCATIONS AFTER REHABILITATION WORK HAS BEEN COMPLETED.

IF SHEET IS LESS THAN 28" X 40" IT IS A REDUCED PRINT- SCALE REDUCED ACCORDINGLY

LEGEND:

EXISTING WALLS
NEW WALLS

GRAPHIC SCALES

1/8" = 1'-0" 0" 2' 6' 14' 24'
1/4" = 1'-0" 0" 2' 4' 6' 8' 12'
1/2" = 1'-0" 0" 1' 2' 3' 4' 6'

A-5

SAI ENGINEERS, INC.
283 Santa Ana Court, Sunnyvale, Ca 94086
SAI Project No. 93116 DATE: 10/27/94

NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

REHABILITATION OF BLDGS. IA-21 & IA-22
BLDG. IA-22
FLOOR PLAN

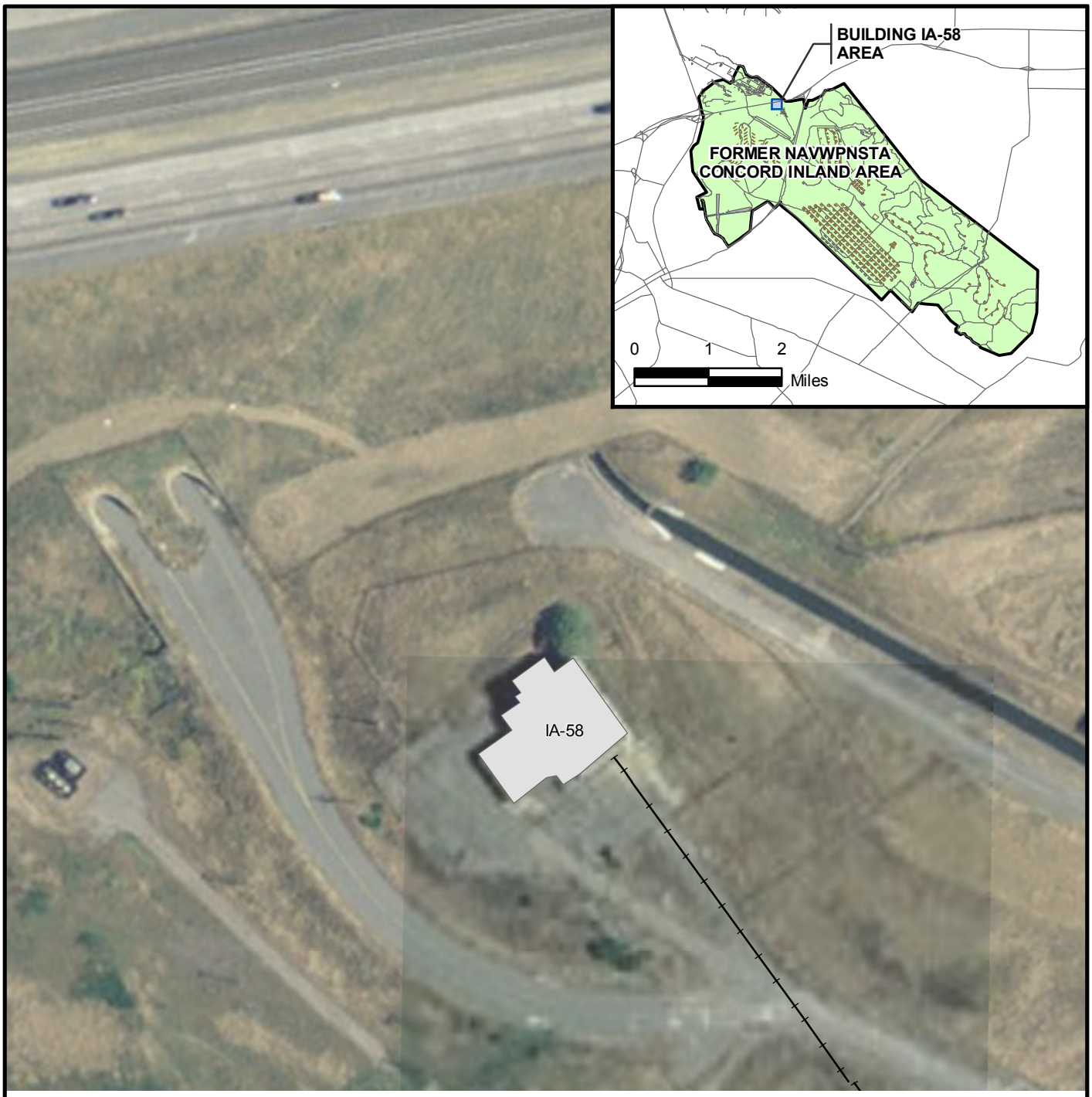
CODE IDENT NO. 80091 | SIZE F | 6412659
SCALE AS SHOWN | SHEET 6 of 61

HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-2FP BLDG IA-22d
REHABILITATION OF BUILDINGS IA-21 AND IA-22
BUILDING IA-22 FLOOR PLAN
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DON: ECSD-3211-0005-0004
FILE NUMBER: 090401L4556.mxd

TETRA TECH EC, INC.

16A002 12/08/94 at 12:54



LEGEND

- ROAD
- RAILROAD
- AMMUNITION MAGAZINE
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- BUILDING
- RUNWAY

N

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

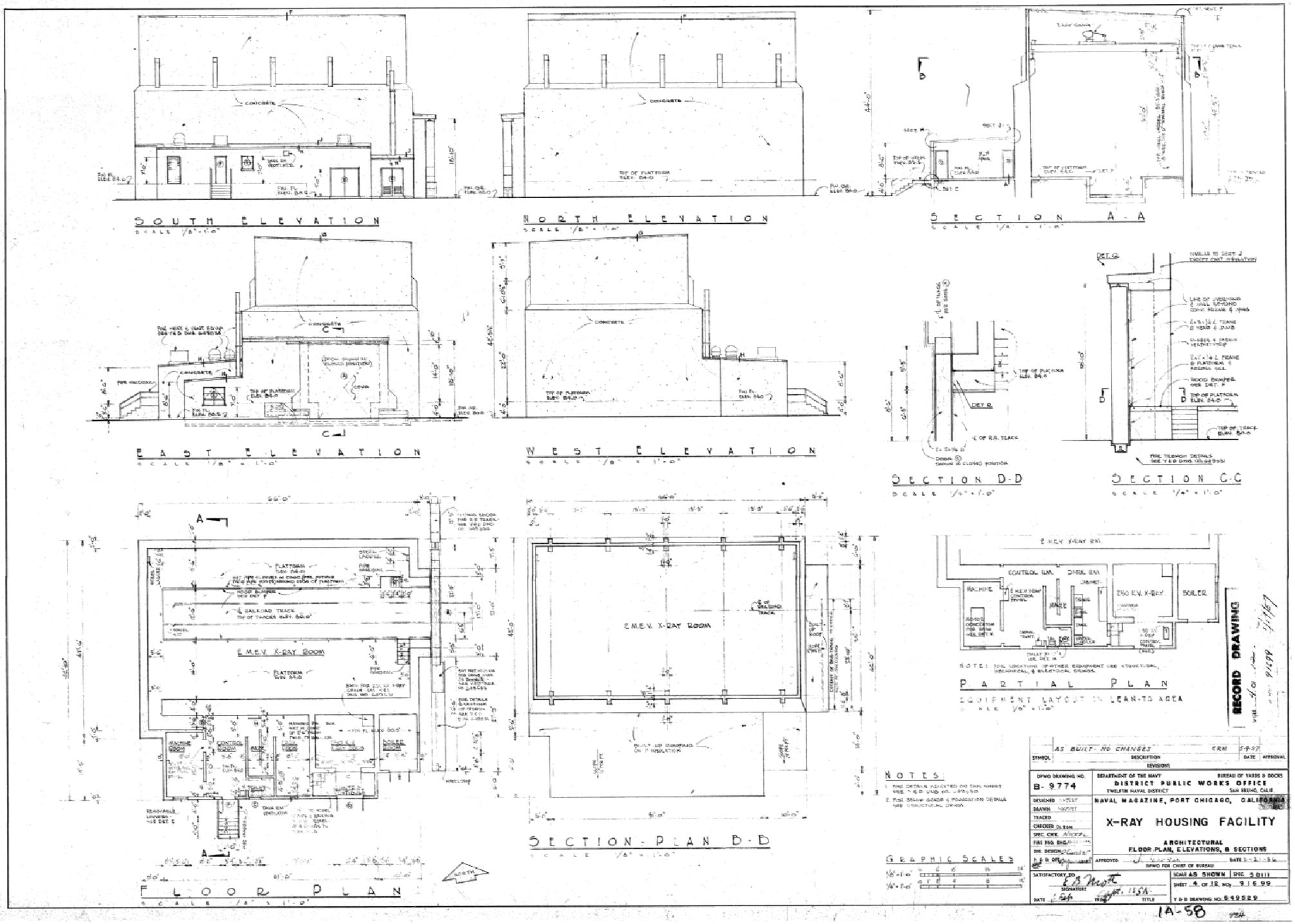
FIGURE 8-3

BUILDING IA-58

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4557.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

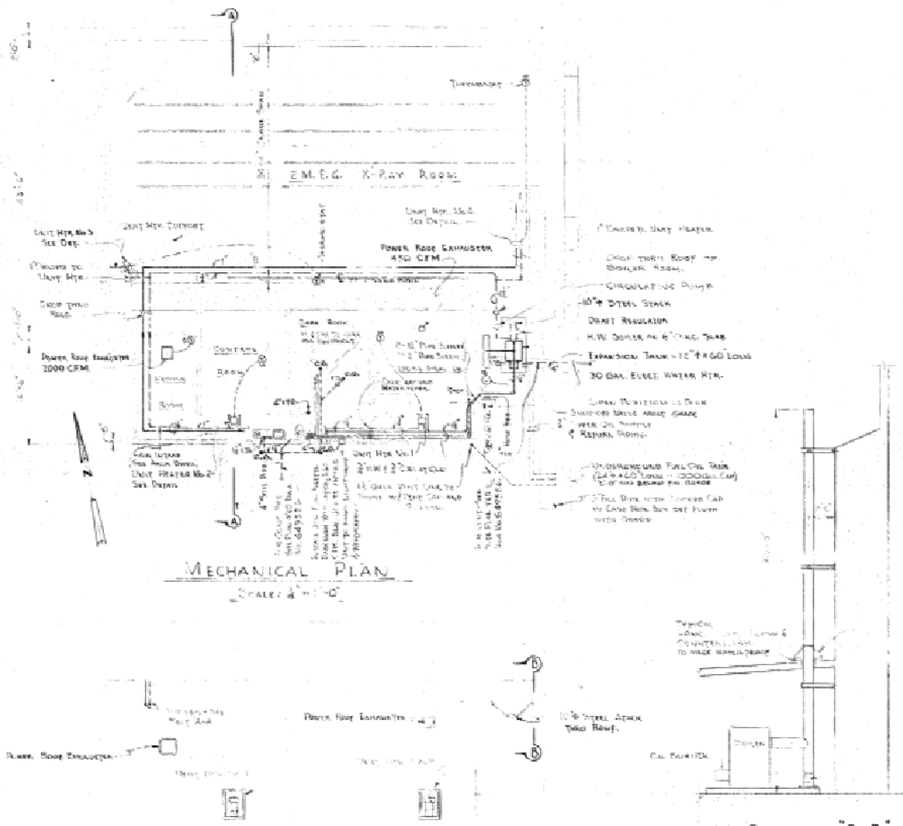
FIGURE 8-3FP BLDG IA-58a

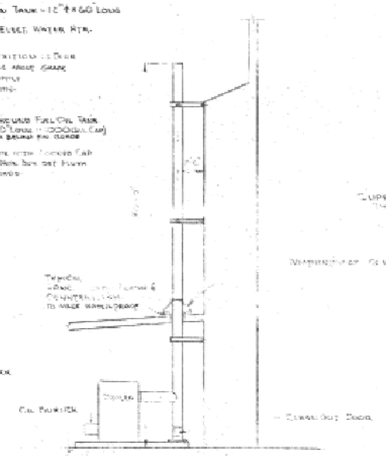
X-RAY HOUSING FACILITY
ARCHITECTURAL FLOOR PLAN,
ELEVATIONS, AND SECTIONS

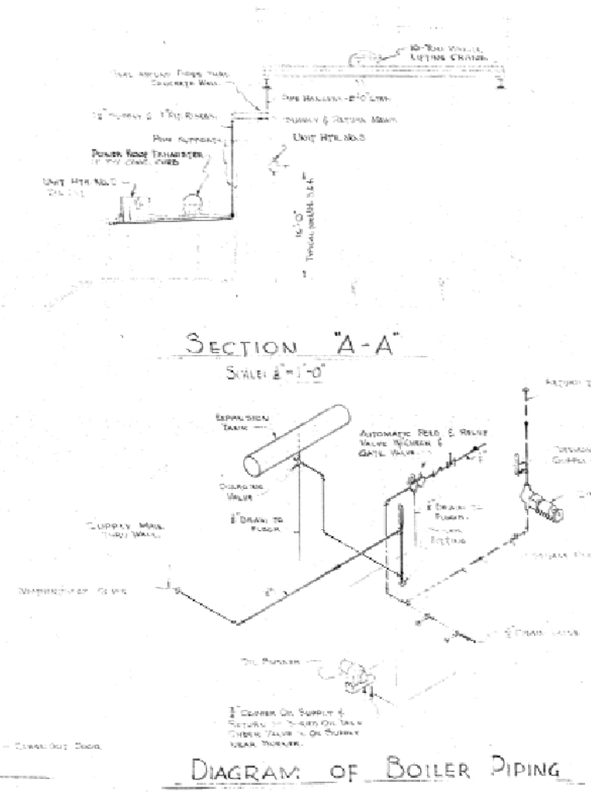
FORMER NAVWPNSTA CONCORD, CALIFORNIA

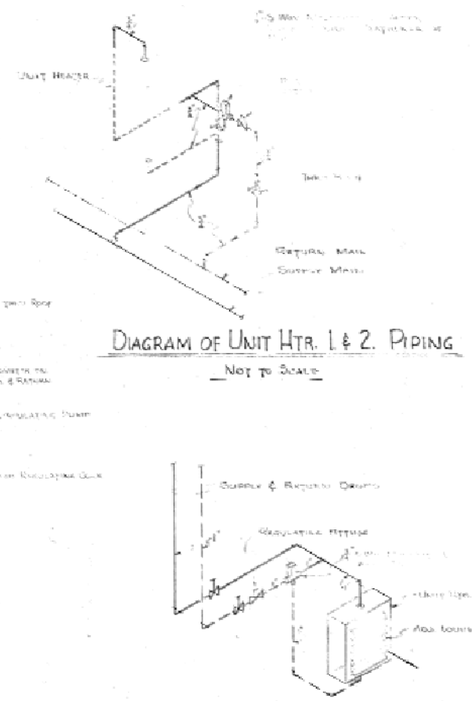
REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4558.mxd

TETRA TECH EC, INC.





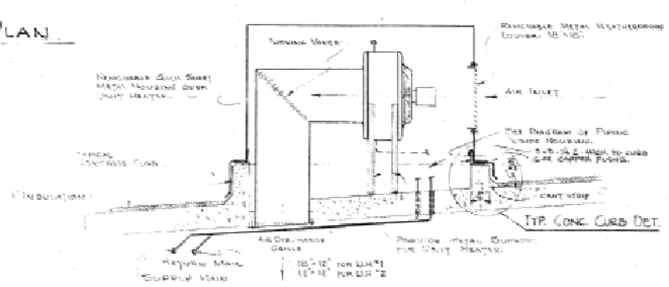




SCHEDULE OF UNIT HEATERS

UNIT HTR. NO.	MBH	GPM	APPROX. CFM	MOUNTING HEIGHT	ENTERING AIR TEMP.
1.	30.5	3.2	4.5" 9.8" 2.2	1/2"	50°F.
2.	23.0	2.4	4.5" 9.8" 2.2	1/2"	30°F.
3.	53.7	5.6	1500	3/4"	60°F.
4.	53.7	5.6	1500	3/4"	60°F.

NOTE: THE CAPACITY OF ALL UNITS VERTICAL FORCED AIR IN TEMPERATURE RISE OF 20°F. EXTERNAL WATER TEMPERATURE 180°F.



GRAPHIC SCALES

RECORD DRAWING
SHEET 8 OF 12
SEE LETTER NO. 21673 DATED 4-7-99

SYMBOL	DESCRIPTION		DATE	APPROVAL
A	AS BUILT - MISCL. PLUMBING CHANGES	GBS	6-8-57	

REVISIONS

DPWO DRAWING NO. B-9779

DEPARTMENT OF THE NAVY — BUREAU OF YARDS & DOCKS
DISTRICT PUBLIC WORKS OFFICE
TWELFTH NAVAL DISTRICT — SAN BRUNO, CALIF.

NAVAL MAGAZINE, PORT CHICAGO, CALIFORNIA

X-RAY HOUSING FACILITY

MECHANICAL
HEATING, VENTILATION, & PLUMBING

DESIGNED: SCHIELL
DRAWN
TRACED
CHECKED
SPEC. CHK.
FIRE PROT. ENG.
DIR. DESIGN.
P. & D. OFF.

APPROVED — DATE
DPWO FOR CHIEF OF BUREAU

SATISFACTORY TO — SIGNATURE — DATE — TITLE

SCALE AS SHOWN | SPEC. 50111
SHEET 8 OF 12 NOS. 91699
T & D DRAWING NO. 949234

1A-58

HISTORICAL RADIOLOGICAL ASSESSMENT

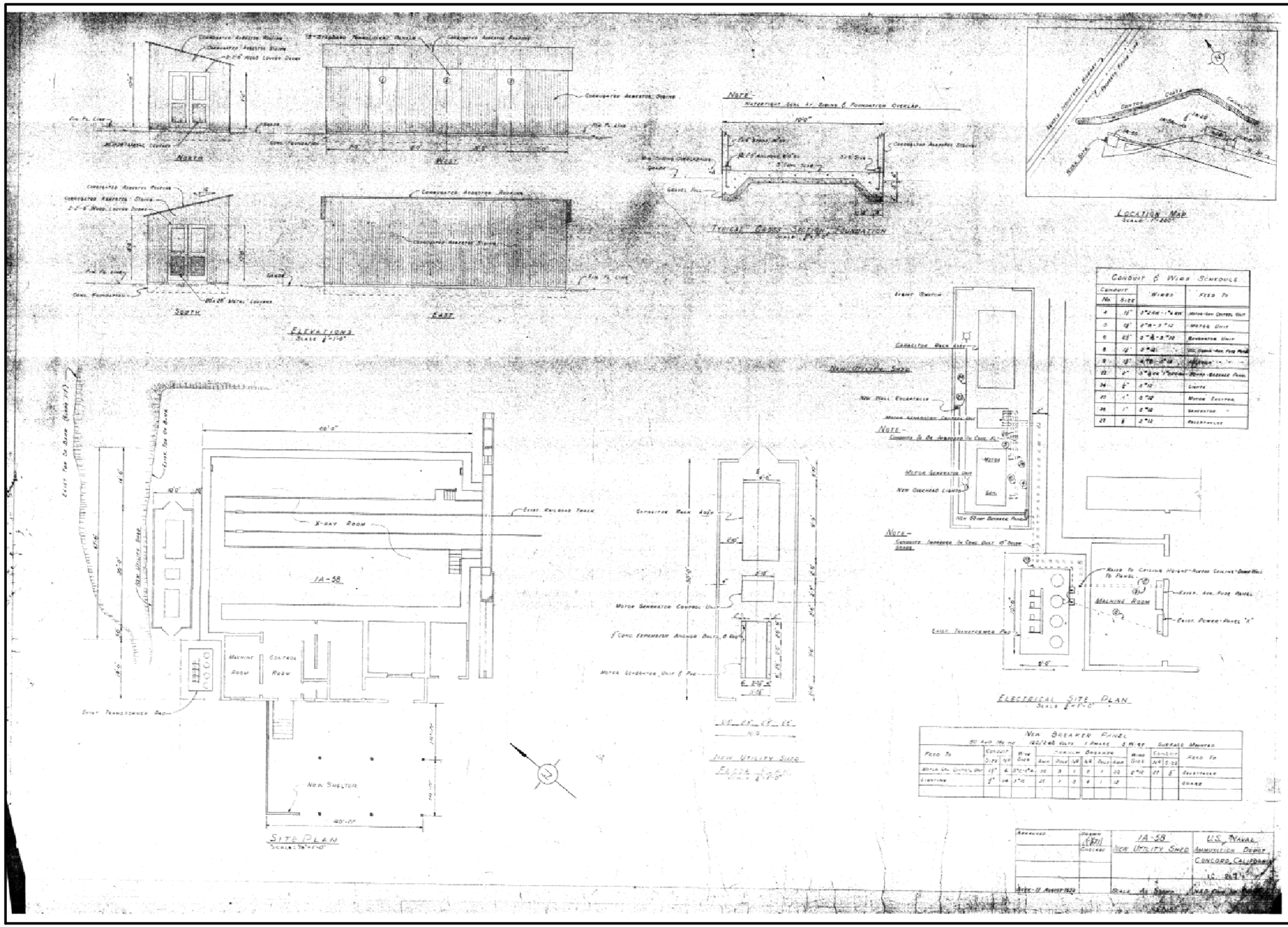
FIGURE 8-3FP BLDG IA-58b

X-RAY HOUSING FACILITY - MECHANICAL HEATING, VENTILATION, AND PLUMBING

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4559.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

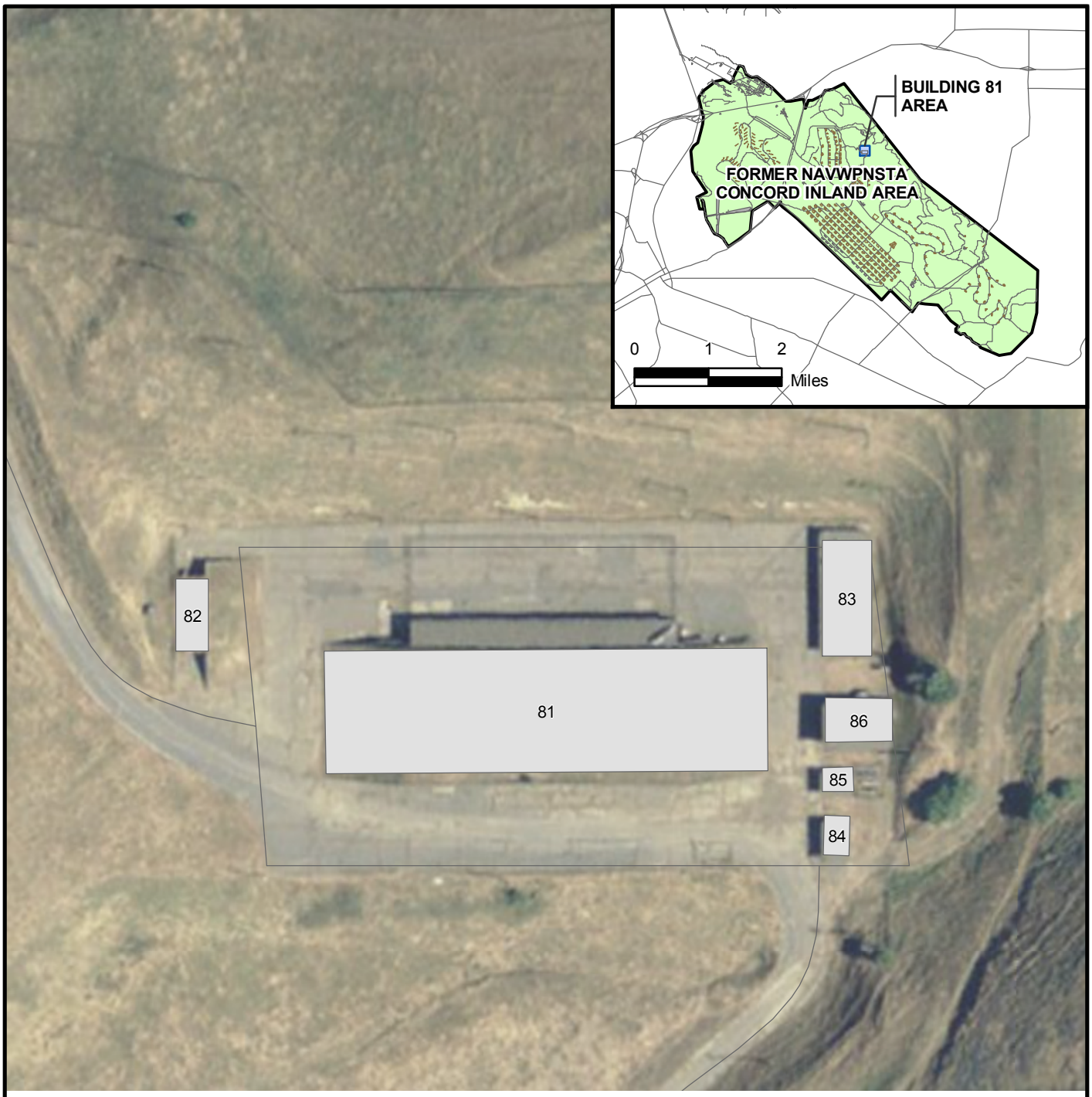
FIGURE 8-3FP BLDG IA-58c

IA-58 NEW UTILITY SHED

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011L4560.mxd

TETRA TECH EC, INC.



LEGEND

- ROAD
- AMMUNITION MAGAZINE
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- BUILDING
- RUNWAY

N

50 0 50 100 Feet

NOTE:

ONLY THE SITES CALLED OUT IN SECTION 8.0 ARE CONSIDERED IMPACTED FOR THE PURPOSE OF THIS HISTORICAL RADIOLOGICAL ASSESSMENT.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

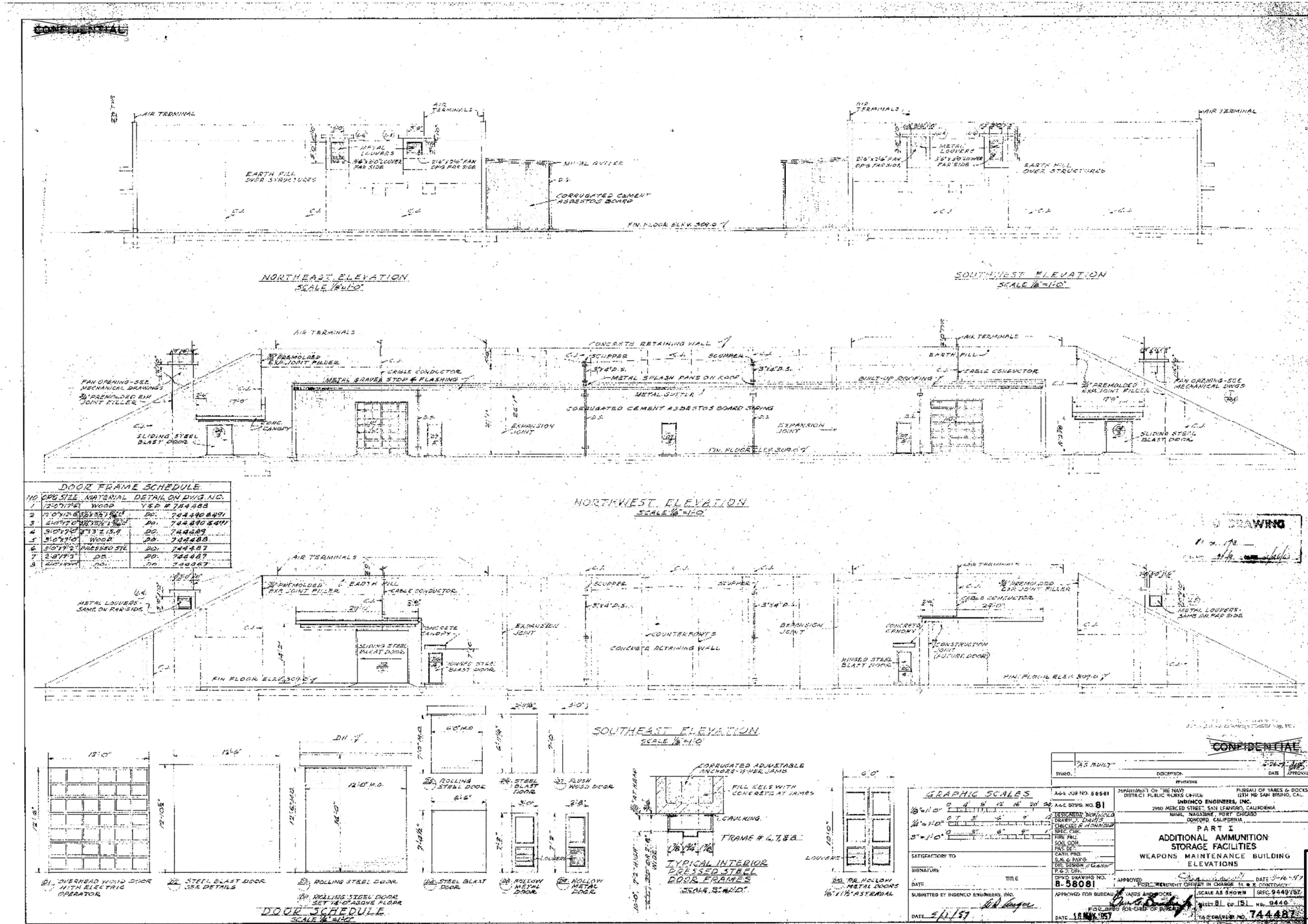
FIGURE 8-4

BUILDING 81

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4561.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

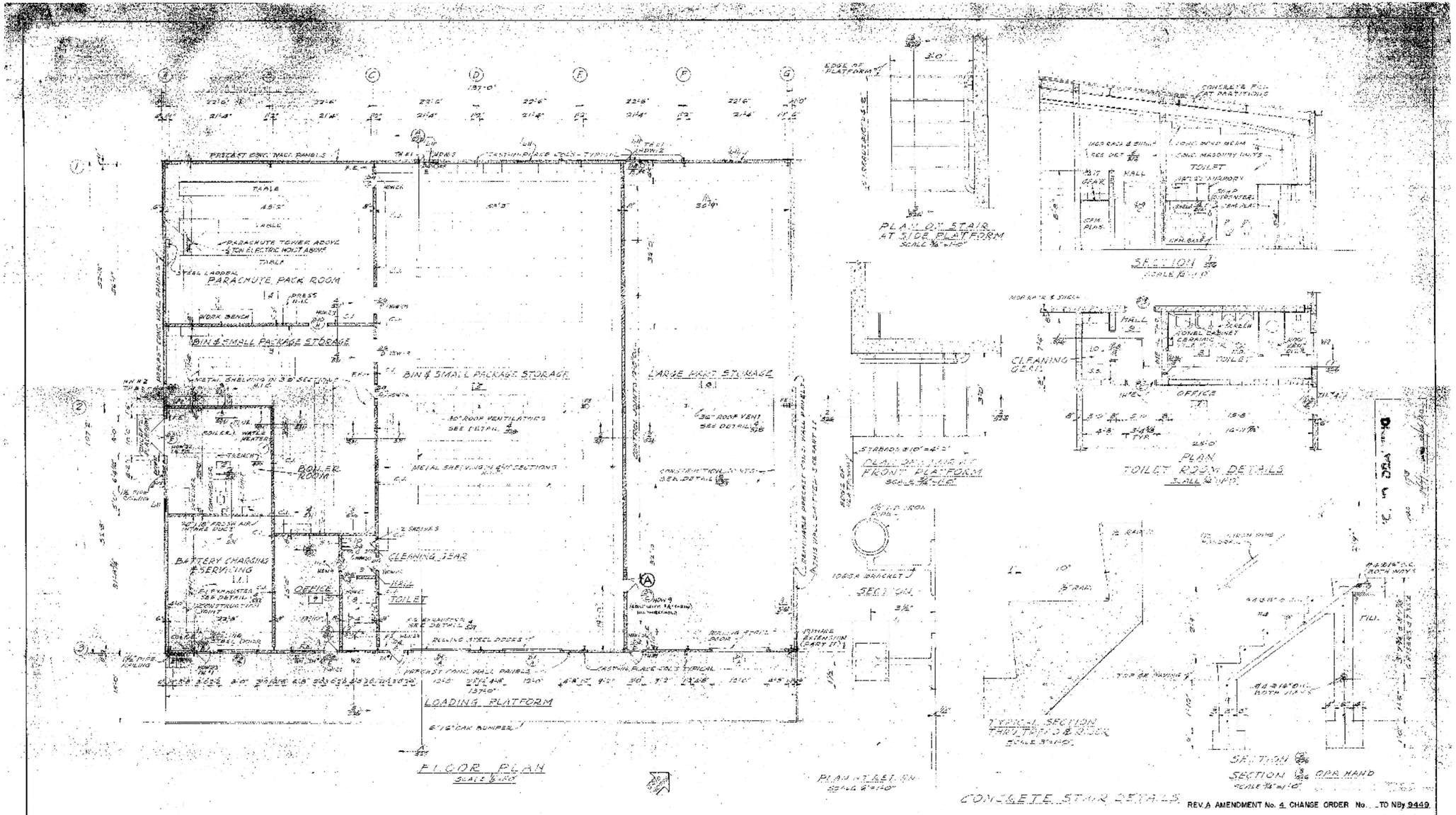
FIGURE 8-4FP BLDG 81a

ADDITIONAL AMMUNITION STORAGE FACILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 09040114562.mxd

TETRA TECH EC, INC.



REV A AMENDMENT No. 4 CHANGE ORDER No. _ TO NBy 9449

SYMBOL	DESCRIPTION	DATE	APPROVAL
A	"AS BUILT" REVISIONS-OMITTED END PANELS	6-26-58	
A	Added Door	11-7-58	

REVISIONS

INTERIOR FINISH SCHEDULE

NO.	ROOM DESCRIPTION	FLOOR MAT'L	FLOOR FINISH	BASE MAT'L	BASE FINISH	WAINSCOT MAT'L	WAINSCOT FINISH	WALL MAT'L	WALL FINISH	CEILING MAT'L	CEILING FINISH	TRIM MAT'L	TRIM FINISH	COLOR REMARKS
1	BATTERY CHARGING & SERVICING	CONC.	NAT.	—	—	—	—	CONC & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #5
2	BOILER ROOM	CONC.	NAT.	—	—	—	—	CONC & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #2
3	BIN & SMALL PACKAGE STORAGE	CONC.	NAT.	—	—	—	—	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
4	PARACHUTE PACK ROOM	CONC.	WAX	—	—	—	—	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #3
5	BIN & SMALL PACKAGE STORAGE	CONC.	NAT.	—	—	—	—	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
6	LARGE PART STORAGE	CONC.	NAT.	—	—	—	—	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
7	OFFICE	ASPH. TILE	WAX	TO TILE	—	—	—	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #7
8	TOILET	CER. TILE	NAT.	CER.	B.	CER. PLAS.	ENAMEL	CONC & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #13
9	HALL	CONC.	NAT.	—	—	—	—	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #7
10	CLEANING GEAR	CONC.	NAT.	CER.	B.	CER. PLAS.	ENAMEL	CONC & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #13

GENERAL NOTES

1. PROVIDE WET PIPE SPRINKLER SYSTEM IN ENTIRE BUILDING UNDER UNIFORM DISCHARGE DENSITY PER SPEC. 29-40 (16) & HAZ. DOCKS TO-WIT IV AREAS 3, 5 & 6 AND ORDINARY HAZARD OCCUPANCIES TO EXCLUDE IN THE REMAINDER OF THE BUILDING.
2. ALL EXPOSED PIPES (WATER), DUCTWORK & SUNDRY METAL SHALL BE PAINTED AS TRIM.
3. PROVIDE ALL NECESSARY ANCHORS, SLEEVES, HANGERS & INSERTS REQUIRED FOR MECHANICAL & ELECTRICAL WORK.

GRAPHIC SCALES

SATISFACTORY TO

SIGNATURE TITLE

DATE

SUBMITTED BY INDENCO ENGINEERS, INC.

DATE 3/1/57

A&E JOB NO. 58581

A&E DRWG. NO. 120

DESIGNED
DRAWN
CHECKED
SPEC. CHK.
FIRE PROT.
SOIL CON.
SAE DES.
CATH. PRO.
S.M.G. PAYR.
DIL DESIGN
P.&D. DRA.

DPWO DRAWING NO. B-58120

APPROVED FOR BUREAU OF YARDS AND DOCKS

DATE 15 MAY 1957

DEPARTMENT OF THE NAVY
DISTRICT PUBLIC WORKS OFFICE
BUREAU OF YARDS & DOCKS
12TH ND SAN BRUNO, CAL.

INDENCO ENGINEERS, INC.
2960 MERCED STREET, SAN LEANDRO, CALIFORNIA

NAVAL MAGAZINE, FORT CHICAGO
CONCORD, CALIFORNIA

PART I
ADDITIONAL AMMUNITION STORAGE FACILITIES
INERT STORAGE & PROCESSING BLDG.
PLAN & INTERIOR DETAILS

APPROVED FOR: DISTRICT OFFICER IN CHARGE
DATE 5-4-61

SCALE AS SHOWN
SPEC. 9449/57
SHEET 120 OF 151
NBy 9449
Y&D DRAWING NO. 744526

CONFORMED

HISTORICAL RADIOLOGICAL ASSESSMENT

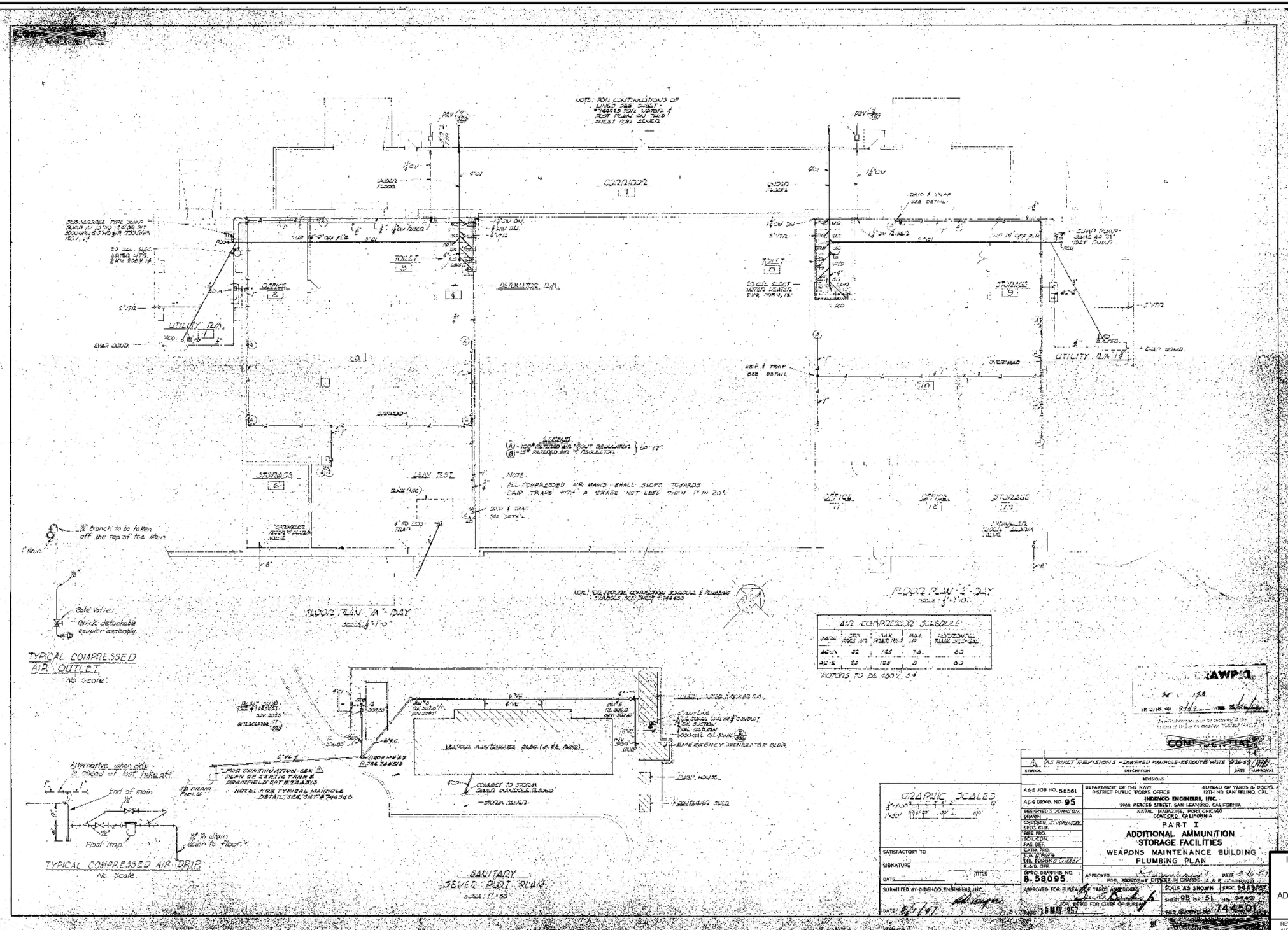
FIGURE 8-4FP BLDG 81b

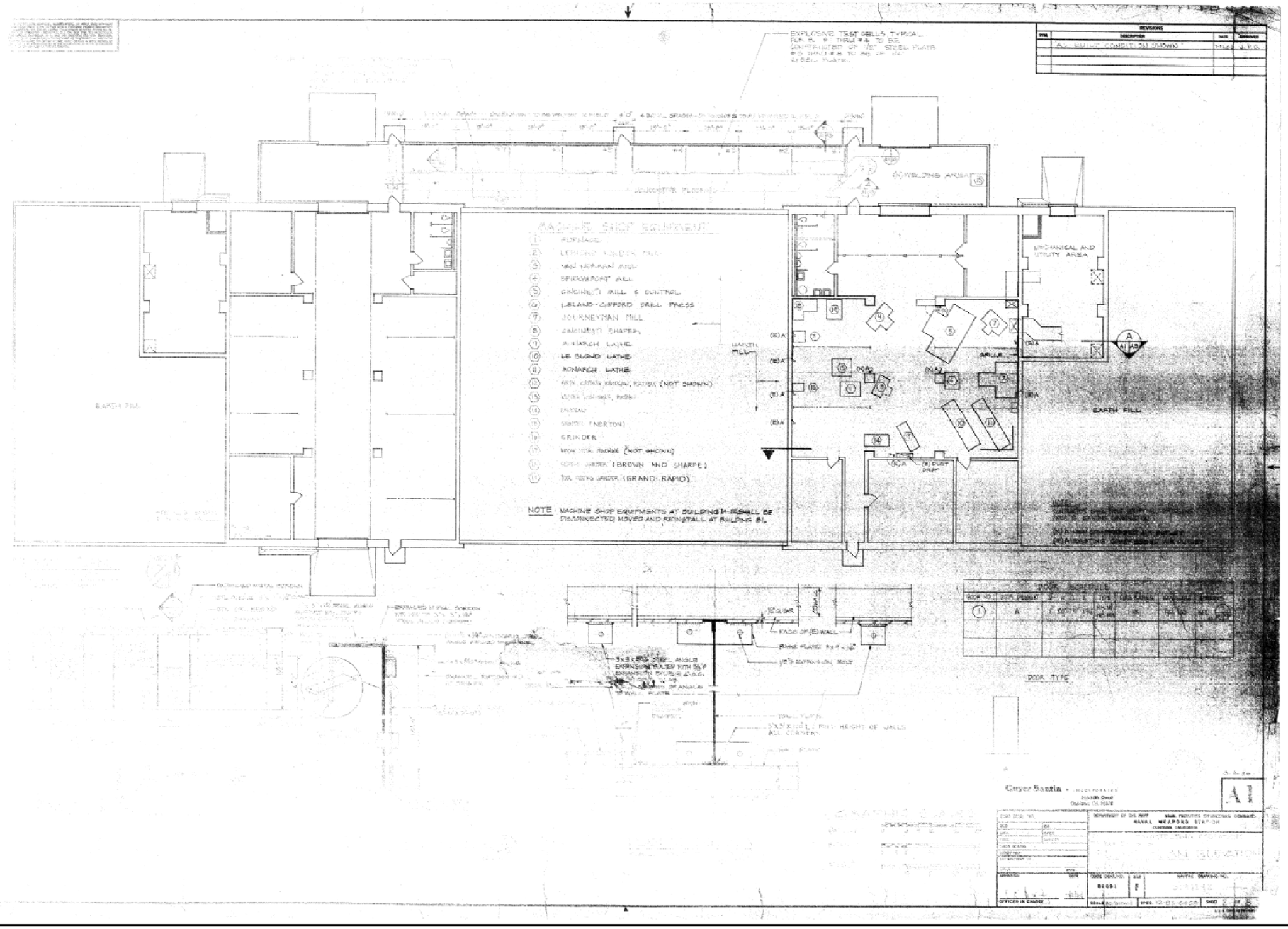
ADDITIONAL AMMUNITION STORAGE FACILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904014563.mxd

TETRA TECH EC, INC.


CORRIDOR
TOILET
OFFICE
STORAGE
UTILITY R/A
DETOXIFICATION R/A
OVERHEAD
LEAK TEST
OFFICE
STORAGE
FLOOR PLAN "A" BAY
FLOOR PLAN "B" BAY
TYPICAL COMPRESSED AIR OUTLET
No Scale
TYPICAL COMPRESSED AIR DRIP
No Scale
SANITARY SEWER PLOT PLAN
AIR COMPRESSOR SCHEDULE
CONFIDENTIAL
GRAPHIC SCALES
AS BUILT REVISIONS - UNLEADED MAINLINE - REROUTED WASTE
DEPARTMENT OF THE NAVY
DISTRICT PUBLIC WORKS OFFICE
BUREAU OF YARDS & DOCKS
12TH ND SAN BRUNO, CAL.
INDENCO ENGINEERS, INC.
2988 ALDRICH STREET, SAN LEANDRO, CALIFORNIA
NAVAL MAGAZINE, PORT CHICAGO
CONCORD, CALIFORNIA
PART I
ADDITIONAL AMMUNITION STORAGE FACILITIES
WEAPONS MAINTENANCE BUILDING
PLUMBING PLAN
A&E JOB NO. 58581
A&E DRWG. NO. 95
B-58095
SCALE AS SHOWN
SHEET 98 OF 151
744501
HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-4FP BLDG 81c
ADDITIONAL AMMUNITION STORAGE FACILITIES
FORMER NAVWPNSTA CONCORD, CALIFORNIA
REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011.4564.mxd
TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

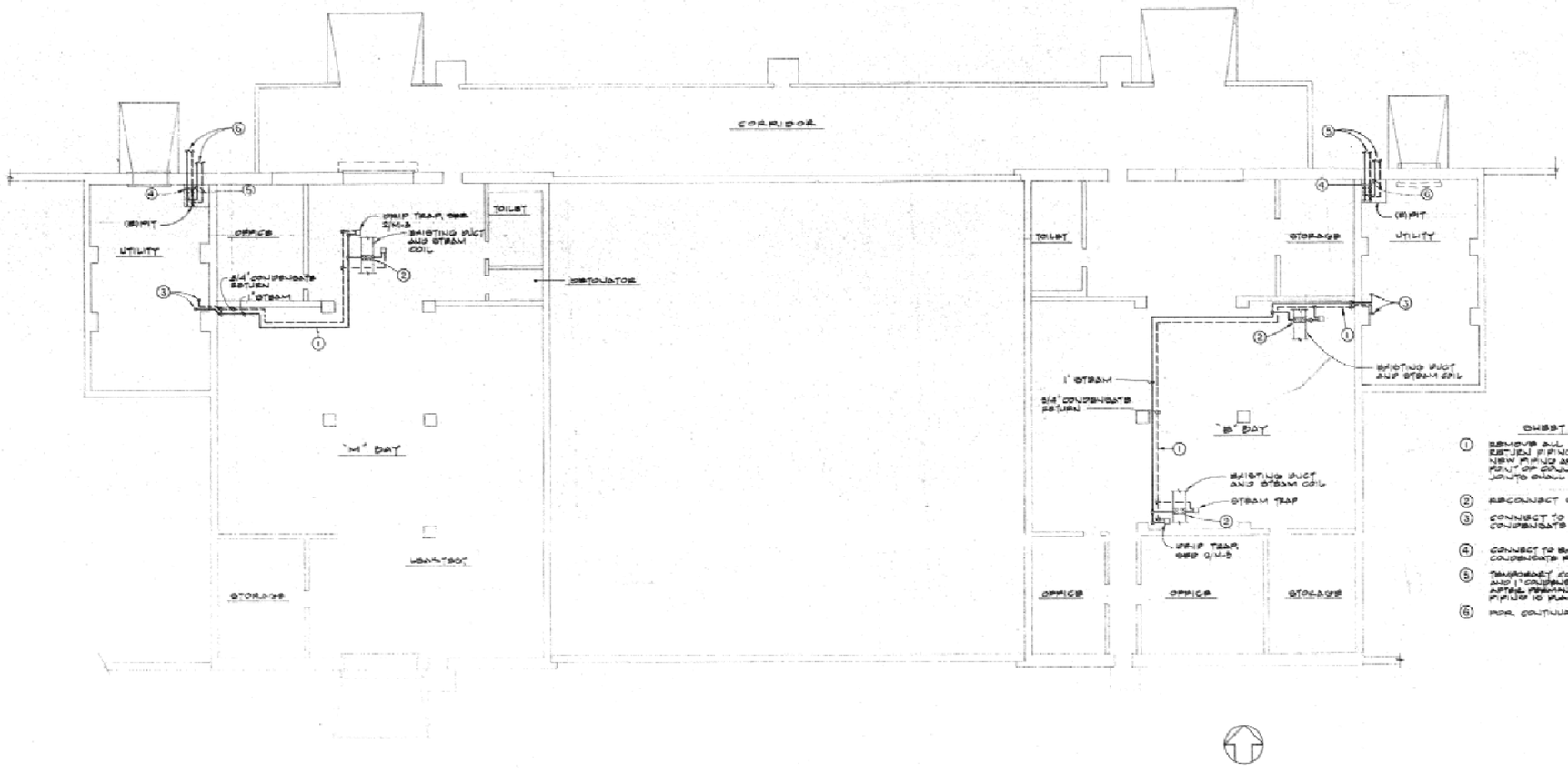
FIGURE 8-4FP BLDG 81d

RELOCATION OF WQEC TESTING OPERATIONS TO BUILDING 81 FLOOR PLAN EVALUATION DETAILS

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4565.mxd

TETRA TECH EC, INC.



FLOOR PLAN

SHEET NOTES

1. REMOVE ALL STEAM & CONDENSATE RETURN PIPING AND REPLACE WITH NEW PIPING AS SPECIFIED FROM POINT OF CONNECTION SHOWN. SHARP BENDS SHALL BE AVOIDED.
2. RECONNECT STEAM COIL
3. CONNECT TO EXISTING STEAM & CONDENSATE RETURN.
4. CONNECT TO EXISTING STEAM AND CONDENSATE RETURN IN PIT.
5. TEMPORARY CONNECTIONS TO 1" STEAM AND 1" CONDENSATE RETURN. REMOVE AFTER PERMANENT HOUSEKEEPING PIPING IS PLACED IN OPERATION.
6. FOR CONTINUATION SEE SHEET M-1.

M·2

GRAPHIC SCALE
0 1 2 3 4 5 6 7 8 9 10

SCALE: 1/8"=1'-0"

GAYNER ENGINEERS
831 HOWARD STREET
SAN FRANCISCO, CALIF. 94103
TELEPHONE: 415-333-1333

FWO DWG. NO.
DES. | DR
CHK. | SPEC.
TYPE | SAFETY
CHKD IN CHK | DATE
E-INSTOR | DATE
SUPERVISOR IN
CHIEF | DATE
APPROVED | DATE
OFFICER IN CHARGE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

BUILDING 81
STEAM & CONDENSATE PIPING

CODE IDENT. NO. 80091 | SIZE F | NAVFAC DRAWING NO. 6108515
SCALE | SPEC. 12-78-2572 | SHEET 3 OF 4

HISTORICAL RADIOLOGICAL ASSESSMENT

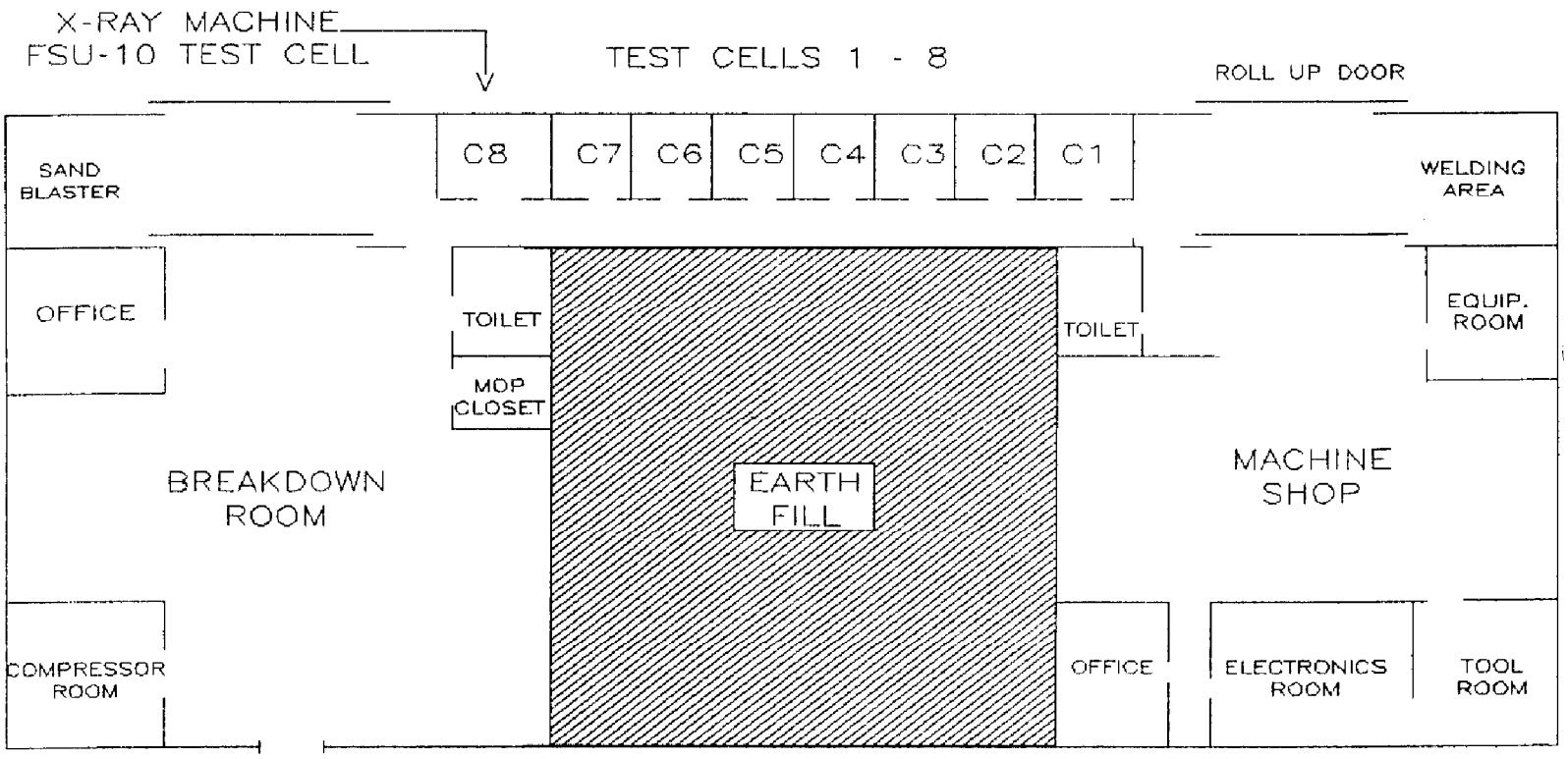
FIGURE 8-4FP BLDG 81e

BUILDING 81 STEAM AND CONDENSATE PIPING

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011.4566.mxd

TETRA TECH EC, INC.



NOT TO SCALE

SOURCE:

FACILITY EVALUATION OF BUILDING 81. LETTER. SEPTEMBER 8, 1989

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

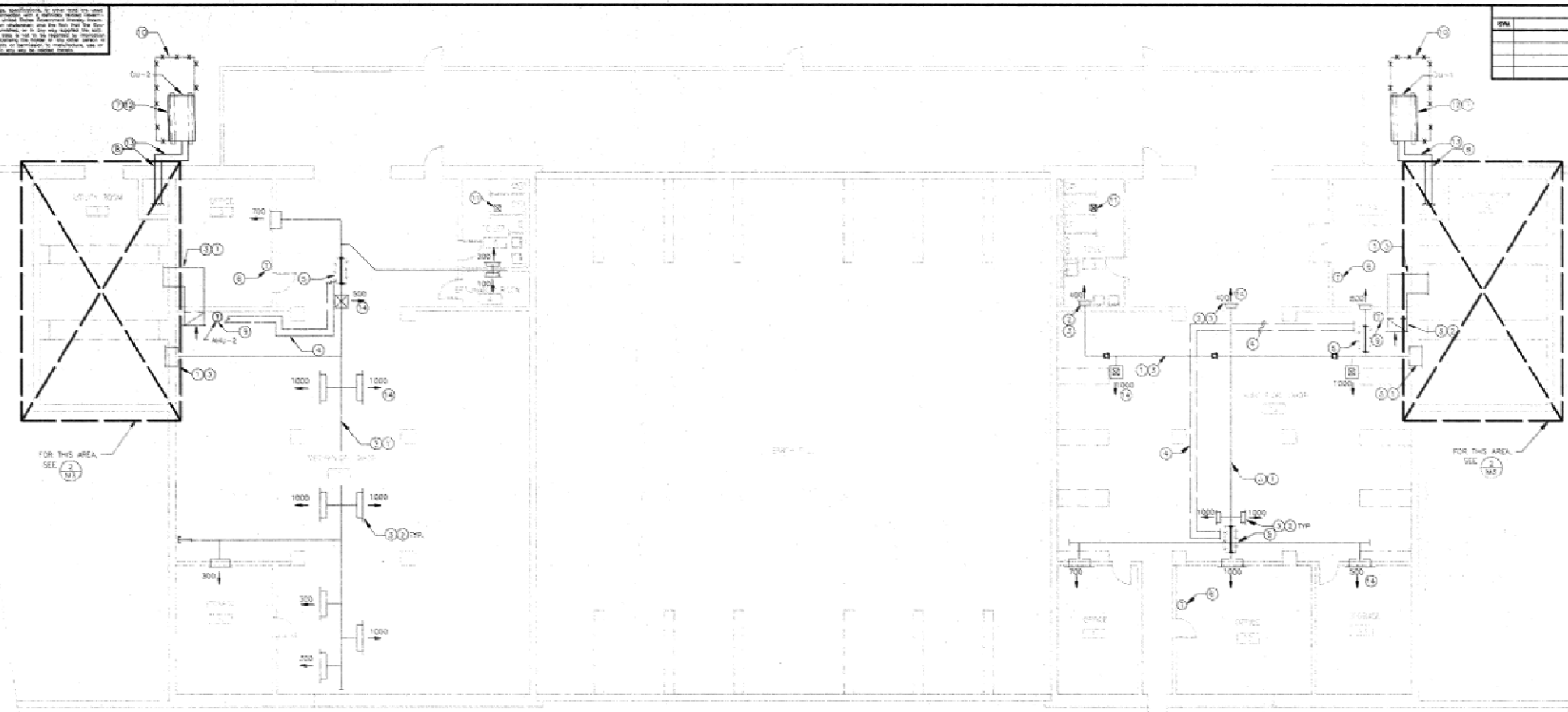
FIGURE 8-4FP BLDG 81f

BUILDING 81 FLOOR PLAN

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4567.mxd

TETRA TECH EC, INC.



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

(1) Floor Plan
SCALE: 1/8" = 1'-0"

SHEET NOTES :

1. EXISTING DUCT TO REMAIN. (TYPICAL)
2. EXISTING DIFFUSERS & REGISTERS TO REMAIN. BALANCE SYSTEM TO CFM AS SHOWN. TYP. FOR ALL.
3. CLEAN ALL DUCTWORK (INSIDE) AND DIFFUSERS OF ALL DEBRIS, DUST, ETC.
4. ABANDON PIPING IN PLACE. CAP PIPE ENDS.
5. REMOVE EXISTING BY-PASS DUCT & HEATING COILS. INSTALL NEW CONNECTOR & PATCH EXISTING DUCT AIRTIGHT.
6. REMOVE UNUSED THERMOSTATS AND CONTROL TUBING. PATCH AND PAINT WALL TO MATCH. TYPICAL FOR ALL.
7. (N) AIR COOLED CONDENSING UNIT. SET UNIT ON WOOD SLEEPERS. SECURE WITH 1/4"DIA. LAG BOLTS.
8. RUN PIPES THRU (E) WALL OPENING. SEAL WATERTIGHT.
9. REPLACE (E) THERMOSTAT WITH (N)THERMOSTAT AS SPECIFIED.
10. REMOVE (E) AIR-COOLED CONDENSER AND PIPING. RECLAIM REFRIGERANT (R12) PER CODE AND RETURN TO OWNER. PATCH (E) PIPE HOLES IN WALL.
11. (E)EXHAUST FAN TO REMAIN. CHECK AND SERVICE FAN FOR PROPER OPERATION.
12. PROVIDE (N) SLEEPER(S) AS REQUIRED. (N) SLEEPER TO MATCH (E) SLEEPER. REMOVE UNUSED (E) SLEEPER AND PATCH SURFACE AS REQUIRED.
13. NEW REFRIGERANT PIPES. PIPE SIZE AS RECOMMENDED BY THE MANUFACTURER OF UNIT. SUBMIT DATA FOR APPROVAL. RUN PIPES TIGHT TO BEAM.
14. CLEAN AND RE-USE ALL (E) DIFFUSERS. TYPICAL

IF THIS SHEET IS LESS THAN 28"X40" IT IS A REDUCED PRINT- SCALE REDUCED ACCORDINGLY.

M2

Ferd Engineers, Inc.
CHAMBERLAIN/PAINTER
Consulting Engineers, Electrical/Mechanical

PWD DWG. NO.

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

HVAC SYSTEM REPLACEMENT TO BUILDING 81

HVAC FLOOR PLAN

CODE IDENT NO.	SIZE	NAVFAC DRAWING NO.
80091	F	6397195

SCALE AS NOTED

HISTORICAL RADIOLOGICAL ASSESSMENT

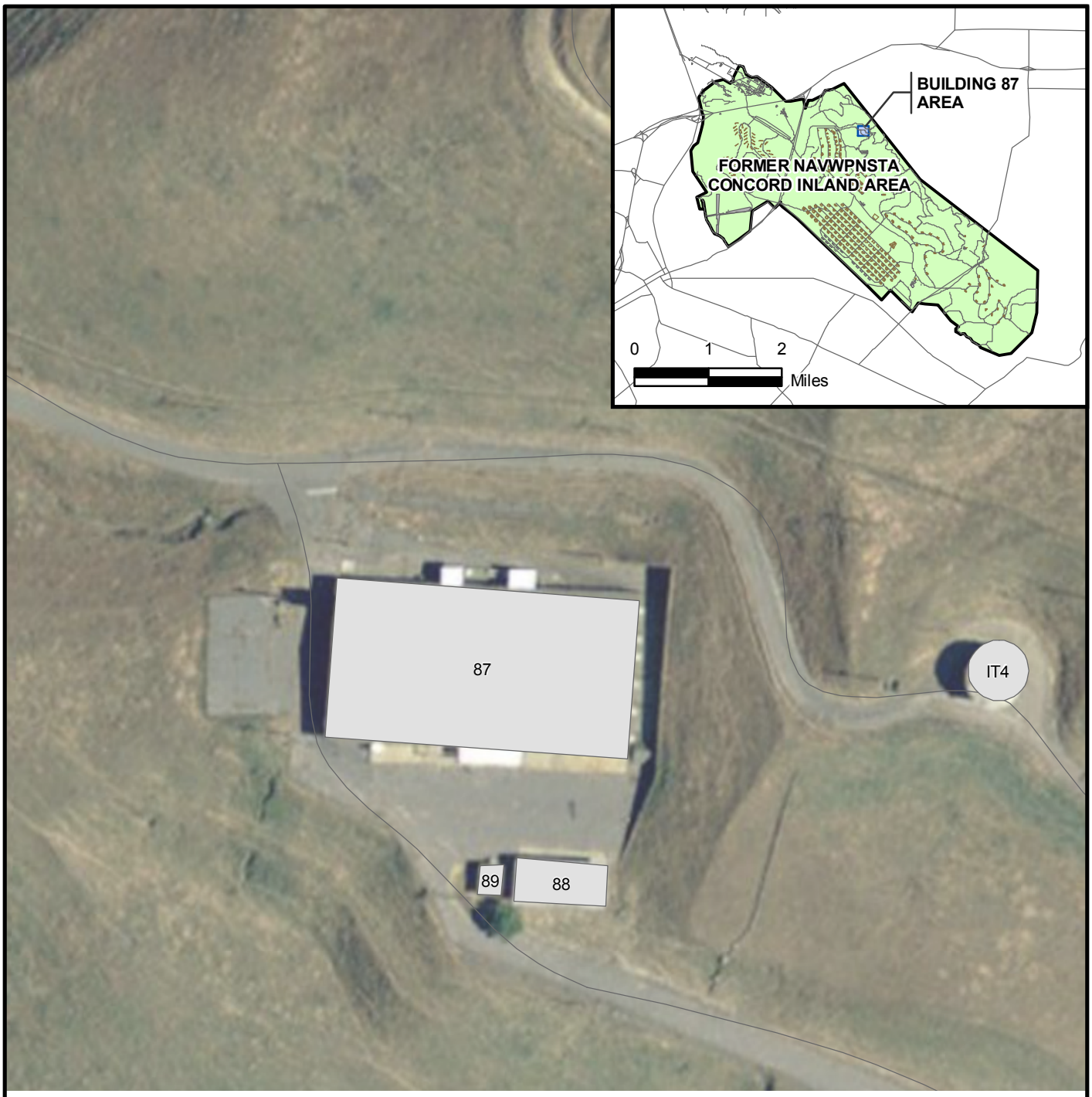
FIGURE 8-4FP BLDG 81g

HVAC SYSTEM REPLACEMENT TO BUILDING 81

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4568.mxd

TETRA TECH EC, INC.



LEGEND

- ROAD
- AMMUNITION MAGAZINE
- FORMER NAVWPNSTA CONCORD INLAND AREA BOUNDARY
- BUILDING
- RUNWAY

N

50 0 50 100 Feet

NOTE:

ONLY THE SITES CALLED OUT IN SECTION 8.0 ARE CONSIDERED IMPACTED FOR THE PURPOSE OF THIS HISTORICAL RADIOLOGICAL ASSESSMENT.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

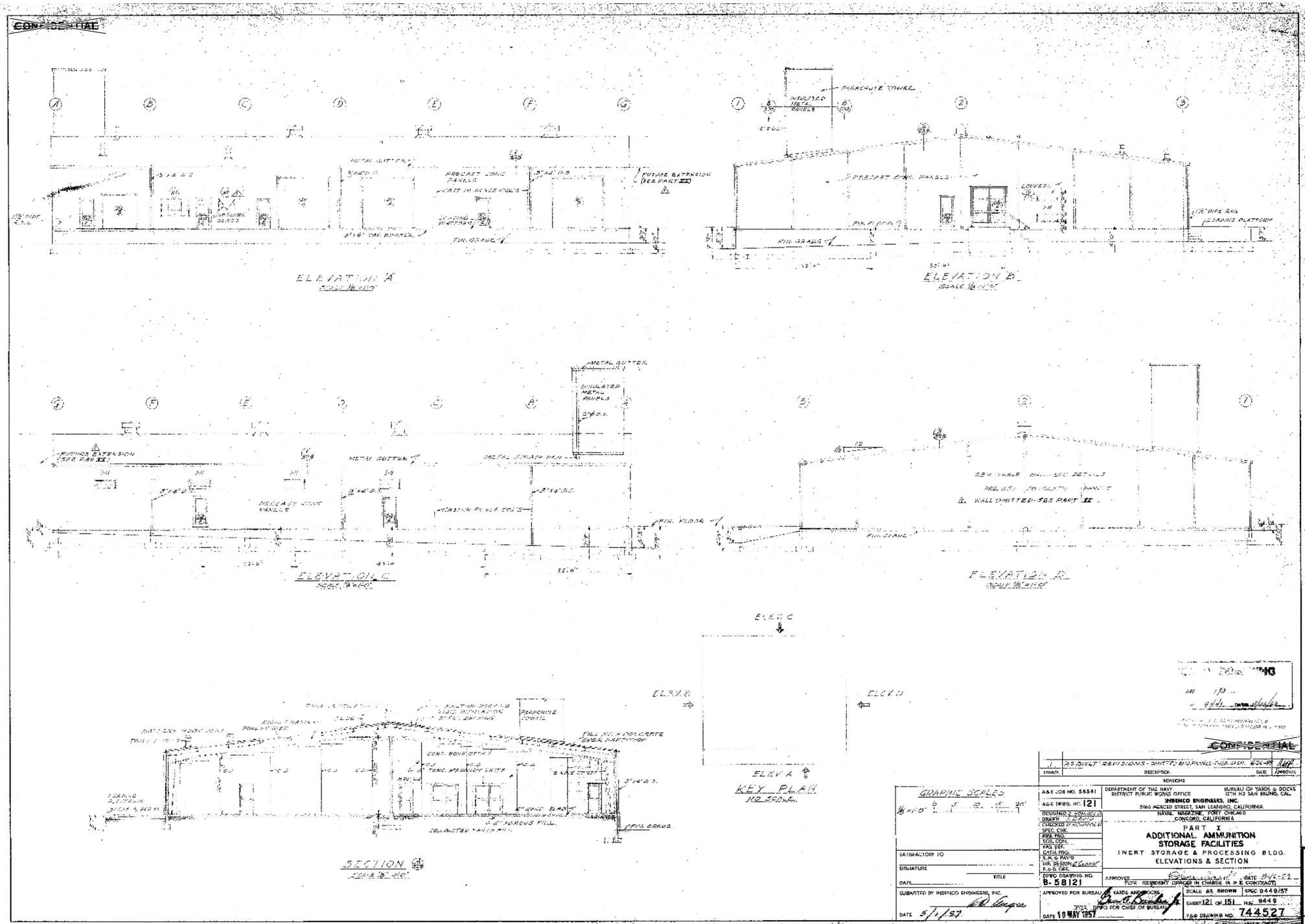
FIGURE 8-5

BUILDING 87

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 09040114569.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

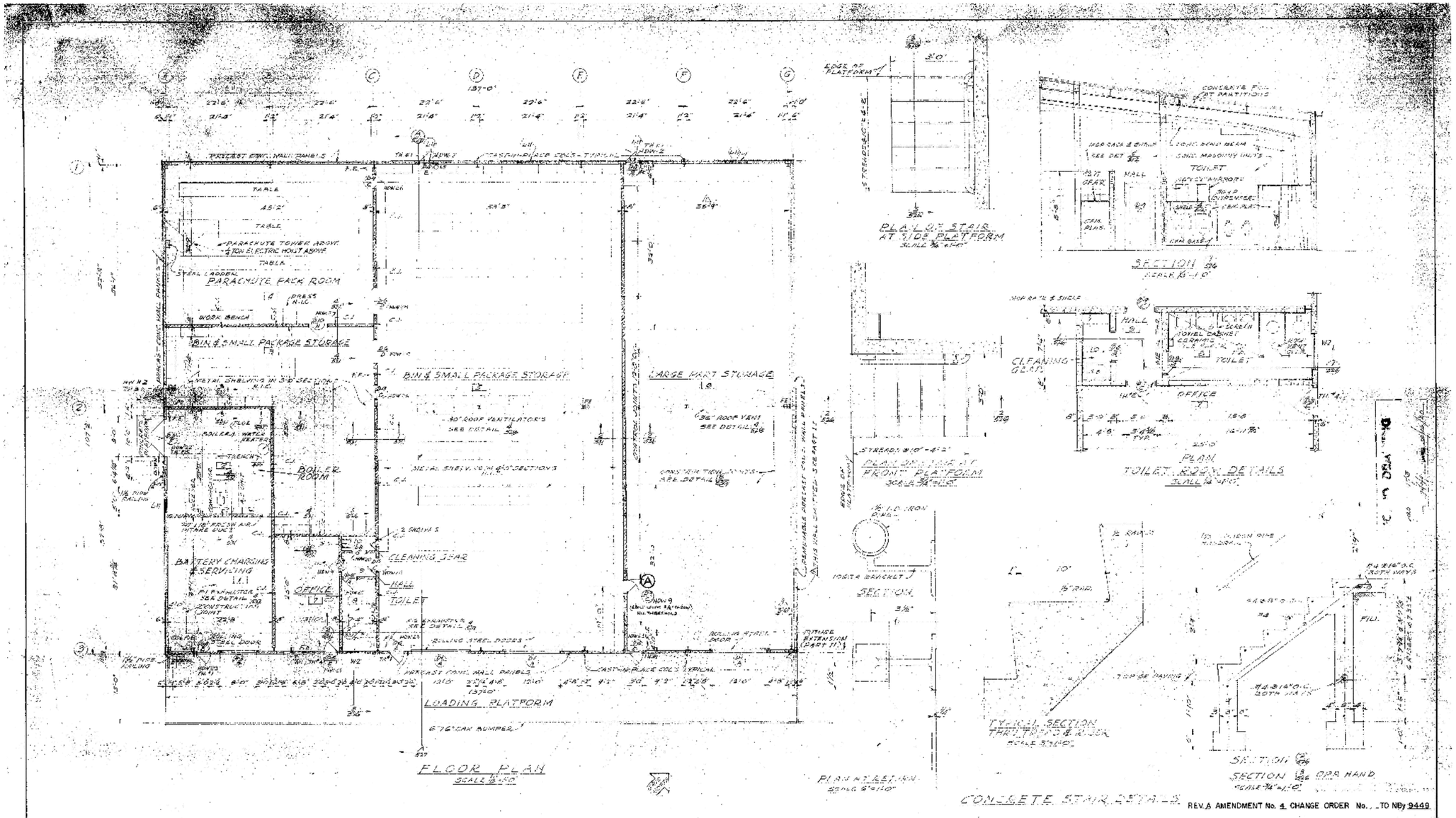
FIGURE 8-5FP BLDG 87a

ADDITIONAL AMMUNITION STORAGE FACILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 0904011L4570.mxd

TETRA TECH EC, INC.



REV. A AMENDMENT No. 4 CHANGE ORDER No. TO NBy 9449

SYMBOL	DESCRIPTION	DATE	APPROVAL
A	AS MOST REVISIONS OF TOILET ENCLOSURES	6-26-57	
A	Added Door	11-27-56	

REVISIONS

INTERIOR FINISH SCHEDULE

ROOM NO.	ROOM DESCRIPTION	FLOOR MAT'L	FLOOR FINISH	BASE MAT'L	BASE FINISH	WAINSCOT MAT'L	WAINSCOT FINISH	WALL MAT'L	WALL FINISH	CEILING MAT'L	CEILING FINISH	TRIM MAT'L	TRIM FINISH	COLOR REMARKS
1	BATTERY CHARGING & SERVICING	CONC.	NAT.	—	—		—	CONC. & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #5
2	BOILER ROOM	CONC.	NAT.	—	—			CONC. & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #4
3	BIN & SMALL PACKAGE STORAGE	CONC.	NAT.	—	—			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
4	PARACHUTE PACK ROOM	CONC.	WAX	—	—			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #3
5	MINE SMALL PACKAGE STORAGE	CONC.	NAT.	—	—			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
6	LARGE PART STORAGE	CONC.	NAT.	—	—			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
7	OFFICE	ASP. TILE	WAX	CO. TILE	—			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #7
8	TOILET	CER. TILE	NAT.	CER.	B.	CER. PLAS.	ENAMEL	CONC. & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #13
9	HALL	CONC.	NAT.	—	—			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #7
10	CLEANING GEAR	CONC.	NAT.	CER.	B.	CER. PLAS.	ENAMEL	CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #13

GENERAL NOTES

1. PROVIDE WET PIPE SPRINKLER SYSTEM IN ENTIRE BUILDING UNDER UNIFORM DISCHARGE DENSITY PER SPEC. 24-404(16) & NAV. DOCKS TP-NUM IN AREAS 3, 5 & 6, AND ORDINARY HAZARD OCCUPANCIES SCHEDULE IN THE REMAINDER OF THE BUILDING.
2. ALL EXPOSED PIPE, CONDUIT, DUCTWORK & MISC. METAL SHALL BE PAINTED AS TRIM.
3. PROVIDE ALL NECESSARY ANCHORS, SLEEVES, FRAMES & INSERTS REQUIRED FOR MECHANICAL & ELECTRICAL WORK.

GRAPHIC SCALES

SATISFACTORY TO: [illegible] TITLE
SIGNATURE
DATE
SUBMITTED BY INDENCO ENGINEERS, INC.
DATE 5/1/57

A&E JOB NO. 58551
A&E DRWG. NO. 120
DESIGNED [illegible]
DRAWN [illegible]
CHECKED [illegible]
SPEC. CIR.
PRE. PROJ. ENGR.
SOIL CON.
RES. DEC.
CATH. PROT.
S. M. & PAVING
SUB. DESIGN
P. & D. OFF.
DPWO DRAWING NO. B-58120
APPROVED FOR BUREAU OF YARDS AND DOCKS: [illegible] FOR CHIEF OF BUREAU
DATE 16 MAY 1957

DEPARTMENT OF THE NAVY
DISTRICT PUBLIC WORKS OFFICE
INDENCO ENGINEERS, INC.
2966 MERCED STREET, SAN LEANDRO, CALIFORNIA
NAVAL MAGAZINE, PORT CHICAGO
CONCORD, CALIFORNIA

BUREAU OF YARDS & DOCKS
17TH ND SAN BRUNO, CAL.

PART I
ADDITIONAL AMMUNITION STORAGE FACILITIES
INERT STORAGE & PROCESSING BLDG.
PLAN & INTERIOR DETAILS

APPROVED: [illegible] DATE 5-6-57
FOR: PRESIDENT OFFICER IN CHARGE A & E COMMANDER
SCALE AS SHOWN | SPEC. 8440/57
SHEET 120 OF 151 | NBy 9449
T&D DRAWING NO. 744526

CONFIDENTIAL

HISTORICAL RADIOLOGICAL ASSESSMENT

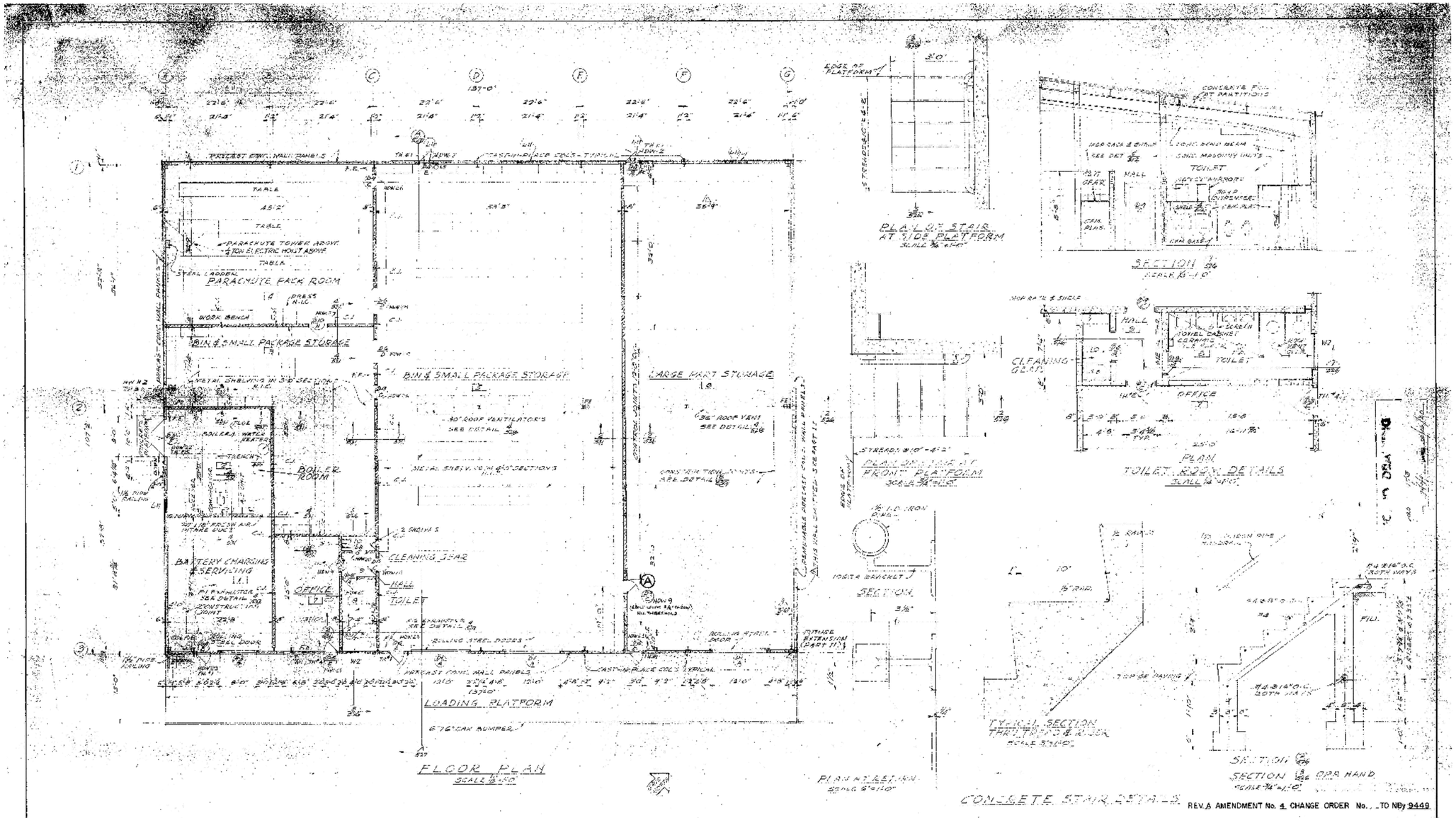
FIGURE 8-5FP BLDG 87b

ADDITIONAL AMMUNITION STORAGE FACILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DON: ECSD-3211-0005-0004
FILE NUMBER: 0904011.4571.mxd

TETRA TECH EC, INC.



REV. A AMENDMENT No. 4 CHANGE ORDER No. _ TO NBy 9449

SYMBOL	DESCRIPTION	DATE	APPROVAL
A	AS MOUT REVISIONS OUTSIDE WALL PANELS	4-26-57	
A	Added Door	11-27-56	

REVISIONS

INTERIOR FINISH SCHEDULE

SYM.	ROOM DESCRIPTION	FLOOR MAT'L	FLOOR FINISH	BASE MAT'L	BASE FINISH	WAINSCOT MAT.	WAINSCOT FINISH	WALL MAT'L	WALL FINISH	CEILING MAT'L	CEILING FINISH	TRIM MAT'L	TRIM FINISH	COLOR REMARKS
1	BATTERY CHARGING & SERVICING	CONC.	NAT.	----	----		----	CONC. & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #5
2	BOILER ROOM	CONC.	NAT.	----	----			CONC. & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #4
3	BIN & SMALL PACKAGE STORAGE	CONC.	NAT.	----	----			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
4	PARACHUTE PACK ROOM	CONC.	WAX	----	----			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #3
5	MINE SMALL PACKAGE STORAGE	CONC.	NAT.	----	----			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
6	LARGE PART STORAGE	CONC.	NAT.	----	----			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #5
7	OFFICE	ASP. TILE	WAX	ASP. TILE	----			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #7
10	TOILET	CER. TILE	NAT.	CER.	B.	CER. PLAS.	ENAMEL	CONC. & B.	ENAMEL	STEEL	ENAMEL	METAL	ENAMEL	PR #13
9	HALL	CONC.	NAT.	----	----			CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #7
10	CLEANING GEAR	CONC.	NAT.	CER.	B.	CER. PLAS.	ENAMEL	CONC. & B.	FLAT PT.	STEEL	FLAT PT.	METAL	ENAMEL	PR #13

GENERAL NOTES

1. PROVIDE WET PIPE SPRINKLER SYSTEM IN ENTIRE BUILDING UNDER UNIFORM DISCHARGE DENSITY PER SPEC. 24-404(16) & NAV. DOCKS TP-NUM IN AREAS 3, 5 & 6, AND ORDINARY HAZARD OCCUPANCIES SCHEDULE IN THE REMAINDER OF THE BUILDING.
2. ALL EXPOSED PIPE, CONDUIT, DUCTWORK & BASE METAL SHALL BE PAINTED AS TRIM.
3. PROVIDE ALL NECESSARY ANCHORS, SLEEVES, FRAMES & INSERTS REQUIRED FOR MECHANICAL & ELECTRICAL WORK.

GRAPHIC SCALES

1/16"=1'-0" 1/8"=1'-0" 1/4"=1'-0" 1/2"=1'-0" 3/4"=1'-0" 1"=1'-0" 1 1/2"=1'-0" 3"=1'-0"

SATISFACTORY TO: [illegible] TITLE

SIGNATURE

DATE

SUBMITTED BY INDENCO ENGINEERS, INC.

DATE 5/1/57

A&E JOB NO. 58551

A&E DRWG. NO. 120

DESIGNED [illegible]
DRAWN [illegible]
CHECKED [illegible]
SPEC. CIR.
PRE. PROV.
SOIL CON.
RAS. DEC.
CATH. PROT.
S. M. & DAVIS
SUB. DESIGN
P. & D. OFF.

DPWO DRAWING NO. B-58120

APPROVED FOR BUREAU OF YARDS AND DOCKS: [illegible]
FOR: DIRECTOR, DIVISION OF DESIGN
DATE 16 MAY 1957

DEPARTMENT OF THE NAVY
DISTRICT PUBLIC WORKS OFFICE
INDENCO ENGINEERS, INC.
2966 MERCED STREET, SAN LEANDRO, CALIFORNIA
NAVAL MAGAZINE, PORT CHICAGO
CONCORD, CALIFORNIA

BUREAU OF YARDS & DOCKS
17TH ND SAN BRUNO, CAL.

PART I
ADDITIONAL AMMUNITION STORAGE FACILITIES
INERT STORAGE & PROCESSING BLDG.
PLAN & INTERIOR DETAILS

APPROVED: [illegible] DATE: 5-6-57
FOR: RESIDENT OFFICER IN CHARGE, A & E CONTRACT

SCALE AS SHOWN | SPEC. 9449/57

SHEET 120 OF 151 | NBy 9449

YARD DRAWING NO. 744526

CONFIDENTIAL

HISTORICAL RADIOLOGICAL ASSESSMENT

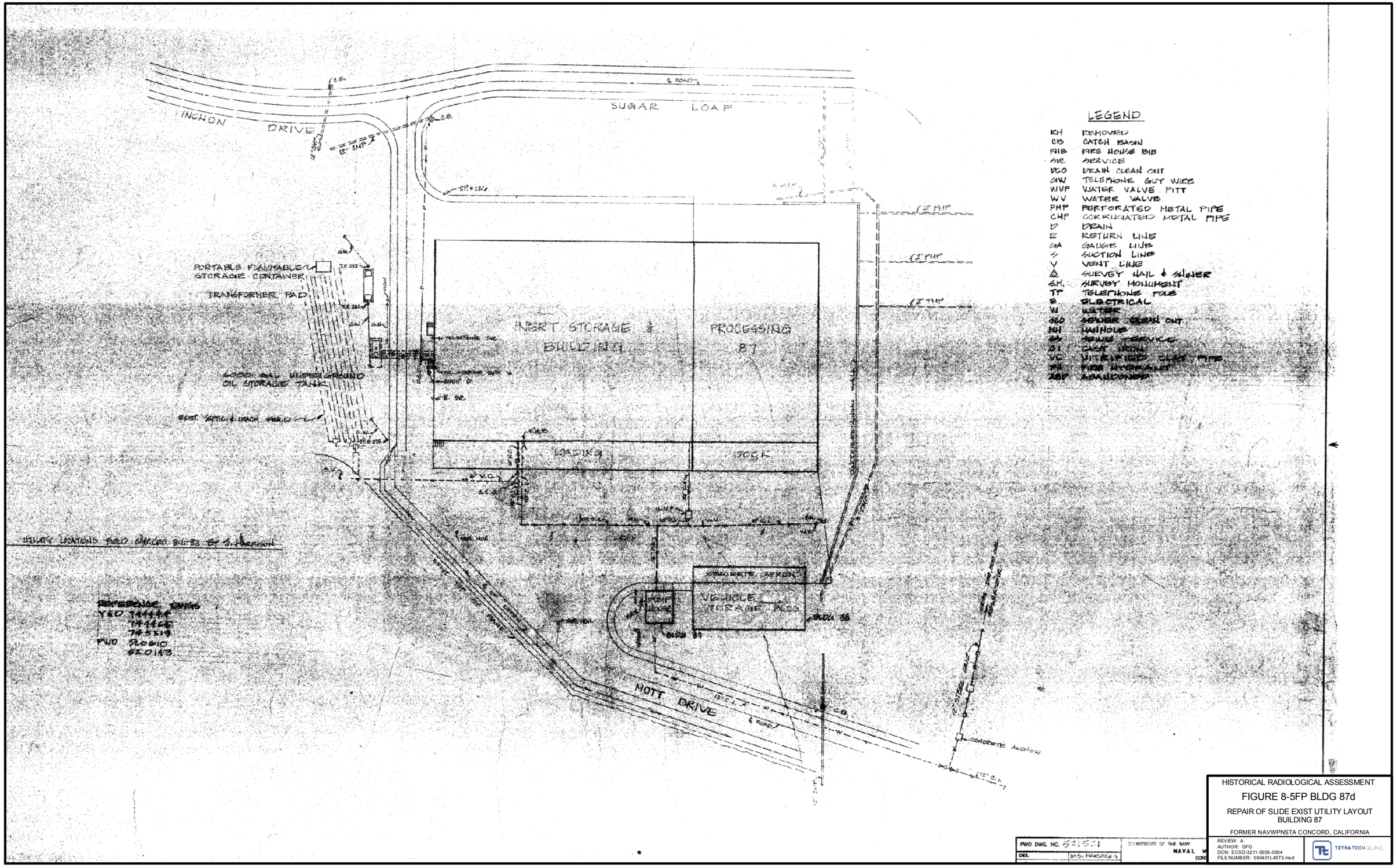
FIGURE 8-5FP BLDG 87c

ADDITIONAL AMMUNITION STORAGE FACILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DON: ECSD-3211-0005-0004
FILE NUMBER: 0904011.4572.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-5FP BLDG 87d

REPAIR OF SLIDE EXIST UTILITY LAYOUT BUILDING 87

FORMER NAVWPNSTA CONCORD, CALIFORNIA

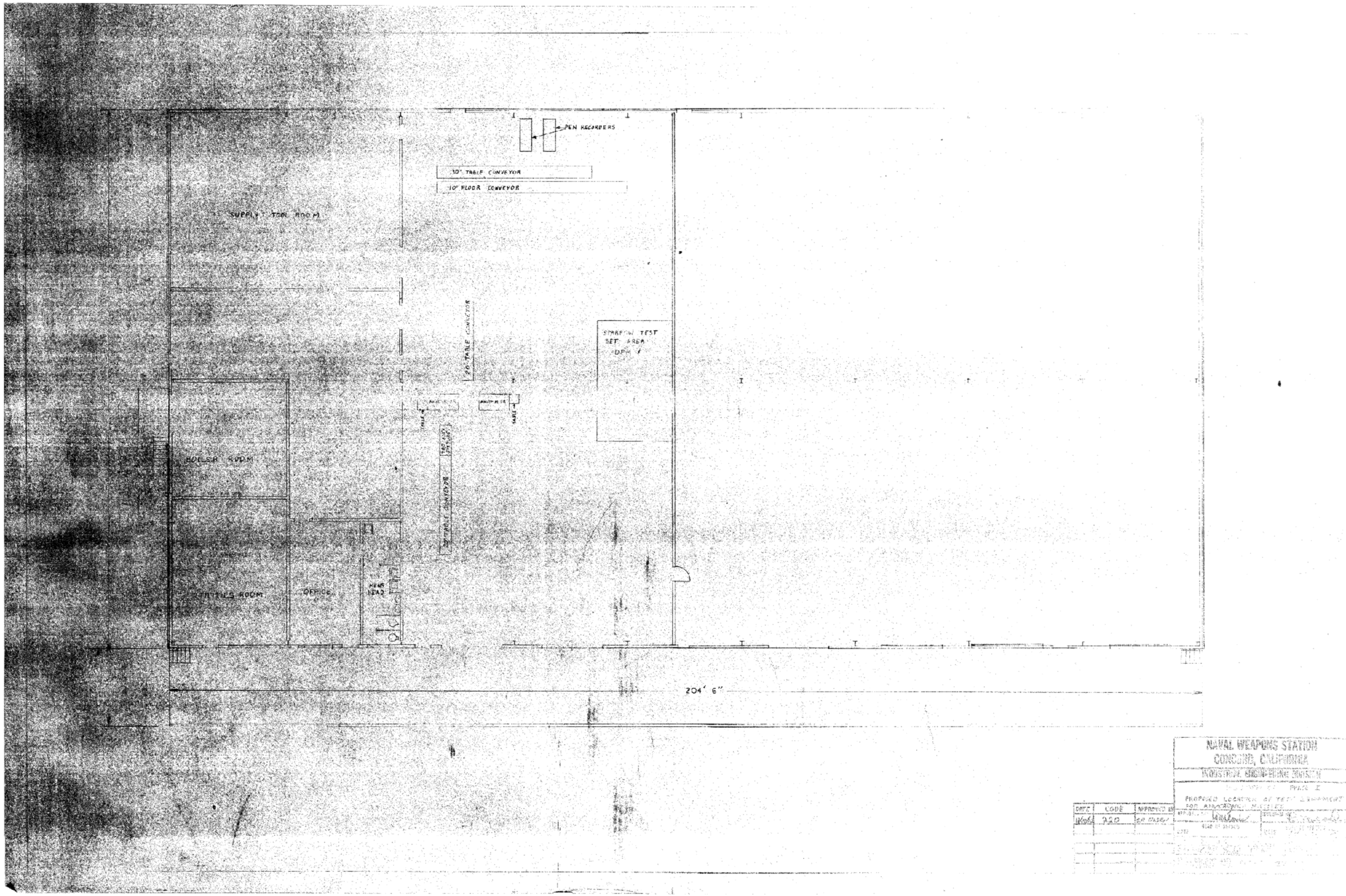
PWO DWG. NO. 521511

DES. DRN. FRANCESCA

DEPARTMENT OF THE NAVY NAVAL W CONC

REVIEW: A
AUTHOR: GFG
DON: ECSD-3211-0005-0004
FILE NUMBER: 090401L4573.mxd

TETRA TECH EC, INC.



NAVAL WEAPONS STATION
CONCORD, CALIFORNIA
INDUSTRIAL ENGINEERING DIVISION
PHASE I
PROPOSED LOCATION OF TEST EQUIPMENT FOR AIR LAUNCH MISSILES

DATE	LOBE	APPROVED BY
Mar 63	920	[illegible]

HISTORICAL RADIOLOGICAL ASSESSMENT

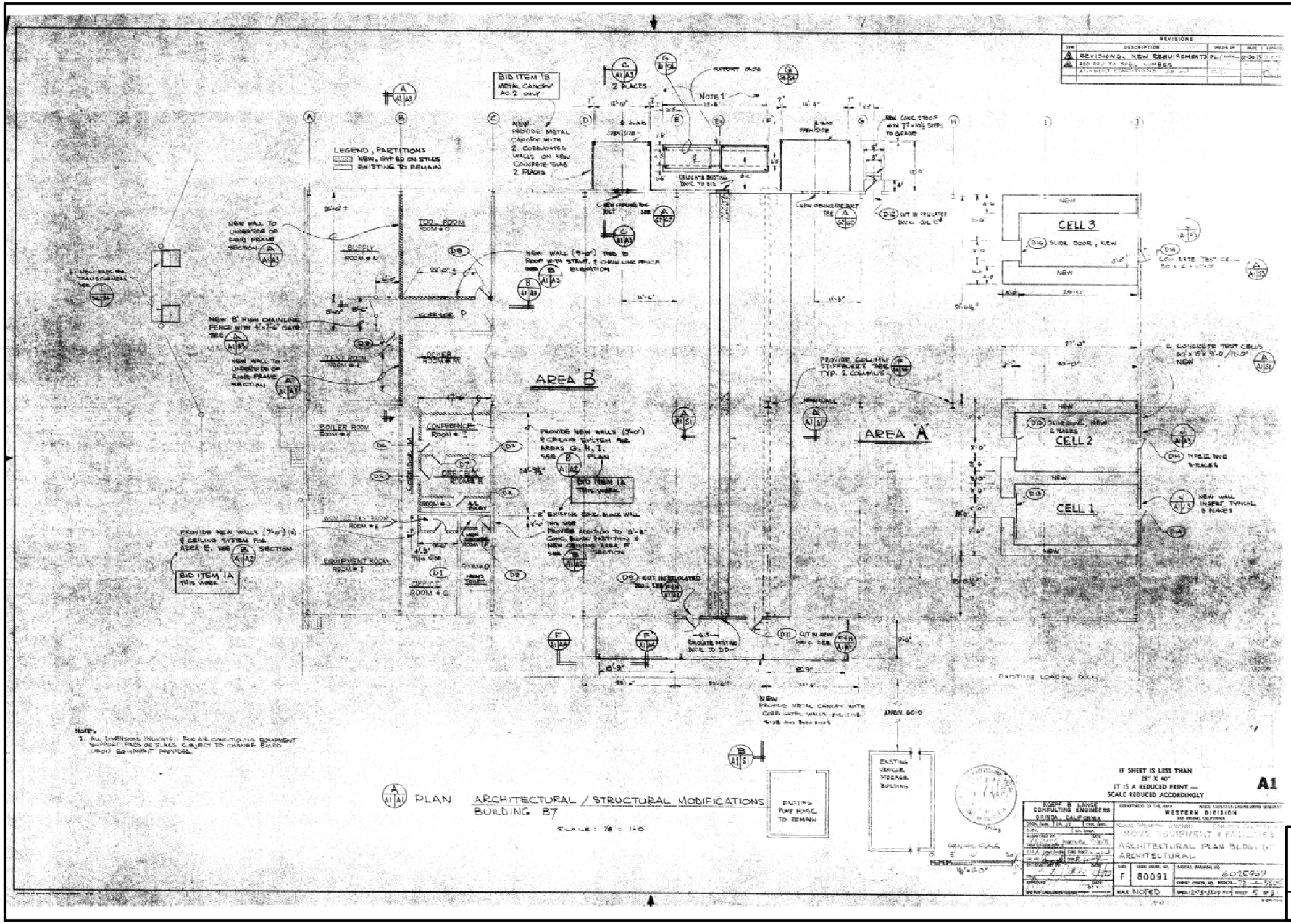
FIGURE 8-5FP BLDG 87e

BUILDING 87 PHASE I - PROPOSED LOCATION OF TEST EQUIPMENT FOR AIR LAUNCH MISSILES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4574.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-5FP BLDG 87f

MOVE EQUIPMENT AND FACILITIES
ARCHITECTURAL PLAN BUILDING 87

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4575.mxd

TETRA TECH EC, INC.

LEGEND

- ROAD
- RAILROAD
- DEPLETED URANIUM MUNITIONS MAGAZINES
- AMMUNITION MAGAZINES
- BUILDING

250 0 250 500 Feet

N

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

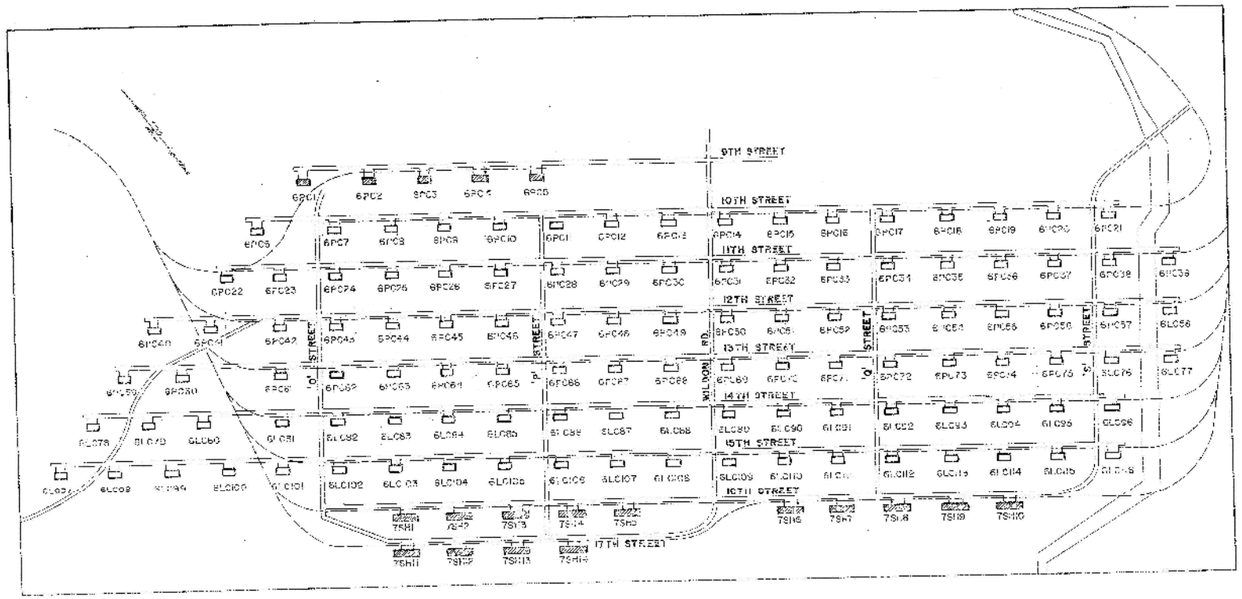
FIGURE 8-6

DEPLETED URANIUM MUNITIONS MAGAZINES
6LC87, 6LC88, 6LC96, 6PC44, 6PCZ65, 6PCZ58

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4576.mxd

TETRA TECH EC, INC.



LOCATION PLAN

SCALE: 1" = 400'-0"

LEGEND:

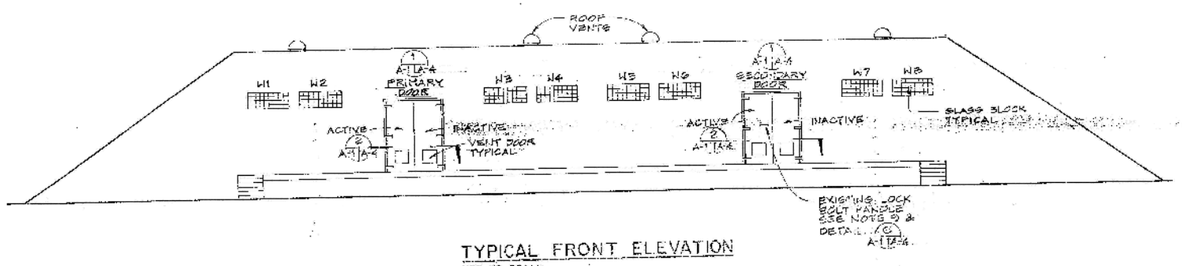
- IN CONTRACT
- NOT INCLUDED IN THIS CONTRACT

NOTES:

1. RE-ALIGN ALL DOOR PANELS TO ORIGINAL SPECIFIED TOLERANCES. SEE DRAWING A-4.
2. REPAIR / REPLACE MISALIGNED OR MISSING 1x5/8 BAR STRIP WEATHERSTOP WELDED TO DOOR FRAME. SEE DETAIL 3/A-1&A-4
3. REMOVE & REPLACE DAMAGED DOOR HINGES. REPLACE ALL EXISTING DOOR HINGE PINS WITH 3/4" ϕ BOLTS AND 2 NUTS TACK WELDED TO BOLTS. SEE DETAIL A/A-1&A-4
4. WELD ALL SEAMS CONTINUOUS ALONG VENT DOOR OPENING.
5. REPAIR OR REPLACE DAMAGED LOCK BOXES, HEAVY DUTY, INCLUDING PILLOW BLOCKS TO OPERABLE CONDITIONS. CLEAN ALL THRESHOLD BOLT SLOTS FREE OF DIRT OR FOREIGN OBJECTS.
6. REMOVAL OF ALL INSTALLED DOOR & JAMB INTERLOCK DEVICES. GRIND SMOOTH ALL SURFACES OF ANY SAFETY HAZARD.
7. INSTALL NEW HIGH SECURITY HASP ON PRIMARY DOORS. SEE DETAIL B/A-1&A-4 FOR TYPE OF DOOR APPLICATION.
8. INSTALL NEW DOOR & JAMB INTERLOCK DEVICES. SEE DETAIL 3/A-1&A-4
9. CUT & REMOVE EXTERIOR LOCK BOLT HANDLE FOR SECONDARY DOORS & WELD STANDARD PIPE CAP OVER. SEE DETAIL 7/A-1&A-4
10. PAINT THE DOOR PANEL & DOOR FRAME.
11. A BARRIER (I.E. WELDING CURTAIN, CANVAS, ETC.) MUST BE PLACED BETWEEN THE CONTENTS AND THE WELDING OPERATION.
12. A FIREWATCH MUST BE PRESENT OUTSIDE THE MAGAZINE AND THE MAGAZINE DOORS MUST REMAIN OPEN DURING THE WELDING OPERATION.
13. THE MAGAZINES MUST BE QUIET AND ALL TOOLS, EXCESS MATERIALS AND WASTE REMOVED DAILY.

ABBREVIATIONS:

BLK.	BLOCK.
BOT.	BOTTOM.
CLR.	CLEAR
EXIST	EXISTING
E.W.	EACH WAY
G.F.E.	GOVERNMENT FURNISHED EQUIPMENT
HOR.	HORIZONTAL
MAX.	MAXIMUM
MIN.	MINIMUM
PL	PLATE
PRI.	PRIMARY
SEC.	SECONDARY
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL



TYPICAL FRONT ELEVATION

NOT TO SCALE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL WEAPONS STATION
CONCORD, CALIFORNIA

SECURITY HARDENING
GROUP 6 MAGAZINES (PHASE I)
LOCATION PLAN, NOTES & EXTERIOR ELEVATION

SCALE: 1" = 100'

HISTORICAL RADIOLOGICAL ASSESSMENT

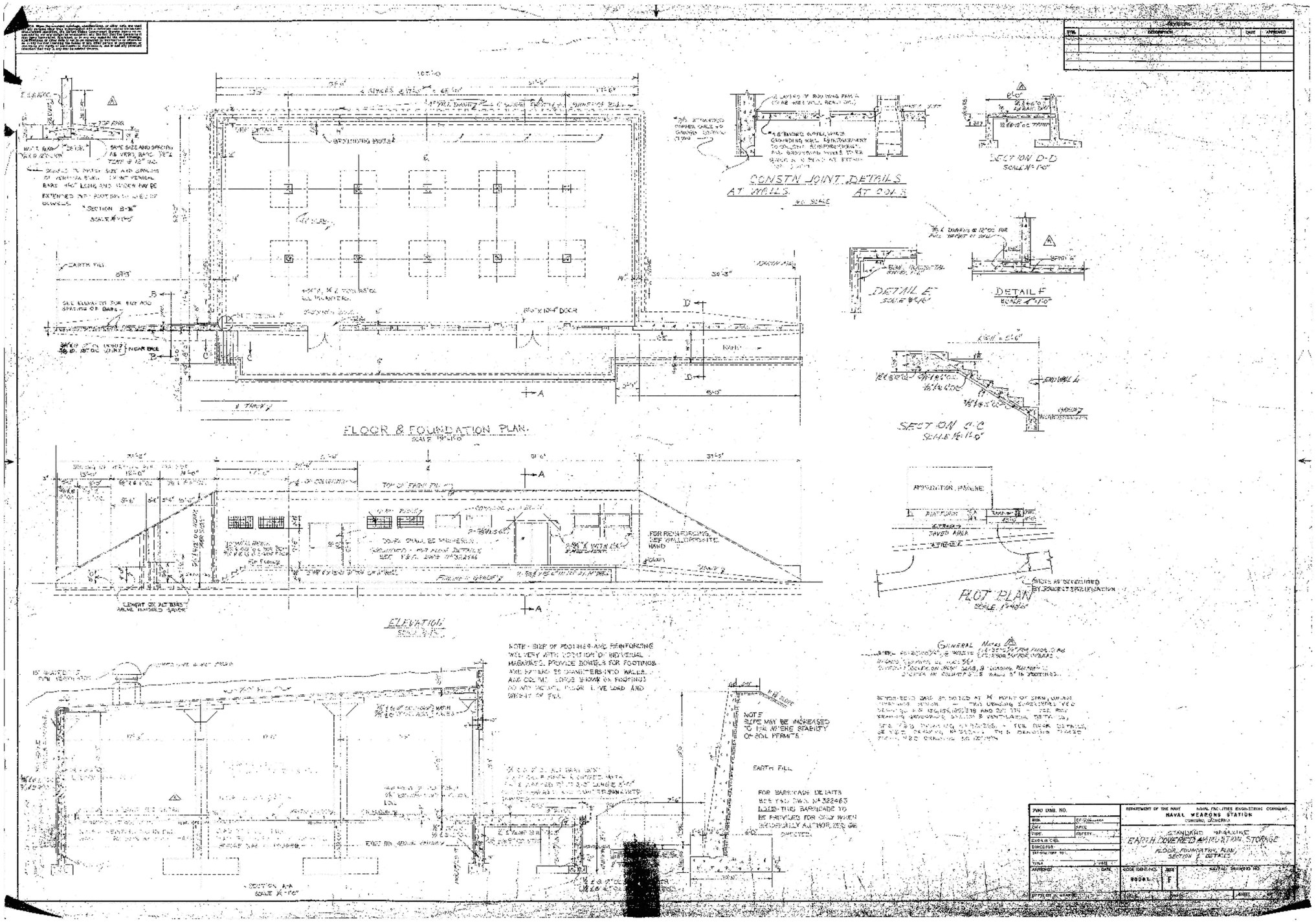
FIGURE 8-6FP DU MAGAZINES a

SECURITY HARDENING
GROUP 6 MAGAZINES (PHASE I)

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4577.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

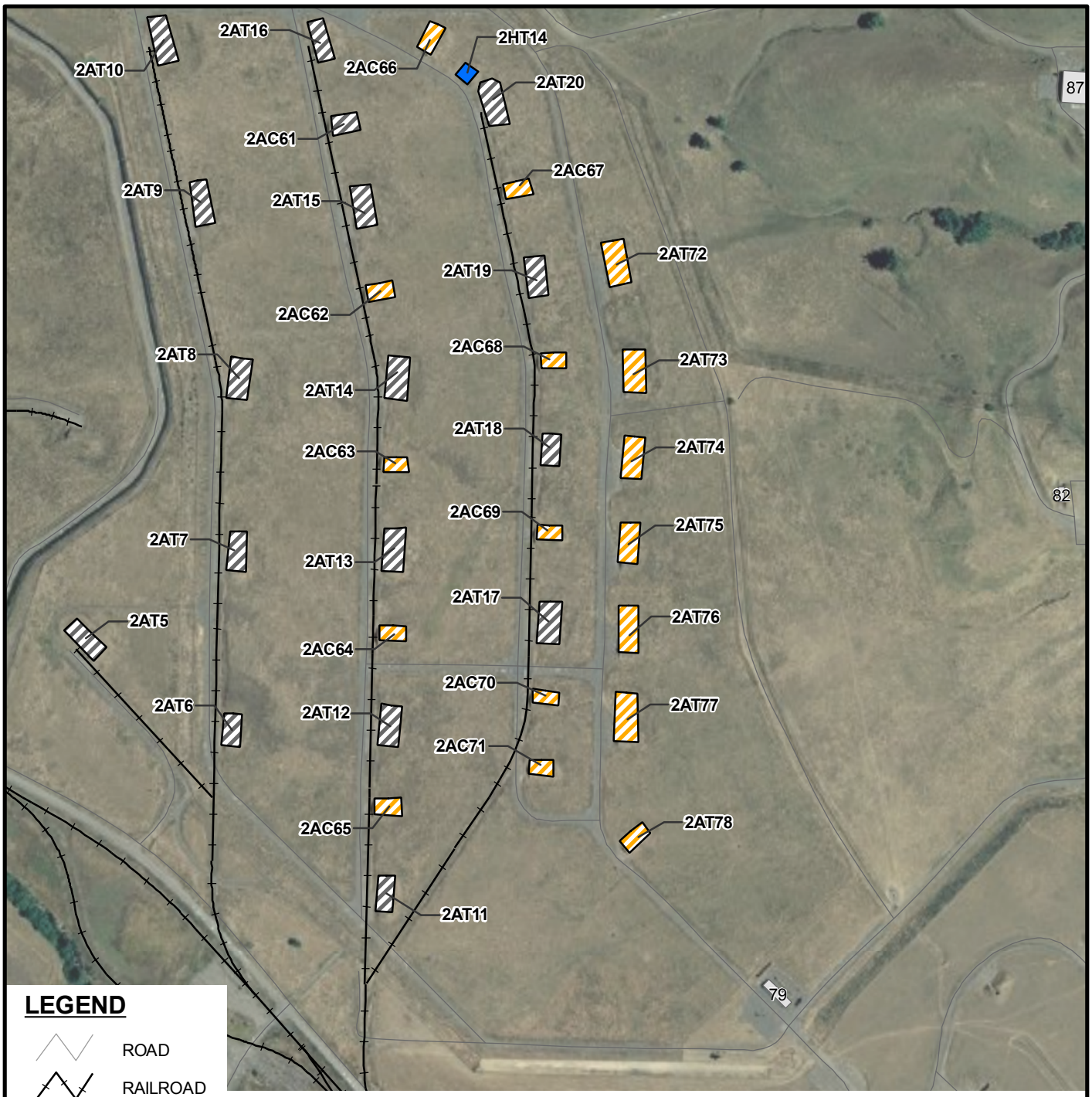
FIGURE 8-6FP DU MAGAZINES b

EARTH COVERED AMMUNITION STORAGE

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: RKH
DON: ECSD-3211-0005-0004
FILE NUMBER: 0904011L4578.mxd

TETRA TECH EC, INC.



LEGEND

- ROAD
- RAILROAD
- MAG. SPECIAL WEAPONS-RI
- SPECIAL WEAPONS MAGAZINE
- SPECIAL WEAPONS MAGAZINE-BULK
- BUILDING

N

250 0 250 500 Feet

NOTE:

ONLY THE SITES CALLED OUT IN SECTION 8.0 ARE CONSIDERED IMPACTED FOR THE PURPOSE OF THIS HISTORICAL RADIOLOGICAL ASSESSMENT.

SOURCE:

CONCORD INLAND AREA ENVIRONMENTAL STATUS REPORT, MARCH 2005.

NAVAL SEA SYSTEMS COMMAND
YORKTOWN, VIRGINIA

HISTORICAL RADIOLOGICAL ASSESSMENT

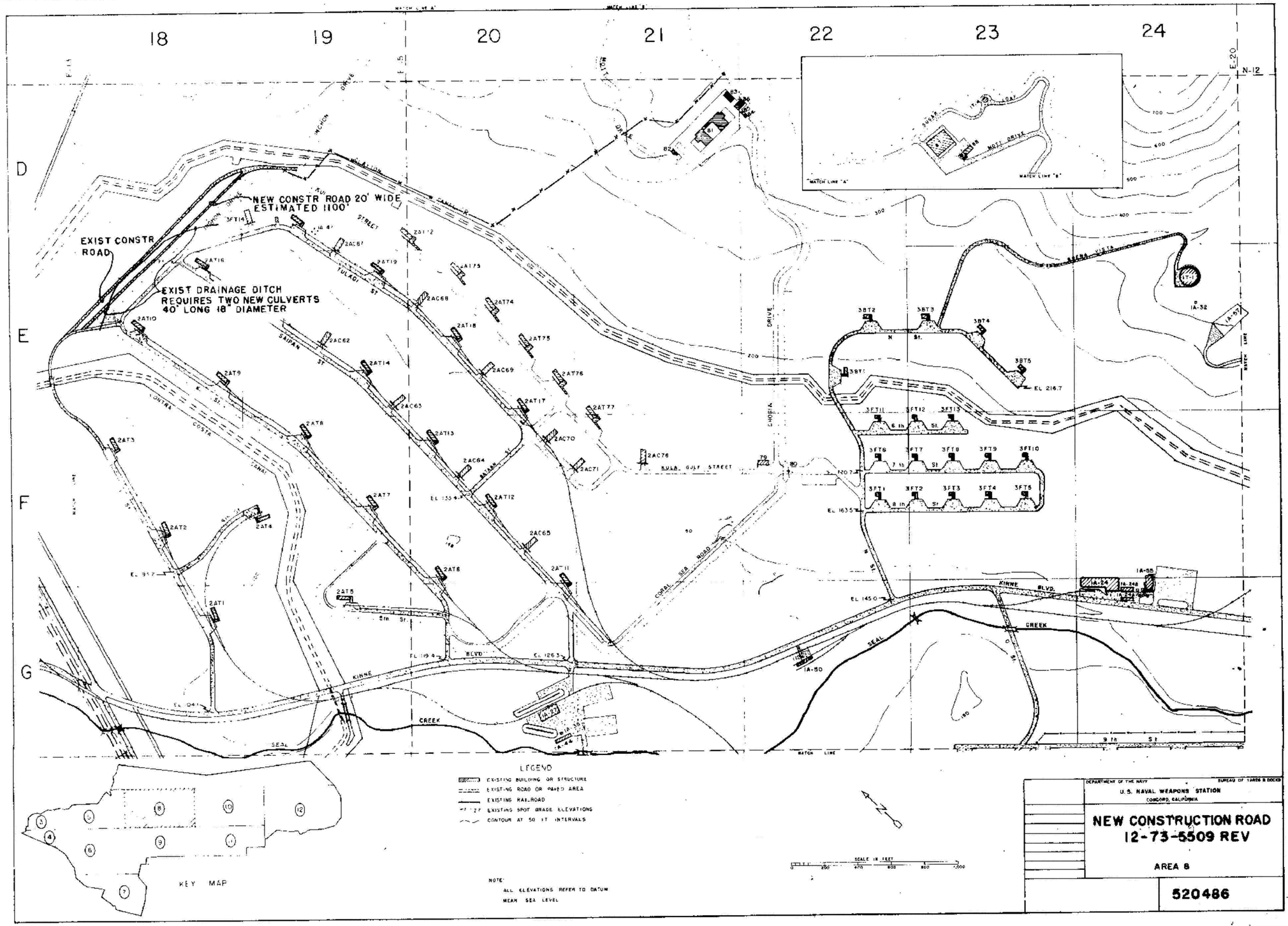
FIGURE 8-7

SPECIAL WEAPONS MAGAZINE

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: B
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4579.mxd

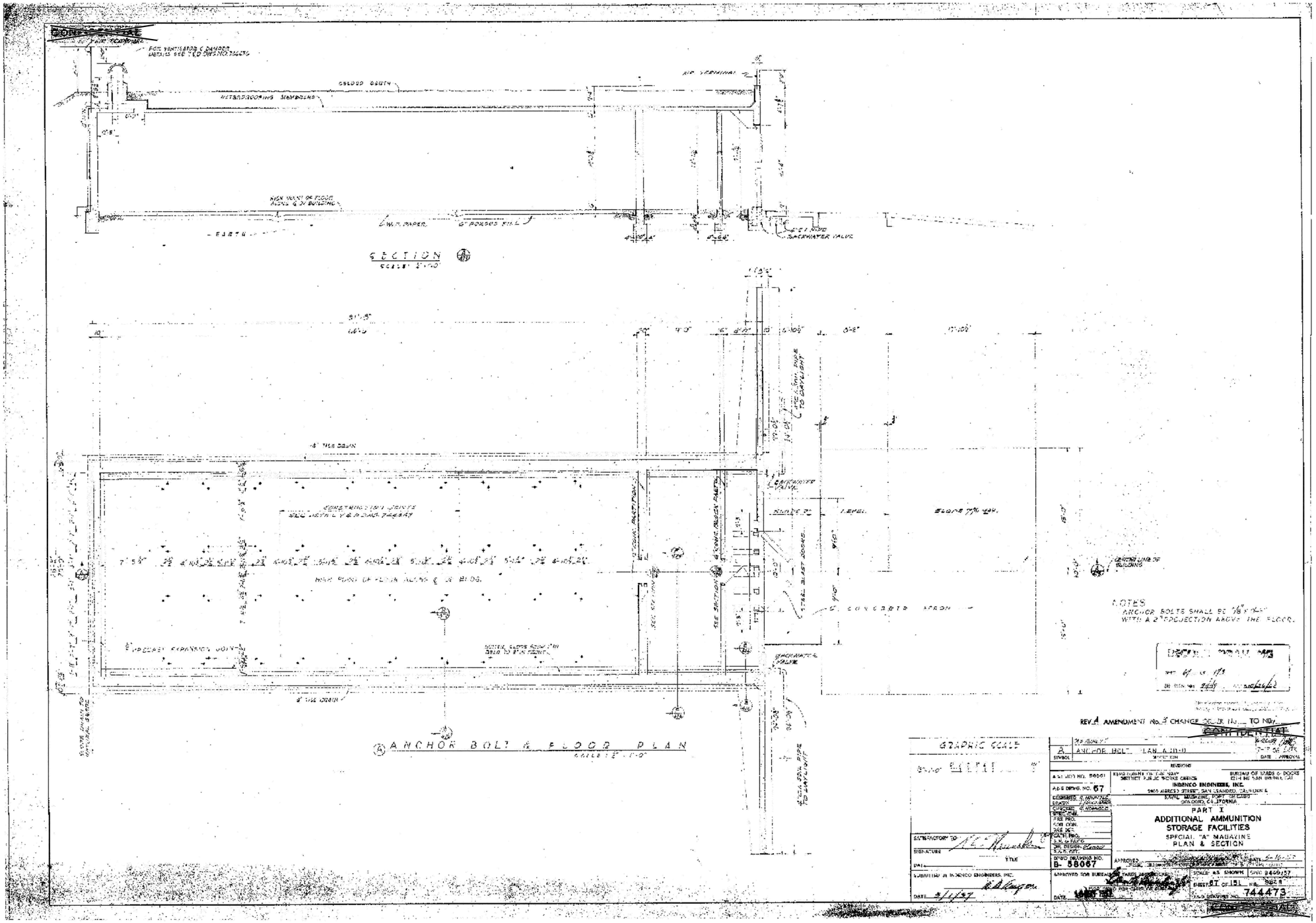
TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT
FIGURE 8-7FP SPECIAL
WEAPONS MAGAZINE a
NEW CONSTRUCTION ROAD
FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: GFG
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4580.mxd

TETRA TECH EC, INC.



HISTORICAL RADIOLOGICAL ASSESSMENT

FIGURE 8-7FP SPECIAL
WEAPONS MAGAZINE b

ADDITIONAL AMMUNITION STORAGE FACILITIES

FORMER NAVWPNSTA CONCORD, CALIFORNIA

REVIEW: A
AUTHOR: RKH
DCN: ECSD-3211-0005-0004
FILE NUMBER: 090401L4581.mxd

TETRA TECH EC, INC.

APPENDIX A

RADIATION OVERVIEW

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APPENDIX A RADIATION OVERVIEW

A1 GENERAL

Radiation is energy in the form of electromagnetic waves or subatomic particles. Radiation is emitted from the nucleus or electron cloud of atoms or from devices generating electromagnetic waves and particles such as x-ray machines, neutron generators, and cyclotrons. Radiation is either *ionizing* or *non-ionizing*.

Radiation that has insufficient energy to remove electrons from atoms is non-ionizing radiation. Examples of non-ionizing radiation include most visible light, infrared light, microwaves, and radio waves. Radiation that has sufficient energy to remove electrons from atoms is ionizing radiation. All radiological investigations at HPS have focused on ionizing radiation, which includes alpha, beta, and gamma radiation.

A2 ALPHA RADIATION

Alpha particles are charged particles containing two protons and two neutrons. Alpha particles are emitted from the nuclei of certain heavy atoms, such as uranium, when they decay. Because of its size and heavy electrical charge, +2, an alpha particle can travel only a few centimeters in air. It can be stopped or shielded by a sheet of paper. Alpha particles cannot penetrate the outer layer of skin but can cause localized damage inside the body if ingested or inhaled.

A3 BETA RADIATION

Beta particles are particles with the mass of an electron and a -1 electrical charge; essentially, they are high-velocity electrons. Radioactive isotopes of many different elements emit beta particles. Even though moderate energy beta particles can travel as far as 10 feet through air, they easily can be stopped by a 1/3-inch-thick sheet of plastic or a 1/8-inch-thick sheet of aluminum. Because beta particles can penetrate the outer layer of skin and affect living tissue, they are a hazard to the body's skin and the eyes.

A4 GAMMA RADIATION

Gamma radiation is electromagnetic radiation with no mass or charge. Gamma rays are emitted from the nucleus of an atom during radioactive decay. Because it has no mass or charge, gamma radiation can penetrate most materials. In air, higher energy gamma radiation can travel several hundred feet. Gamma radiation can penetrate the skin and interact with the dense structures of the body. Dense materials such as lead or concrete are needed for shielding against gamma radiation.

A5 X-RAYS

X-rays are also electromagnetic radiation with no mass or charge. The difference between gamma radiation and x-radiation is the nature of their origin. Gamma radiation originates in the nucleus, while x-rays originate in the electron region of the atom. The penetrating properties are the same; therefore, safety concerns and shielding mechanisms are similar. X-rays are typically produced by machines, and thus are not a hazard if the machine is turned off.

A6 SCIENTIFIC NOTATION

Radiation measurement units are normally reported in scientific notation. Scientific notation is also known as exponential notation or power-of-10 notation. It is a concise method of expressing numbers from very small to very large. Scientific notation is the expression of a number raised to a power of 10. For example, 3,456 can be expressed as 3.456×10^3. For the purpose of this HRA, scientific notation is often used when radiation units are reported.

Here is a listing of common numbers expressed in scientific notation:

10^6 = 1,000,000	10^{-1} = 0.1 (1/10)
10^5 = 100,000	10^{-2} = 0.01 (1/100)
10^4 = 10,000	10^{-3} = 0.001 (1/1000
10^3 = 1000	10^{-4} = 0.0001 (1/10,000)
10^2 = 100	10^{-5} = 0.00001 (1/100,000)
10^1 = 10	10^{-6} = 0.000001 (1/1,000,000)
10^0 = 1	

A7 RADIATION UNITS

For this HRA, radiation measurements are stated in units of curies, roentgens, rads, rems, and reps. These units are defined as:

- **Curie (Ci).** The curie measures radioactivity; 1 curie is that quantity of a radioactive material that will have 37,000,000,000 (3.7×10^{10}) transformations in 1 second. Often radioactivity is expressed in smaller units like thousandths (10^{-3}, millicurie or mCi), millionths (10^{-6}, microcurie or µCi), billionths (10^{-9}, nanocurie or nCi), or trillionths (10^{-12}, picocurie or pCi) of a curie.
- **Roentgen (R)**. The roentgen is a unit used to measure exposure. It describes an amount of gamma and x-rays present in air only. The roentgen is a measure of the ionization of the molecules in a mass of air: one roentgen is equal to depositing in dry air enough energy to cause an electrical charge of 2.58×10^{4} coulombs per kilogram (kg) (1 kg = 2.2 pounds). The main advantage of this unit is that it is easy to measure directly, but it is limited because it is only for deposition in air and only for gamma and x-rays.
- **Rad (from radiation absorbed dose).** The rad is a unit used to measure absorbed dose. This relates to the amount of energy actually absorbed in some material. It is used for any type of radiation and any material. One rad is defined as the absorption of 100 ergs per gram of material. The unit rad can be used for any type of radiation, but it does not describe the biological effects of different radiations.
- **Rem (from roentgen equivalent man).** The rem is a unit used to derive a quantity called equivalent dose. This relates the absorbed dose in biological tissue to the biological effect. Not all radiation has the same biological effect, even for the same amount of absorbed dose. Equivalent dose is often expressed in terms of thousandths of a rem, or millirem (mrem). To determine equivalent dose in rem, absorbed dose (rad) is multiplied by a quality factor (Q) that is unique to the type of incident radiation and the material in which the energy is deposited.
- **Rep (from roentgen equivalent physical).** A unit of absorbed radiation dose equal to the amount of ionizing radiation that will transfer 93 ergs of energy to 1 gram of water or living tissue.

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APPENDIX B

PUBLIC OUTREACH

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Naval Weapons Station Seal Beach, Detachment Concord, Concord, California

Historical Radiological Assessment

Fact Sheet No. 1 June 2008

Introduction

The Department of the Navy (Navy) is preparing a **Historical Radiological Assessment** (HRA) for the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area (see Figure 1). The HRA is being prepared because the Concord Inland Area was licensed to handle and store **radioactive material**. Through research, the HRA will expand, refine, and document the record for historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for nonmilitary use. It will be prepared in accordance with Federal and State guidelines.

Information for the HRA comes from records searches, interviews, and onsite inspections of locations at the Concord Inland Area where radioactive materials may have been used, stored, or disposed. The completed HRA will determine if additional **radiological investigations** are needed.

(Text in bold is defined on Page 3.)

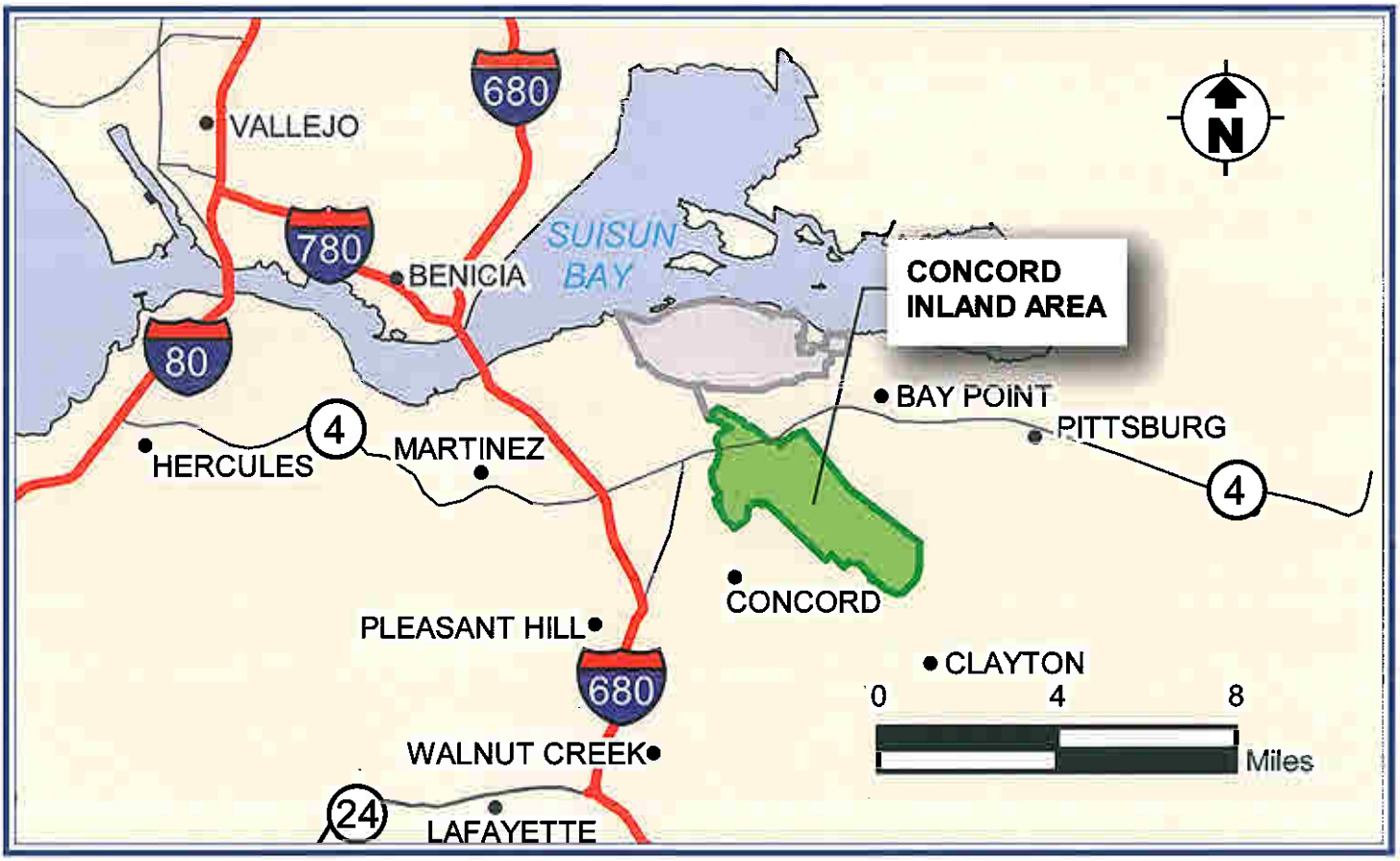

Figure 1 - Inland Area Location Map

Community Participation

The Navy desires to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Concord Inland Area. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457**, and tell us when and how to contact you. A member of the HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com.

In order to expedite the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.

Overview of Base History

The weapons station at Concord is one of the oldest naval ordnance support bases on the Pacific Coast. It dates from 1942 when the Navy constructed munitions transfer facilities at Concord (known as Port Chicago at the time) as an annex to an ordnance storage magazine at the Mare Island Naval Shipyard. As the annex grew in size and importance to the World War II Pacific victory effort, it became a separate command and was renamed Naval Ammunition Depot, Port Chicago. By April 1945, three large piers, support buildings, and many ordnance storage magazines had been constructed on approximately 13,000 acres of land. The property currently consist of two parcels: the Tidal Area (approximately 6,200 acres) and the Inland Area (approximately 5,200 acres), connected by a narrow surface transportation corridor.

From its inception in 1942, the primary purpose of the weapons station at Concord was the transfer of munitions from ground transport (railroad and highway) to ships. Munitions from World War II and other conflicts of the late twentieth century also were returned from naval vessels to Concord for transshipment to disposal facilities elsewhere. In the Inland Area, weapons and munitions were stored in magazines, and maintenance and inspection of ordnance were performed in various buildings. As its importance diminished late in the twentieth century, the station became an annex of the Seal Beach Weapons Station in southern California and was renamed Naval Weapons Station Seal Beach Detachment Concord.

In October 1999, Naval Weapons Station Seal Beach Detachment Concord was placed in "reduced operating status." Major military operations ended and the facility was prepared for possible future use and/or reactivation. In 2005, most of the Inland Area was designated for closure under the authority of the Department of Defense Base Closure and Realignment Act. This act requires the Navy to perform certain environmental investigations as part of the base realignment and closure (BRAC) process. One of these is the preparation of an HRA. The Inland Area is the property that is currently undergoing the HRA investigation.

The Tidal Area, the transportation corridor, and 115 acres of the Inland Area will be transferred to the Army. These comprise an active military base and are not part of the HRA.

Definitions

Historical Radiological Assessment (HRA) – a detailed investigation to collect historical radiological information and data for a particular site and its surroundings where radioactive materials were used, stored, or disposed.

Radioactive material – a substance that contains or emits radiation. Radioactive materials and radiation occur in nature. These materials are also used by the military and private industry and are present in common household items. Common items that use radioactive materials are smoke detectors, radioluminescent devices, including dials, ships' deck markers and gauges, lead paint analyzers, static eliminators, non-electrically powered exit signs, and biological and chemical agent detectors.

Radiologically impacted site – a radiologically impacted site is one that has a potential for radioactive contamination based on historical information or is known to contain radioactive contamination. Areas immediately adjacent to the primary impacted site may be included in this designation. Radiologically impacted sites include: sites where radioactive materials were used or stored; sites where known spills, discharges, or other unusual occurrences involving radioactive materials have occurred, or may have occurred, that could have resulted in the release or spread of contamination; and sites where radioactive materials might have been disposed of or buried.

Radiological investigation – a systematic examination of an area to determine if radioactive materials are present and, if so, at what levels.

What is a Historical Radiological Assessment?

Historical documentation indicates the potential past use and/or storage of radioactive materials at the Concord Inland Area. The HRA will define the extent of former activities involving radiation and radioactive materials, including special weapons. The HRA will:

- Document information about radiological operations, investigations, and surveys discovered during searches of historical records and interviews;
- Identify potential, likely, or known sources of radioactive material and areas where these materials might have been used;
- Classify as "**radiologically impacted**" those **sites** where radioactive materials were known to have been used, stored, or disposed with reasonable potential for residual contamination (all other sites are, by definition, "non-impacted" by radiological operations);
- Assess the likelihood of any potential residual radioactive material to migrate into other areas or to the environment;
- Identify sites that need further action; and recommend actions that will achieve site closure.

The Navy is currently conducting on-site inspections and record reviews at Concord and comprehensive records searches and review of relevant documents at various Federal archives.

What's Next?

Because individual knowledge of activities involving radioactive material at the Concord Inland Area is essential to understanding work performed there, we will interview personnel who respond to this request for interviews. The Navy has put advertisements in local newspapers to reach as many potential interviewees as possible.

The HRA is anticipated to be completed and published in the fall of 2009. We will provide regular updates at the Navy's Restoration Advisory Board (RAB) meetings. For a schedule of RAB meetings, see the Navy's environmental website at: http://www.bracpmo.navy.mil/brac2005/bracbases/ca/concord/default.aspx

Ms. Julie Crosby-Brooks
Navy Remedial Project Manager, Department of the Navy
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

Navy Points of Contact

Mr. Darren Newton
Navy BRAC Environmental Coordinator,
Department of the Navy
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310
(619) 532-0963
darren.newton@navy.mil

Ms. Julie Crosby-Brooks
Navy Remedial Project Manager,
Department of the Navy
BRAC Program Management Office West
1455 Frazee Road, Suite 900
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(619) 532-0929
julie.crosby@navy.mil

SACRAMENTO BEE

The Sacramento Bee

P.O. Box 15779 • 2100 Q Street • Sacramento, CA 95852

TETRA TECH ENGINEERING
1230 COLUMBIA ST #3571
SAN DIEGO, CA 92101

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

COUNTY OF SACRAMENTO

STATE OF CALIFORNIA

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interest ed in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

June 30, 2008 &
July 7, 14, 2008

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on **July 14, 2008**

(Signature)

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

SAN JOSE MERCURY NEWS

PROOF OF PUBLICATION

San Jose Mercury News

750 RIDDER PARK DRIVE
SAN JOSE, CALIFORNIA

IN THE
City of San Jose
STATE OF CALIFORNIA
COUNTY OF SANTA CLARA

Tetra Tech
Lindsay Morabe
1230 Columbia Street Suite 750
San Diego, CA 92101
Legal Ad No. 2854632

STATE OF CALIFORNIA)
) SS.
COUNTY OF SANTA CLARA)

The undersigned, being first duly sworn, deposes and says: That at all times hereinafter mentioned affiant was and still is a citizen of the United States, over the age of eighteen years, and not a party to nor interested in the above entitled proceedings; and was at and during all said times and still is the principal clerk of the printer and publisher of the San Jose Mercury News, a newspaper of general circulation printed and published daily in the city of San Jose in said County of Santa Clara, State of California, that said San Jose Mercury News is and was at all times herein mentioned a newspaper of general circulation as that term is defined by Sections 6000 and following, of the Government Code of the State of California, and, as provided by said sections, is published for the dissemination of local or telegraphic news and intelligence of a general character, having a bona fide subscription list of paying subscribers,and is not devoted to the interests or published for the entertainment or instruction of a particular class, professional, trade, calling, race or denomination, or for the entertainment and instruction of any number of such classes, professionals, trades, callings, races or denominations; that at all times said newspaper has been established, printed and published in the said city of San Jose in said County and State at regular intervals for more than one year preceding the first publication of the notice herein mentioned; that said notice was set in type not smaller than nonpareil and was preceded with words printed in black-face type not smaller than nonpareil, describing and expressing in general terms, the purport and character of the notice intended to be given; that the clipping of which is annexed is a true printed copy, was published and printed in said newspaper on the following dates, to-wit:

July 13,2008

Dated at San Jose, California
this 14th day of July,2008
I declare under penalty of perjury that the foregoing is true and

Signed.....
Principal clerk of the printer and publisher of the San Jose Mer

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

OAKLAND TRIBUNE

OAKLAND TRIBUNE

c/o Bay Area News Group
7677 Oakport Street, #950, Oakland, CA 94621
Legal Advertising
(800) 595-9595 option 4

Legal No. 2853645

PROOF OF PUBLICATION

In the matter of:

20080620 HRA Conc Navy

I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Oakland Tribune, a newspaper published in the English language in the City of Oakland, County of Alameda, State of California.

I declare that The Oakland Tribune is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order, dated December 6, 1951, in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of The Oakland Tribune as a Newspaper of General Circulation, Case Number 237798. Said order states that "The Oakland Tribune is a newspaper of general circulation within the City of Oakland, and the County of Alameda, and the State of California, within the meaning and intent of Chapter 1, Division 7, Title 1 [§§ 6000 et seq.], of the Government Code of the State of California." Said order has not been revoked, vacated, or set aside.

The

PUBLIC NOTICE

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

July 6, 2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Public Notice Advertising Clerk

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

The Oakland Tribune, #2853645
July 6, 2008

ALAMEDA TIMES-STAR

ALAMEDA TIMES-STAR

c/o Bay Area News Group
7677 Oakport Street, #950, Oakland, CA 94621
Legal Advertising
(800) 595-9595 option 4

Legal No. 2853653

PROOF OF PUBLICATION

In the matter of:

20080620 HRA Conc Navy

I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Alameda Times-Star, a newspaper published in the English language in the City of Alameda, County of Alameda, State of California.

I declare that The Alameda Times-Star is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order, dated September, 17, 1951, in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of The Alameda Times-Star as a Newspaper of General Circulation, Case Number 236092. Said order states that 'The Alameda Times-Star is a newspaper of general circulation within the City of Alameda, and the County of Alameda, and the State of California, within the meaning and intent of Chapter 1, Division 7, Title 1 [§§ 6000 et seq.] of the Government Code of the State of California." Said order has not been revoked, vacated or set aside.

The

PUBLIC NOTICE

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

July 6, 2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Public Notice Advertising Clerk

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call 1-866-218-0457 and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

The Alameda Times-Star, #2853653
July 6, 2008

THE DAILY REVIEW

The Daily Review

c/o Bay Area News Group
22533 Foothill Blvd., Hayward, CA 94541
Legal Advertising
(800) 595-9595 option 4

Legal No. **2853656**

PROOF OF PUBLICATION

In the matter of:

20080620 HRA Conc Navy

I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Daily Review, a newspaper published in the English language in the City of Hayward, County of Alameda, State of California.

I declare that the Daily Review is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's decree, dated March 2, 1950, in the action entitled *In the Matter of the Ascertainment and Establishment of the Standing of The Daily Review as a Newspaper of General Circulation*, case number 221938. Said decree states that "'The Daily Review' has been established, printed, and published daily in the City of Hayward, County of Alameda, State of California, for one year or more next preceding the date of the filing of said petition; that it is a newspaper published for the dissemination of local and telegraphic news and intelligence of a general character and has a bona fide subscription list of paying subscribers; ... [¶] [and] THEREFORE, ... 'The Daily Review' is hereby determined and declared to be a newspaper of general circulation [within the meaning of Government Code §§ 6000 *et seq.*]" Said decree has not been revoked, vacated or set aside.

The

PUBLIC NOTICE

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

July 6, 2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Public Notice Advertising Clerk

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

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The Daily Review, #2853656
July 6, 2008

THE ARGUS

The Argus

:/o Bay Area News Group
39737 Paseo Padre Parkway, Fremont, CA 94538
_egal Advertising
'800) 595-9595 option 4

Legal No. 2853667

PROOF OF PUBLICATION

In the matter of:

20080620 HRA Conc Navy

I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Argus, a newspaper published in the English language in the County of Alameda, State of California.

I declare that the Argus is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order, dated June 12, 1961, in the action entitled *In the Matter of the Ascertainment and Establishment of the Standing of The Argus as a Newspaper of General Circulation*, Case Number 314854, and as amended, April 25, 1967. Said order, as amended, states "The Argus' has been established, printed and published in the County of Alameda, State of California; [¶] That it is a newspaper published daily for the dissemination of local and telegraphic news and intelligence of a general character and has a bona fide subscription list of paying subscribers; and ... [¶] ... THEREFORE, IT IS ORDERED, ADJUDGED AND DECREED: ... That 'The Argus' is a newspaper of general circulation for the County of Alameda, California." Said order as amended, has not been revoked.

The

PUBLIC NOTICE

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

July 6, 2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Public Notice Advertising Clerk

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

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The Argus, #2853667
July 6, 2008

THE TRI-VALLEY HERALD

The Tri-Valley Herald

c/o Bay Area News Group
4770 Willow Road, Pleasanton, CA 94588
Legal Advertising
(800) 595-9595 option 4

Legal No. 2853672

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call 1-866-218-0457 and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

The Tri-Valley Herald, #2853672
July 6, 2008

PROOF OF PUBLICATION

In the matter of:

20080620 HRA Conc Navy

The undersigned below, deposes and says that he/she was the public Notice Advertising Clerk of the TRI-VALLEY HERALD a newspaper of general circulation as defined by Government Code Section 6000 adjucated as such by the Superior Court of the State of California, County of Alameda (Order Nos. 205 370 AND 240 625) which is published and circulated daily in said county and state.

The

PUBLIC NOTICE

was published in every issue of the TRI-VALLEY HERALD, on the following dates:

July 6, 2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Public Notice Advertising Clerk

SAN MATEO COUNTY TIMES

San Mateo County Times

c/o Bay Area News Group
477 9th Avenue, #110, San Mateo, CA 94402
Legal Advertising
(800) 595-9595 option 4

Legal No. 2853679

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

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San Mateo County Times, #2853679
July 6, 2008

PROOF OF PUBLICATION

In the matter of:

20080620 HRA Conc Navy

The undersigned below, deposes and says that he/she was the public Notice Advertising Clerk of the SAN MATEO COUNTY TIMES a newspaper of general circulation as defined by Government Code Section 6000 adjucated as such by the Superior Court of the State of California, County of San Mateo (Case No.55795 September 21, 1951) which is published and circulated in said county and state daily (Sunday excepted).

That the

PUBLIC NOTICE

of which the annexed is a printed copy, was published in every issue of the SAN MATEO COUNTY TIMES, on the following dates:

July 6, 2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Public Notice Advertising Clerk

EAST COUNTY TIMES

Going Out of Business

FINAL ORIENTAL RUG SALE! Entire inverntory slashed, 70% and more. wide variety of colors, sizes, styles from owner's personal collection, going out of business on or before, 7/31/08. Monarch Interiors, 199 Petaluma Blvd N. Petaluma. 707.769.3092 monarchinteriors.com

Health Care Equipment

A POWER Wheelchair new at NO COST!! Call to qual. 800-350-7033

POWER Chair new Quickie. $900 925-938-2595

Home Furnishings

TEMPERPEDIC "like" Mattress. 11" Thick. Brand New! $399. 925/497-1578

A REAL MATTRESS FACTORY Standard & Custom Sizes in Stock!! Name Brands!! Sealy, Sterns & Foster, Tempurpedic Up to 50% to 75% off While Supplies Last! ☛ 925-798-9785 ☚

BED: Full or Twin Mattress. Brand new. $59. Can del. 925-256-7475

BEDROOM SET: NEW in Box. 6 Pc Cherry Wood Set. $450. Will Deliver. 925/497-1578.

BRAZILIAN LEATHER: New! Sofa/Love. $595. w/del. 925/932-1056

BUNKBED: New! All wood. $79. Will deliver. 925/497-1578

BUNKBEDS $100/up All wd. New.925-753-0483

CAL KING Double Pillow Top Mattress Set. New in plastic. $249. w/del. 925/497-1578

CHERRY SLEIGH BED w/pt mattress set. Brand New! $395. w/ deliver. 925/497-1578

DINING SET: New! Cherry table with 6 chairs. $395. Will deliver. 925/497-1578

DINING Table(Glass) 60X36, w/6 chrs. wht. w/cloth seats. $285 Firm 925-672-0995

KING Bedroom Set: Brand new! 7-piece. Solid cherry. $875. w/del. 925/932-1056

LEATHER Sofa & Loveseat, Ivory Color $250 SOLD

Home Furnishings

QUEEN Ortho mattress: Brand new! $99 w/del. 925/497-1578

QUEEN Pillow Top Mattress & box. New. Never used. $165. w/del. 925/932-1056

QUEEN Size Mattress, Boxsprings & Frame $50 510.932.7084

SOFA, brwn 8ft. 1yr old. $395. DR tbl 68" solid wd w/6chrs. $350. 925-229-2683

SOFA & CHAIR: Brand new microfiber! $375. w/del. 925/497-1578.

WARDROBE Doors Mirrored, dbl set, exc cnd $100 925-828-2373

Miscellaneous

ALL SPAS & Pool Tbls. 50%-75% off. This week only. Immediate del. 800-262-9793

FREE Compost: Horse manure & shavings. Will load pick-ups. 925-939-0795

GO-CART 10 HP. Electric start, w/trlr., $1,050 925-609-8304

★ SPA COVERS $279 ★ 925.634.5134 7days9-9

Musical Instruments

MUST SELL! ESTEBAN 6 string blk Acoustic/Electric **LIKE NEW!!!** Comes with strings on guitar plus NEW strings and case **MAKE OFFER! 925-956-8533**

YAMAHA Clavinova clp123 & disc orchestra module dom30. $1250 obo Oak desk 34" X60" 30"H $100 obo 925-963-2722

Spas & Tanning Beds

SPA NEVER USED Mood lights. loaded, Warr. Can del. $2750. 925-363-4080

Sporting Goods

POOL Table '08 Model warr. Was $4K. Sac. $1175. 925.363.4080

POOL tbl 3.5ft x 7ft. Like new. $795. 925-254-7282

Wanted to Buy

AARON PAYS CASH Antiques, Older Items, Cameras, Slvr Estates, 925-370-8191

Financial

AVON: Start up only $10. Free kit/training Fatima510-754-8521ISR

CLASSIFIED QUICK & EASY

Business Opportunities

ABSOLUTELY RECESSION PROOF. Unlimited Potential! 30 Local Mach/Candy for $9995 Multivend 1.800.893.1341

AUTO REPAIR: Turn key, Concord. $75,000. 925-212-6852

BE YOUR OWN BOSS! CleanNet USA **#1 Success Magazine Commrcl cleaning biz PT/FT AnyBayArea loc** ✓ Guar. Customers ✓ Guar. Financing ✓ Guar. New Equip ✓ $500-$30K/mo **925-548-1151**

ICE Cream or other use. Concd. Gd. rent $25k 510-724-5873

Business Opportunities

DIGITAL Print Graphics center owner retiring Finan avail. no exp nec. loc support. 800-645-3006

DIGITAL PRINT GRAPHICS CENTER OWNER RETIRING FINAN AVAIL. NO EXP NEC. LOC SUPPORT 800-645-3006

GAS/Snack Ind., incl. prop., $2.1M, off I-80 gross sales $6M + 510-409-6386

GLOBAL BEV Co. exchange, 3 piece suit for 6 fig. income 925-947-6610

PACK & SHIP Franchise Prime Bay Area Loc's. Free Info: 877-624-1931

Business Opportunities

GREAT Oppty Be your own boss! Sml busy hair salon/clientele WC $40K 925-451-5141

Money Lenders

★ PAWN YOUR VEHICLE ★ AutoPawn 800.585.7999

The BIGGEST Job Board In The East Bay careerbuilder.com

PUBLIC NOTIFICATION

Legal Notice

FILED June 9, 2008
STEPHEN L. WEIR, County Clerk
CONTRA COSTA COUNTY
By Skarleth S. Settle, Deputy
FILE NO. 2008-4401
FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: NEIGHBOR'S BEVERAGES & SNACKS located at 14600 San Pablo Ave in San Pablo, CA 94805 is hereby registered by the following owner(s):
KATHY SOP
6028 HILLSIDE DRIVE
EL SOBRANTE, CA 94803
This business is conducted by: an Individual
/s/ Kathy Sop
This statement was filed with the County Clerk of Contra Costa on date indicated by file stamp above.
Business commenced on N/A
Expires June 9, 2013
CCT#2830809
June 15, 22, 29, July 6, 2007

Legal Notice

SUMMONS
NOTICE TO DEFENDANT: SIR RICHARD'S, INC., a California corporation dba SIR RICHARD'S CAR STORE OUTLET, and RICHARD A. CROSFIELD, an individual, and DOES 1 through 20, Inclusive
YOU ARE BEING SUED BY PLAINTIFF:
CSK AUTO, INC., an Arizona Corporation

You have 30 CALENDAR DAYS after this Summons is served on you to file a typewritten response at this court and have a copy served on the plaintiff. A letter or phone call will not protect your typewritten response must be in

Legal Notice

proper legal form if you want the court to hear your case. There may be a court form that you can use for your response. You can find these court forms and more information at the California Courts Online Self-Help Center (www.courtinfo.ca.gov/selfhelp), your county law library, or the courthouse nearest you. If you cannot pay the filing fee, ask the court clerk for a fee waiver form. If you do not file your response on time, you may lose the case by default, and your wages, money, and property may be taken without further warning from the court.

There are other legal requirements. You may want to call an attorney right away. If you do not know an attorney, you may call an attorney referral service. If you cannot afford an attorney, you may be eligible for free legal services from a nonprofit legal services program. You can locate these nonprofit groups at the California Legal Services Web site (www.lawhelpcalifornia.org), the California Courts Online Self-Help Center (www.courtinfo.ca.gov/selfhelp), or by contacting your local court or county bar association.
CASE NUMBER: L08-02482
The name and addressof the court is: 725 Court Street, Room 103 Martinez, CA 94553
The name, address, and Telephone number of plaintiff's attorney, or plaintiff without an attorney, is:
Kristina M. Reed
Trainor Fairbrook
980 Fulton Avenue
Sacramento, CA 95825
Phone No. 916-929-7000
Fax No. 916-929-7111
DATE: March 4, 2008
Clerk by,

Legal Notice

C. Shaver
Deputy
NOTICE TO THE PERSON SERVED: You are served as an individual defendant.
CCT, #2828569
June 15, 22, 29, July 6, 2008

NOTICE OF AVAILABILITY OF THE THIRD FINDING OF NO SIGNIFICANT IMPACT FOR THE BASE REALIGNMENT AND CLOSURE MILITARY CONSTRUCTION PROJECTS AT NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, IN CONCORD CALIFORNIA

Per the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA), the United States Navy gives notice that a Second Supplemental Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) have been prepared for the proposed construction and operation of an oil water separator (OWS) and natural gas lines, and installation and operation of one emergency generator at the Fire Station and one at the Administration Building.

Resources analyzed include geology and soils, water resources, biological resources, cultural resources, land use, aesthetics and visual resources, socioeconomics, traffic, air quality, noise, public health and safety, and public services/utilities. No significant environmental impacts would result from implementation of the Proposed Action or the No-Action Alternative. Both the Second Supplemental EA and

Legal Notice

FONSI addressing this Proposed Action are on file and may be reviewed by interested parties at Concord Public Library, 2900 Salvio Street, Concord, CA 94519, (928) 646-5455. Hours of operation are Monday and Thursday, 12 noon to 9 pm, Tuesday and Wednesday, 10 am to 6 pm, Friday and Saturday, 10 am to 5 pm, and Sunday, 1 pm to 5 pm.
CCT#2851714
July 4, 5, 6, 2008

LEGAL CLASSIFIED NOTICE

DOMESTIC VIOLENCE SERVICES

The Contra Costa County Employment and Human Services Department (EHSD) announces the issuance of Request for Proposal (RFP) #105 to private nonprofit agencies. Approximately $164,666 is available for eight (8) months of comprehensive countywide domestic violence support services to include technical assistance, assessment, case management and outreach services for EHSD and its clients. Selected bidders will be expected to enter into an eight (8) month standard purchase of service contract with Contra Costa County, with renewal for subsequent years depending on contract performance and funding availability. Attendance at the mandatory bidder's conference scheduled for July 22 2008 at 9:30 a.m. at 40 Douglas Drive, Martinez, CA 94553 is required for a proposal to be considered. Proposals are due August 5, 2008 by 5:00 p.m. A copy of the RFP is available on our website, www.ehsd.org/rfp, or by calling (925) 313-1648.
CCT#2853842
July 5, 6, 7 2008

PUBLIC NOTIFICATION

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

HOME AND BUSINESS DIRECTORY

NOTICE TO ALL READERS: California law requires that contractors taking jobs that total $500 or more (labor and/or materials) be licensed by the Contractors State License Board. State law also requires that contractors include their license numbers on all advertising. Check your contractor's status at www.cslb.ca.gov or 800-321-CSLB (2752). Unlicensed persons taking jobs that total less than $500 must state in their advertisements that they are not licensed by the Contractors State License Board.

Home Improvement | Air Conditioning & Heating | Cement & Concrete | Electrical | Gardening Services | Hardwood Floors | Painting | Plumbing | Roofing & Gutters | Tree Service

ALAMEDA JOURNAL

Alameda Journal

Legal No. **0002854027**

Tetra Tech EC
Accts Payable,1230 Columbia St., #750
San Diego CA 92101

PROOF OF PUBLICATION

FILE NO. Concord Inland Area

In the matter of

I am a citizen of the United States, I am over the age of eighteen years, and I am not a party to or interested in the above-entitled matter.

I am a foreman or principle clerk of the printer and publisher of the Alameda Journal, a newspaper published in the English language in Alameda County, State of California.

I declare that the Alameda Journal, is a newspaper of general circulation as defined by the laws of the State of California, as determined by the order of the Superior Court of the County of Alameda, dated August 25, 1992, in the action entitled "In the Matter of the Petition of the Alameda Journal to Have the Standing of the Alameda Journal as a Newspaper of General Circulation Ascertained and Established," Case Number 702515-6. Said order provides that: "Petitioner's prayer for an order ascertaining and establishing The Alameda Journal as a newspaper of general circulation...within the City of Oakland, County of Alameda, State of California, is granted." Said order has not been revoked.I declare that the notice, a printed copy of which is annexed hereto, has been published in each regular and entire issue of the Alameda Journal and not in any supplement thereof on the following dates, to-wit:

7/8/2008

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Executed at Walnut Creek, California.
On this 14 day of July, 2008

Signature

Ad Content Is EPS
Creator: MactiveEPSImporter
Title: 0002854027V01
CreationDate: 2008-07-07 17:51:56 +0000
BoundingBox: 0 0 314 504
DocumentProcessColors: Black

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at mail to: john.hiraas@gmail.com **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

ALAMEDA JOURNAL
#2854027
July 8, 2008

Ad Sizing Information:
EPS: 5 Col x 7.00" (4.36" x 7.00")
AD: 4 Col x 7.00" (4.36" x 7.00")
WARNING: EPS size differs from AD size

CONTRA COSTA TIMES

Business Opportunities

REAT Oppty Be your own boss! Sml busy hair salon/clientele C $40K 925-451-5141

Money Lenders

★ PAWN YOUR VEHICLE ★ utoPawn 800.585.7999

The BIGGEST Job Board In The East Bay careerbuilder.com

TION

Legal Notice

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CCT#2851714
July 4, 5, 6, 2008

LEGAL CLASSIFIED NOTICE

DOMESTIC VIOLENCE SERVICES

The Contra Costa County Employment and Human Services Department (EHSD) announces the issuance of Request for Proposal (RFP) #1104 to private nonprofit agencies. Approximately $164,666 is available for eight (8) months of comprehensive countywide domestic violence support services to include technical assistance, assessment, case management and outreach services for EHSD and its clients. Selected bidders will be expected to enter into an eight (8) month standard purchase of service contract with Contra Costa County, with renewal for subsequent years depending on contract performance and funding availability. Attendance at the mandatory bidder's conference scheduled for July 22 2008 at 9:30 a.m. at 40 Douglas Drive, Martinez, CA 94553 is required for a proposal to be considered. Proposals are due August 5, 2008 by 5:00 p.m. A copy of the RFP is available on our website, www.ehsd.org/rfp, or by calling (925) 313-1648.

CCT#2853842
July 5, 6, 7 2008

PUBLIC NOTIFICATION

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If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

NESS DIRECTORY

licensed by the Contractors State License Board. State law also requires that contractors include their license numbers on all advertising.
dal less than $500 must state in their advertisements that they are not licensed by the Contractors State License Board.

Hardwood Floors

BAY AREA HARDWOOD FLOORS
Refinish/Recoat/Repr
Install all types of hrdwd flrs., stairs
510.385.3135 925.818.4911

Painting

COST LESS PAINTING
38yrs exp. Lowest $$ Neat. Free Est. Frank 925-209-1926, unlic.

CUSTOM PAINTING
Base 35yrs exp. refs,

Plumbing

AFFORDABLE Plumber
No job too small. Lic #624538 925.777.1791

MASTER PLUMBER
40yr exp Sm-Med jobs 925-368-5188, unlic.

Roofing & Gutters

GUTTER SERVICES
Clean/Repr/Replace Roof cleaning & repair. Pressure washing. Free Estimates. **Lawrence Crabtree 510-644-4144**

Tree Service

#1 C&W Tree Service
Tree/Stump Removal 724531 Free Est. **(925) 939-8733 or 229-4999**

★ A CUT ABOVE ★
Full Service & Free Est. Lic. #873733 &

WEST COUNTY TIMES

Legal Notice

STUDY SESSION to discuss a preferred land use alternative for the General Plan update from the range of land use alternatives and studied by the General Plan Advisory Committee (GPAC) on April 16, 2008 for analysis in the General Plan Environmental Impact Report.

PUBLIC HEARING to determine whether grounds may exist to revoke Conditional Use Permit 1101606 for a restaurant with Alcoholic Beverage Sales located at 12889 San Pablo Avenue (APNs# 524-010-002, -028, -029, -030, and -001), in the C-2 General Commercial District. If the Commission finds that grounds may exist, it shall direct staff to schedule a permit revocation hearing.
Ray Smith, owner

All persons wishing to speak in support or in objection to the above applications may appear and be heard before this body in the Council Chamber, City Hall, 1401 Marina Way South, Richmond, CA at 7:00 p.m. on July 17, 2008.

West County Times
2853728
July 6, 7 2008

LEGAL CLASSIFIED NOTICE

DOMESTIC VIOLENCE SERVICES

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West County Times
2853839
July 5, 6, 7, 2008

Place A Classified Ad Anytime Go To ContraCostaTimes.com

PUBLIC NOTIFICATION

Legal Notice | Legal Notice | Legal Notice | Legal Notice

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WEST COUNTY TIMES
2853626
JULY 6, 2008

NESS DIRECTORY

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total less than $500 must state in their advertisements that they are not licensed by the Contractors State License Board.

Handyman

KITCH/Baths, Carpentry, Tile,Elect,Paint, drywall,dryrot, unlic. 925-457-5477

Painting

A+ PAINTING Hse Pntng Specialists #505856. 925484-0824

Plastering

EXTER Stucco & Int. Plaster. Alltypes Li.# 404531 925-497-3636

Roofing & Gutters

All Seamless Gutters Steel Tile Roofing 925.681.2141 #725756

Tile

TILE, bath, kit, flrs,frpl Free Est. unlic. (925) 833-9720; 510.418.1364

SAN FRANCISCO CHRONICLE

DECLARATION OF PUBLICATION OF
SAN FRANCISCO CHRONICLE

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

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WESLEY MANALASTAS

declares that:

The annexed advertisement has been regularly published in the

SAN FRANCISCO CHRONICLE

which is and was at all times herein mentioned established as newspaper of general circulation in the City and County of San Francisco, State of California, as that term is defined by Section 6000 of the Government Code.

SAN FRANCISCO CHRONICLE
(Name of Newspaper)

901 Mission Street
San Francisco, CA 94103

From July 6, 2008
To July 6, 2008
Namely, on July 6, 2008

(Dates of Publication)

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 7, 2008

at San Francisco, California.

Wesley Manalastas

Wesley Manalastas

VALLEJO TIMES-HERALD

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
COUNTY OF SOLANO, s.s.

I am a citizen of the United States and a resident of the county of Solano. I am over the age of 18 years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of TIMES-HERALD, P.O. Box 3188 (440 Curtola Parkway), a newspaper of general circulation, printed and published mornings, daily and Sunday in the cities of Vallejo and throughout the county of Solano, and which has been adjudged by the Superior Court of the County of Solano, State of California. The notice of which the attached is a printed copy has been published in each regular and entire issue of sais newspaper. And not in any supplement thereof, on the following dates, to wit:

JULY 13, 2008

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Vallejo, California this
13 th day OF JULY 2008

(*Signature*)

CYNTHIA REED

PROOF OF PUBLICATION
VALLEJO TIMES-HERALD

PUBLIC NOTICES

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

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VALLEY TIMES

PUBLIC NOTIFICATION

Legal Notice

Legal Notice

right to reject any or all bids and to determine which bid is, in the City's judgment, the lowest responsive and responsible bid of a Bidder or group of Bidders. The City also reserves the right to waive any informalities in any bid and to delete certain items listed in the bid as set forth therein. Costs for developing, submitting, and presenting bids are the sole responsibility of the Bidder and claims for reimbursement will not be accepted by the City.

Contractor's License Classification

As provided in California Public Contract Code Section 3300, the City has determined that at the time the contract is awarded, the Contractor shall possess a valid Class•A or C-12 Contractor license. The contractor's failure to possess the specified license shall render the Bid as non-responsive and shall act to bar award of the contract to any Bidder not possessing said license at the time of award.

Substitution of Securities in Lieu of Retention

At the successful Contractor's option, securities may be substituted for the required retention, in accordance with provisions of Section 22300 of California Public Contract Code.

Prevailing Wage

In accordance with California Labor Code Sections 1770 et seq., the Contractor shall pay general prevailing rate of per diem wages to all workers employed under this contract.

Labor Nondiscrimination

The awarded Contractor shall comply with the requirements of the State of California's Standard Specification Code Section 7-1.01A(4) "Labor Nondiscrimination" under this contract.

Questions

Questions should be directed to the project engineer either in person at 200 Old Bernal Avenue, Pleasanton, California, by mail at P.O. Box 520, Pleasanton, California 94566-0802, or by phone at (925) 931-5650.

Legal Notice

provisions of Section 22300 of California Public Contract Code.

Prevailing Wage

In accordance with California Labor Code Sections 1770 et seq., the Contractor shall pay general prevailing rate of per diem wages to all workers employed under this contract.

Labor Nondiscrimination

The awarded Contractor shall comply with the requirements of the State of California's Standard Specification Code Section 7-1.01A(4) "Labor Nondiscrimination" under this contract.

Questions

Questions should be directed to the project engineer either in person at 200 Old Bernal Avenue, Pleasanton, California, by mail at P.O. Box 520, Pleasanton, California 94566-0802, or by phone at (925) 931-5650. Questions will only be answered by reference to particular sections of the contract documents. If interpretation is deemed necessary, then the question shall be addressed in writing and a clarification shall be given to all prospective Bidders through addenda. To allow time for issuance of addenda, questions shall only be accepted prior to seven (7) calendar days before the bid opening date.

CITY OF PLEASANTON
By:Karen Diaz, City Clerk
PT/VT#2852533
July 6, 13, 2008

State of California
Secretary of State
Victims of Corporate Fraud Compensation Fund

Notice of Judgment Debtor

A notice with instructions must be served on each judgment debtor.

To: Atlantic Bancorp of America

NOTICE: Based upon a judgment entered against you in favor of

Denise Yapp

an application for payment from the Victims of Corporate Fraud Compensation Fund (the VCFCF) is being made to the California Secretary of State.

If payment is made from the VCFCF, your corpo-

Legal Notice

Therese Diane Lipps; Mason Michael Lipps and Kaitlyn Ashley Lipps by and through their parents Michael Scott Lipps and Therese Diane Lipps
3852 Mandy Way
San Ramon, CA 94582
SUPERIOR COURT OF CALIFORNIA, COUNTY OF CONTRA COSTA
725 Court Street
PO Box 911
Martinez, CA 94553
PETITION OF: Therese DianeLipps;Mason Michael Lipps and Kaitlyn Ashley Lipps by and through their parents Michael Scott Lipps and Therese Diane Lipps FOR CHANGE OF NAME
Case No. N08-0899
ORDER TO SHOW CAUSE FOR CHANGE OF NAME
TO ALL INTERESTED PERSONS:
1. Petitioner: Therese Diane Lipps;Mason Michael Lipps and Kaitlyn Ashley Lipps by and through their parents Michael Scott Lipps and Therese Diane Lipps has filed a petition with this court for a decree changing names as follows:
(Present Name) Therese Diane Lipps, Mason Michael Lipps, Kaitlyn Ashley Lipps TO (Proposed Name) Therese Diane Ryan-Lipps, Mason Michael Ryan-Lipps, Kaitlyn Ashley Ryan-Lipps
2. THE COURT ORDERS:
(a) All people interested in this matter shall appear before this court at the hearing indicated below to show cause, if any, why the petition for change of name should not be granted.
NOTICE OF HEARING
a. Date: 8/1/08, Time: 9:00 a.m., Dept.: 60, Room: 102, located at 725 Court Street, Martinez, CA 94553.
3.a. A copy of this order to Show Cause shall be published at least once each week for four successive weeks prior to the date set for hearing on the petition in the following newspaper of general circulation, printed in this County: SAN RAMON VALLEY TIMES
Date: June 5, 2008
/s/ Judith A. Sanders
JUDGE OF THE SUPERIOR COURT PRO TEM
Legal SRVT #2837508
Publish June 22, 29, July 6, 13, 2008

Jeffrey George Rodriguez
1170 Catalina Drive #17
Livermore, CA 94550
SUPERIOR COURT OF CALIFORNIA, COUNTY OF ALAMEDA
5672 Stoneridge Dr., Pleasanton CA 94588,

PUBLIC NOTIFICATION

Legal Notice

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NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, INLAND AREA SEEKING INFORMATION FOR HISTORICAL RADIOLOGICAL ASSESSMENT

The Department of the Navy (Navy) is seeking to interview current and former Navy personnel, civilian employees, and contractors who can provide information regarding radiological activities at the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, hereinafter referred to as the Concord Inland Area. The Navy is preparing a Historical Radiological Assessment (HRA) for the Concord Inland Area. The HRA will research and document historical radiological activities at the Concord Inland Area in order to facilitate future transfer of the property for non-military use. Face-to-face, telephone, or email interviews can be arranged. Information from the interviews will be used to prepare the HRA and is essential to augment historical records and develop an accurate and complete history of past radiological activities.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call **1-866-218-0457** and leave a message telling us when and how to contact you. A member of the Navy's HRA team will return your call and schedule an interview, either in person or by phone. You can also email Mr. John Hiraas at john.hiraas@gmail.com. **In order to assist the Navy with the HRA process and to schedule an interview, please contact the Navy before October 11, 2008.**

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NEWS RELEASE FROM BRAC PROGRAM MANAGEMENT OFFICE WEST PUBLIC AFFAIRS

FOR IMMEDIATE RELEASE: October 1, 2008

Contact: Ms. Melanie Ault
Voice: 619-532-0768
E-mail: melanie.ault@navy.mil

Navy Seeks Historical Use Information for Naval Weapons Station Seal Beach Detachment Concord Inland Area, Concord California

SAN FRANCISCO — The U.S. Navy Base Realignment and Closure (BRAC) Program Management Office West is preparing a Historical Radiological Assessment (HRA) for the Inland Area at Naval Weapons Station Seal Beach Detachment Concord, Concord, California. The HRA is a detailed investigation that will define the extent of former operations involving radiation and radioactive materials, including special weapons. The Navy is currently conducting on-site inspections and record reviews at Concord and comprehensive records searches and review of relevant documents at various federal archives. This HRA is a history of past radiological operations in support of future transfer of the property for non-military use.

If you are a current or former member of the Navy, civilian employee, or contractor and have information about radiological operations conducted within the Concord Inland Area, please call 1-866-218-0457 and leave a message stating the best way and time to contact you. You can also contact Mr. John Hiraas via e-mail at john.hiraas@gmail.com. A member of the Navy's HRA team will contact you and schedule a face-to-face, telephone, or e-mail interview. Please contact the Navy before October 25, 2008.

For more information about the environmental restoration program at Inland Area at Naval Weapons Station Seal Beach Detachment Concord, Concord, California, please contact Mr. Darren Newton, the Navy's BRAC Environmental Coordinator, at 619-532-0963 or darren.newton@navy.mil.

www.bracpmo.navy.mil

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National Demolition Association	Trade Periodicals	Other	United States of America	1
New Consumer Magazine	Consumer Periodicals, Web/On-Line Service	Auto, Energy, Entertainment, Features, Healthcare, Media, Other, Public Services, Retail, Technology, Transport, Travel	United Kingdom	1
NewsRX	Other	Other	United States of America	1
NewsStrike	Newspaper, Radio, Web/On-Line Service, Wire Service	Auto, Broadcast, Energy, Entertainment, Features, Financial Services, Healthcare, Media, Public Services, Retail, Technology, Transport	United States of America	1
Omega Communications	Other	Other	United States of America	1
Penton Media	Consumer Periodicals	Healthcare	United States of America	1
Quami Ekta	Newspaper, Web/On-Line Service	Auto, Broadcast, Energy, Entertainment, Features, Financial Services, Healthcare, Media, Other, Public Services, Retail, Sports, Technology, Transport, Travel	United States of America	1
Recycled Paper News	Consumer Periodicals	Other	United States of America	1
Resource Recycling	Trade Periodicals	Other, Public Services	United States of America	1
Resource Recycling Inc.	Other	Other	United States of America	1
Seawaves Magazine	Trade Periodicals, Web/On-Line Service	Other	Canada	1
SFist.com (Gothamist.com)	Blogger	Auto, Entertainment, Media, Other, Public Services,	United States of America	1

		Technology, Transport		
SPG Media	Web/On-Line Service	Energy, Features, Healthcare, Public Services, Technology, Transport, Travel	United Kingdom	1
Techfun	Blogger	Energy, Features, Financial Services, Media, Other, Retail	United States of America	1
The Business Journal	Newspaper	Media, Other, Retail, Technology	United States of America	1
TMC	Trade Periodicals, Web/On-Line Service	Media, Technology	United States of America	1
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WellSpring Publishing	Freelance/Writer, Newspaper, Other	Auto, Broadcast, Energy, Entertainment, Features, Financial Services, Healthcare, Media, Other, Public Services, Retail, Sports, Technology, Transport, Travel	United States of America	1
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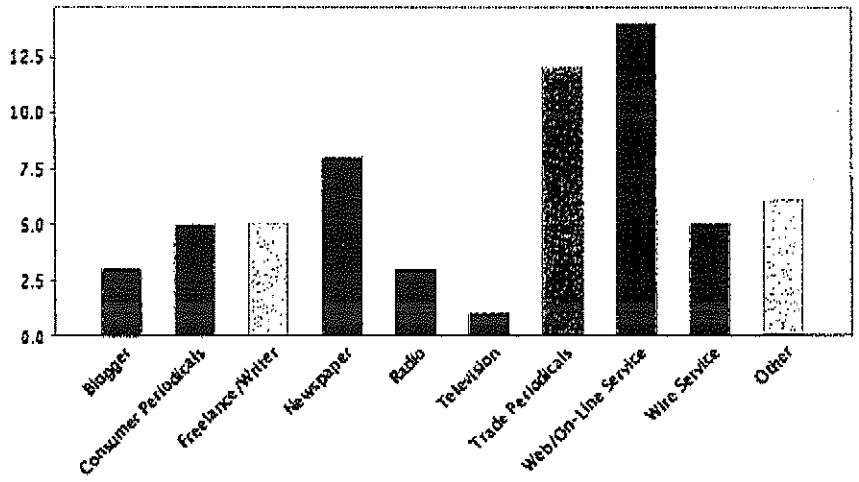

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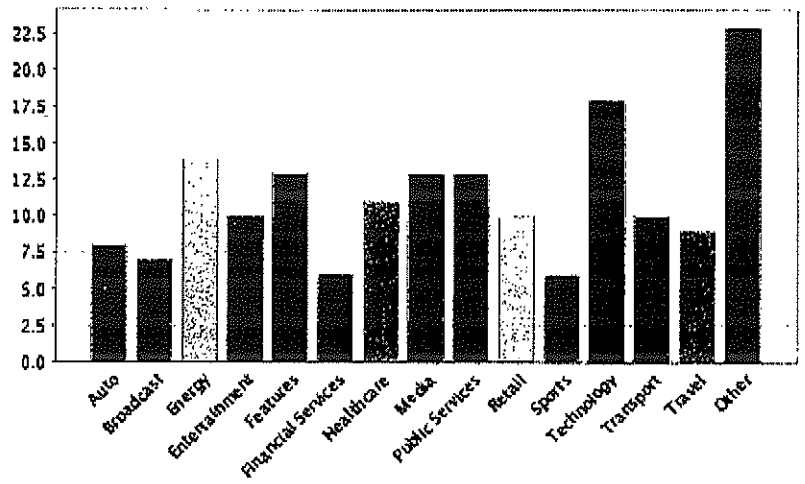

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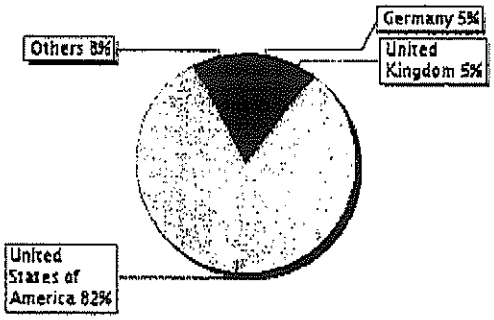

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Date	Headline	Clear Time
Oct 01, 2008	Navy Seeks Historical Use Information for Naval Weapons Station Seal Beach Detachment Concord Inland Area, Concord California	1:33 PM

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APPENDIX C

INTERVIEW

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DANA ROBERTS

Mr. Roberts was employed at Concord from 1977 to 1980. He was a Petty Officer 3rd Class and worked in Building 93 assembling and "canning" missiles. By the end of his assignment at Building 93, he had been promoted to supervisor of the canning operation. Canning was the term used for putting missiles into shipping containers. When the missiles were canned, the cans were sealed and filled with nitrogen prior to removal from Building 93. He said that he worked on missiles that got conventional warheads and those destined to be fitted with nuclear warheads. No nuclear warheads were fitted or stored in Building 93: the missiles destined to be tipped with them were marked with black dots and sent to the Alpha Area where the warheads were to be installed. Black dot missiles did not get canned, but were put into transport slings for movement to the Alpha Area following their final inspection in Building 93. The workers in Building 93 were a mix of civilian and Navy personnel.

Mr. Roberts said he witnessed three accidents in Building 93: a fire that consumed a Harpoon weapon; a dummy warhead that was dropped from a sling to the floor, causing one of the employees to wet his pants; and a forklift driven through the side of a missile. He alleged that workers would leave the building for lunch, go to one of the Navy clubs on the base and drink. They would return to work in a state of intoxication.

While he did not work in the Alpha Area, Mr. Roberts stated that there was an elevator system that was large enough to lower semi-trucks to an underground work area. He thought there might have been an underground railroad between the Alpha Area and the Q Area on the Tidal side of the base. When questioned how this might have been done, he used the BART system as an example of constructing such a system in the Bay area. He did not have any specifics of either the elevator or underground railroad. He suggested locating quality assurance (QA) personnel who might have worked in the Alpha Area to get more details about the facilities there. He said the QA inspectors were rotated through work areas so they did not get too familiar with the workers. It was suggested that since work in the Alpha Area was classified, it probably would be difficult or impossible to get anyone to discuss it in detail. He agreed and said that what he was telling me was also classified. He recalled that the Alpha Area was closed in about 1980 and all activities there were transferred quickly to the Q Area.

Mr. Roberts suggested three potential contacts for further information: Richard Rabun, Terry Crowder and Gary Krieger. He did not know how to contact these individuals. He also said there might be a police officer on the Concord police force who was a Marine guard at the Alpha Area, but he did not know his name. He also suggested contacting a PVogel@together.net.

At the end of the interview, Mr. Roberts said that what he had told me he also told public television station KQED, the Contra Costa county Times and the University of California-Berkeley School of Investigative Journalism. He also explained that Roberts was not the name he had when he worked at Concord, but that he had legally changed it after he left there. His previous name is not known.

APPENDIX D

PROJECT DATABASE WITH REFERENCE DOCUMENTS
(Provided on CD only)

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APPENDIX E

REGULATORY AGENCY COMMENTS AND RESPONSE TO COMMENTS

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Kathryn A. Stewart, P.E.
BRAC Environmental Coordinator
BRAC Program Management Office West
Navy Caretaker Site Office
1 Avenue of the Palms, Suite 161
Treasure Island
San Francisco, CA 94130-1807

Draft Historical Radiological Assessment for Naval Weapons Station Seal Beach Detachment Concord (NWSSBDC)

Dear Ms Stewart:

The Department of Toxic Substances Control (DTSC) and the California Department of Public Health – Environmental Management Branch (CDPH-EMB) have reviewed the following report, "Draft Historical Radiological Assessment for Former Naval Weapons Station Seal Beach Detachment Concord, Inland Area, Concord, California", (HRA). The Report was dated August 11, 2009.

The HRA reviewed the handling practices for radiological material from January 1945 to the present. The HRA found that 48 sites have the potential for radiological contamination. The sites are further broken down into 7 buildings or structures, 6 magazines housing depleted uranium (DU) munitions and 35 Special Weapons magazines. Potentially contaminated media include surface and subsurface soils, structures and their interiors, and drainage systems. The HRA further found no evidence of a pathway for potential contamination to migrate off-base and no impacted site is recommended for emergency action. The scope of the HRA was limited to the Inland Area.

To address its findings the HRA proposes scoping surveys for the 48 sites. These include the buildings IA-20, IA-21, IA-21A, IA-22, IA-58, 81, and 87, the 6 DU munitions storage magazines, and 35 Special Weapons magazines. DTSC concurs with this proposal.

DTSCs primary concern regards limiting of scope of the HRA to the Inland Area. The Navy had maintained operational control of both the Tidal and Inland Areas of NWSSBDC until October 2008. At which time it relinquished control of the Tidal Area to the U.S. Army. Since both Areas have been under Navy operational control for the majority of their active life time, it is likely the Navy would have the most complete records regarding the handling of radiological materials. Therefore DTSC would recommend that the Navy also initiate a radiological assessment for the Tidal Area or closely coordinate with the Army to develop a Tidal HRA. DTSC requests a schedule be developed to accomplish this.

DTSC would also like to have transportation routes used to move radiologic materials included in the proposed scoping surveys.

Attached please find the comments from the CDPH-EMB regarding technical elements of the HRA. Should you have any questions, please contact me at (916) 255-3719 or at jpinasco@dtsc.ca.gov. Please feel free to contact the reviewers of the follow on comments.

Sincerely,

Jim Pinasco
Hazardous Substances Engineer
Department of Toxic Substances Control

Cc: Ms. Mary Lou Williams
RAB Community Co-Chair
1015 San Miguel Road
Concord, California 94518-2110

Ms. Julie Crosby
BRAC PMO West
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San Diego, CA 92108-4310

Ms. Margaret Wallerstein
IR Manager Seal Beach
800 Seal Beach Blvd.
Seal Beach, California 90740-5000

Ms. Agnes Vinluan
Contra Costa County Environmental Health
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Concord, California 94520

Mr. Michael Wright
City of Concord
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Mr. Alan Friedman
California Regional Water Quality Control Board,
San Francisco Bay Region
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Oakland, California 94612

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SFD-8-3
USEPA Region 9
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San Francisco, California 94105

Ms. Joanna Canepa
TtEMI
135 Main Street, Suite 1800
San Francisco, California 94105

California Department of Public Health

MEMORANDUM

DATE: October 30, 2009

TO: Jim Pinasco
Senior Engineering Geologist
Office of Military Facilities
Department of Toxic Substances Control (DTSC)
8800 Cal Center Dr.
Sacramento, California 95826-3200

FROM: Larry E. Morgan, Senior Health Physicist
Emergency, Restoration & Waste Management Section
Environmental Management Branch (EMB)
California Department of Public Health
PO Box 997377
1616 Capitol Ave., MS 7405
Sacramento, California 95899-7377
(916) 449-5921

SUBJECT: Review of the Draft Historical Radiological Assessment (Use of General Radioactive Materials) for the former Naval Weapons Station Seal Beach Detachment Concord-Inland Area, Concord, California. Issued August 11, 2009.

The California Department of Public Health-Environmental Management Branch (CDPH-EMB) has reviewed the subject document and has wishes to submit review comments. Please refer to the attached pages for subject document review comments. This review was performed by Robert Wilson (Health Physicist), in support of the Interagency Agreement between DTSC and CDPH-EMB.

If you have any questions concerning this review, or if you need additional information, please contact Robert Wilson at (916) 449-5688.

California Department of Public Health Review

Activity: Review Comments for *Draft Historical Radiological Assessment (Use of General Radioactive Materials 1945-2009) for the former Naval Weapons Station Seal Beach, Detachment Concord Inland Area*, Concord, California. Issued August 2009.

General Comments:

1. This document was not received by the California Department of Public Health – Environmental Management Branch (CDPH-EMB) in a timely manner. The issue date for the subject document cover letter was dated August 11, 2009 with a due date of October 12, 2009 for submittal of document review comments. CDPH-EMB did not receive the subject document until October 14, 2009.

   Please ensure and acknowledge receipt of future deliverables.

2. An Associated Press news release, dated January 30, 1998, reported that shipments of "Asian nuclear waste" would arrive, via ship, at NAVWPNSTADET Concord and would be subsequently loaded onto rail for transport to the Idaho National Engineering and Environmental Laboratory. It has been reported that the "Asian nuclear waste" would be comprised of spent fuel rods from nuclear power generating plants. Please provide a status report for this Department of Energy (DOE) activity and any updates for current DOE activities.

Specific Comments:

1. Section 3.1, "Site Description", 4th paragraph, page 3-1:

   a. This paragraph suggests that this site was active and operational when it was listed in the NPL, is this correct? Please check the chronology of this paragraph.

   b. Did the 1994 NPL listing of NAVWPNSTADET Concord include the Inland Area, the Tidal Area or both? A search of the EPA website for NPL listings revealed that the Tidal Area was included in the NPL in 1988 and later de-listed in 1990.

2. Section 3.5, "Adjacent Population and Land Use", page 3-4:

   State Route 4 is a major thoroughfare for Sacramento/Stockton/Bay Area commuters. Please include estimates of weekday and weekend peak traffic volume along State Route 4.

3. Section 4.2, "Purpose", pages 4-1 and 4-2:

   a. Sixth bullet, page 4-2: See General Comment #2 above.

   b. Please include, as an additional bullet item, the on-site and off-site disposal of radioactive wastes generated by on-site activities at NAVWPNSTADET Concord. The sixth bulleted item of this section only addresses "receipt of radioactive materials and sources sent by other facilities to NAVWPNSTA Concord".

4. Section 4.3.2, "Nonimpacted and Impacted Sites", page 4-4 and Section 4.3.3, "Potentially Contaminated Media", page 4-5:

   Please address drainage systems such as industrial waste lines, storm drains sanitary sewer lines and leach fields.

5. Section 4.4.3.2, "Radionuclide Identification", page 4-9, and Table 4-4:

   Please explain why cesium-137 was not included in Table 4-4.

6. Section 5.5.1, "CDPH", page 5-9:

   a. Second sentence: add "through its Radiologic Health Branch (RHB)." at the end of this sentence.

   b. Third sentence: Delete existing sentence and rewrite as. "CDPH will provide consultation to the California Environmental Protection Agency, Department of Toxic Substances and Control (DTSC) on radiological issues at BRAC sites on the NPL.

7. Section 6.3.1, "X-ray Machines and Particle Generators", page 6-3:

   a. Second paragraph: Please specify "X-ray" after the words "Machine generated" in the first sentence of this paragraph.

   b. What was the Van de Graaff machine found empty of?

   c. Information about the particle accelerator is vague. Please provide additional information about the particle accelerator, such as, type, shielding, location and its use at this site. This information could be an

aid to determine if specific supplemental surveys would be needed in the future.

d. Please include a reference to the use of a particle accelerator in subsection 8.2.5, "Building IA-58 – WQEC X-ray Building", page 8-15.

8. Section 6.3.2, "Sealed Source Gamma Radiography", page 6-5:

a. Third paragraph: Please identify the "independent off-site facility" that measured potential leakage of radiography sources.

b. The seventh and eighth sentences appear to contradict each other. One sentence claims: "there are no records of leakage…", while the next sentence refers to the IAS mentioning two or three events with positive leak tests. What mechanism did the IAS use to reveal the positive leak test results?

c. The Navy may need to further investigate the use of radium-226 or cesium-137 as sources for gamma radiography prior to, or immediately after, the issuance of formal DON guidelines and licenses for the possession and use of by-product material on this site.

9. Section 6.7, "Radium-226", page 6-13, last paragraph:

a. Please provide additional information about "a radium-226 source stored in Building IA-58 (HRA-508)." Please note that Section 8.2.5 of this HRA does not reference HRA-508, but this section does mention the storage of a radium-226 source within IA-58.

b. The IAS mentioned NAVWPNSTADET Concord as a homeport for a squadron of U.S.Navy ammunition ships (AE). One of the classes of AEs was constructed and commissioned during a timeframe that coincides with the widespread use of radium deck markers on naval surface craft, while other AE class of ships may have used strontium-90 deck markers. Homeport activities could have included limited repairs and modifications to naval surface craft that did not require berthing at naval shipyards. Is it possible that some of these activities could involve the removal and disposal of radioactive deck markers in NAVWPNSTADET Concord?

c. Did NAVWPNSTADET Concord use radium-226 position markers, such as those used to mark above ground structures or roadways during blackout conditions during World War II?

10. Section 6.9, "G-RAM Storage and Disposal", page 6-14:

a. First paragraph: Please clarify the meaning of "other facilities" and "off-site".

b. Second paragraph: It is well known that the DoD practice of on-site disposal of radiological wastes, prior to the 1960s, was generally uncontrolled and not documented. While NAVWPNSTADET Concord may not have possessed the quantity of G-RAM when compared to DoD installations, such as Hunters Point Naval Shipyard and Alameda Naval Air Station, this site did have the potential to store and maintain a variety of special weapons during a portion of the site's operational lifetime.

It is probable that some of the earlier designed uranium fueled special weapons required disassembly of the warheads and these warheads were subjected to manual cleaning due to the spallation of uranium. This particular type of maintenance process may have been performed in a glove box and would have produced radiological wastes that would have been subject to proper disposal.

How often this type of maintenance was performed is currently unknown, but the number of special weapons magazines may suggest that Building 81, where and when special weapons maintenance may have been carried out, would have produced a meaningful amount of radiological wastes over time. Also, it is unknown if any of the aforementioned special weapons maintenance was performed inside of the magazines throughout the confines of the Alpha Area, but outside of Building 81.

11. Section 6.10, "Black Pit At Red Rock", last paragraph, pages 6-14 and 6-15:

a. Please cross check and resolve any potential conflicts related to surface dimensions of this site. The HRA states a length of 25 feet while the

referenced HRA-274 (subsection 2.3.4) states a length of 15 feet, and referenced HRA-572 states a length of 25 feet.

b. CDPH does not concur with the Navy in deeming this site as nonimpacted due to the following:

i. Prior to the mid-1960s, the disposal of hazardous and radioactive wastes at military installations was generally, not documented or vague, therefore, it is likely that evidence of disposal activities would not be part of the historical record for this site. The potential for the on-site disposal of hazardous wastes is evident from the results of some of the investigations at the Black Pit, but the question regarding the disposal of radiological wastes at this particular site remains unanswered due to past radiological surveys that were limited to scans of the surface of the Black Pit, no sampling, and do not address subsurface conditions.

ii. HRA-655 states that interviews of past employees of NAVWPNSTADET Concord had comments of miscellaneous waste disposal practices at this former Department of Defense (DoD) site. It is not clear if these practices are related to the disposal of radioactive wastes or material.

iii. The radiological survey in the referenced HRA-655 has recommended that additional radiological screening should be performed at the Black Pit if trenching operations were to occur.

c. Page 6-15: Is HRA-689 relevant for a discussion about background radiation levels at the Black Pit?

12. Section 6.11, "Special Weapons", page 6-16:

See comment 10(b) above.

13. Section 6.12, "Historical Radiological Investigations, Surveys, and Studies", page 6-19:

a. All bullet points: Please specify the entities that performed surveys or inspections.

b. Last bullet point: The supplemental CD would not allow CDPH-EMB to access and review reference HRA-687. Please provide accessibility as needed.

14. Section 8, "Findings and Recommendations":

a. Subsection 8.2.2, Building IA-21 – WQEC Material Testing Laboratory:

In addition to the handling of low-level radioactive waste (LLRW), was LLRW stored at this facility? If so, then this "Contaminated Media" section may need to be revised to reflect storage issues.

b. Subsection 8.2.5: See Comment 7(d) above.

c. Subsection 8.2.9, Special Weapons – Bulk Magazines:

i. The dimensions and number of these bulk magazines (17ea) could suggest that they would have contained sizable inventories of special weapons subjected to handling and transport for periodic maintenance [see Comment 10(b) above]. This periodic activity would have been made more efficient if maintenance for uranium spalling, which included the disassembly of the warheads, was performed within the confines of the magazines.

The handling of sealed special weapons could suggest to movement only and does not describe any maintenance activity. Is it the Navy's intention to include the possible on-site maintenance of special weapons as "handling"? If this particular form of maintenance was not performed in the bulk magazines, but in Building 81, then this further suggests an increase in the handling and transport of special weapons from storage to the maintenance depot and back through a transport pathway, such as a road, and increasing a potential for contamination since the road handled special weapons.

ii. Has the Navy considered the potential accumulation of Radon-222 in the bulk magazines over time, including the magazines used to store conventional weapons?

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

October 13, 2009

Kathryn A. Stewart, P.E.
BRAC Environmental Coordinator
BRAC Program Management Office West
Navy Caretaker Site Office
1 Avenue of the Palms, Suite 161
Treasure Island
San Francisco, CA 94130-1807

RE: U.S. EPA Review of Concord Naval Weapons Station Draft Historical Radiological Assessment

Dear Ms Stewart:

The U.S. Environmental Protection Agency (U.S. EPA) appreciates the opportunity to receive and review a Department of the Navy (Navy) document entitled "Draft Historical Radiological Assessment" for Former Naval Weapons Station Seal Beach Detachment Concord, Inland Area, Concord , California, dated August 11, 2009 (HRA). The HRA describes historical radiological operations, identifies potential or known sources of radiological materials, identifies sites that need further assessment, and provides recommendations for further radiological investigations and remediation processes. The HRA provides the following conclusions with regards to impacted sites and follow-up recommendations:

* There area 48 impacted sites (7 buildings/structures and 41 magazines) (as indicated in the HRA , "an impacted site is one that has the potential for radiological contamination based upon historical information, or one that is known to contain or have contained radiological contamination.").

* Scoping surveys are recommended for 7 buildings/structures (IA-20, IA-21, IA-21A, IA-22, IA-58, 81, and 87), 6 depleted uranium (DU) munitions storage magazines, and 35 Special Weapons magazines.

* Potentially contaminated media include surface and subsurface soils, structures, and their interiors, and drainage systems.

* No evidence of a pathway for potential contamination to migrate off-base.

* No impacted site is recommended for emergency action.

Based upon a review of the HRA, the U.S. EPA has determined that the document is relatively complete. However, U.S. EPA does have a limited number of general and specific comments, which we request the Navy to address in the Final HRA. Please see the enclosure for a complete list of U.S. EPA's general and specific comments.

Please do not hesitate to contact the undersigned or Ms Melinda Garvey at (415) 947-4184 if you have any questions concerning this matter.

Sincerely,

Phillip Ramsey
Remedial Project Manager

cc:

Mr. Robert Terry, U.S.EPA
Ms Julie Crosby, Navy
Mr. Jim Pinasco, DTSC
Mr. Alan Friedman, RWQCB
Ms. Agnes Vinluan, CCC Environmental Health
Mr. Michael Wright, City of Concord
Ms Mary Lou Williams, RAB Chairperson

ENCLOSURE: **October 13, 2009**

U.S. EPA Review of Concord Naval Weapons Station - Inland Area - Draft Historical Radiological Assessment

Based upon U.S. EPA's review of "Draft Historical Radiological Assessment" for Former Naval Weapons Station Seal Beach Detachment Concord, Inland Area, Concord, California, dated August 11, 2009 (HRA), the following general and specific comments apply:

General Comments:

1. As indicated in Executive Summary, the focus of the HRA is the approximately 5,100 acres of the Inland Area portion of Concord Naval Weapons Station that has been retained by the Navy following the 2007 BRAC determination and 2008 transfer of the Tidal Area portion of Concord to the Army. U.S. EPA has concerns that the HRA does not assess radiological operations within the Tidal Area and believes that any additional information related to the Tidal Area would have benefited an understanding of site-wide radiological operations that were conducted by the Navy, reinforcing an understanding of the Inland Area. In Section 4.4, Preparation of This HRA, text indicates that "[t]his HRA reviews historical radiological operations and past radiological investigations to provide a complete picture..." (emphasis added). Also, given the 2008 transfer of the Tidal Area to the Army, U.S. EPA believes the Navy is in a much better position to assess past Navy radiological operations within the Tidal Area than shifting this responsibility to the Army for a future time. Further, U.S. EPA believes that only limited additional time and resources may be necessary to complete this more expanded assessment of the entire former Concord Naval Weapons Station, making the assessment more complete. Please expand the Navy's historical radiological assessment to include the Tidal Area or support the Draft HRA focus on the Inland Area.

2. Building 97 (Guided Missile Department Rocket Motor Maintenance and Test Facility), was not identified in the HRA as an impacted site; however, Navy documentation indicates that radiological material was used in this building. In a letter report dated February 2, 2009, which provided summary information on several suspect building sites at Concord, including Building 97, text states that "Radiological monitoring was performed at Building 97 to evaluate the radiation transmission profiles of the Tomahawk missile family. The radiation source used during monitoring was 10 millicuries of cesium- 137, which posed a hazard only to personnel in the immediate vicinity of the source." In an April 16, 2009, electronic message from Navy RPM Dennis Parker to U.S. EPA, retransmitting the Building Evaluations summary report, the Navy indicates, "The use of cesium 137 at Bldg 97 is being evaluated as part of the HRA investigation. The specific content of the HRA report has not been finalized." HRA Table 4-5, Radionulcides (sic) of Concern at Former NAVWPNSTA Concord, lists cesium 137 as a check source used only in Building IA-58 (an impacted site). Text in Section 6.8, RADIACs, Calibrators, and Check Sources, discusses use of calibrators containing cesium 137; however, this discussion does not appear consistent with the Navy's February 2009 description of "radiological monitoring …to evaluate radiation transmission profiles…" Please include

Building 97 as an impacted building requiring further assessments or clarify why the Navy believes Building 97 is not impacted.

Specific Comments:

1. Section 1.4 Regulatory Involvement: Although excellent detail is provided in Sections 5.1 and 5.2, a little more detail should be provided. For example, when AEC/NRC issued the radioactive materials (RAM) license to Concord NWS, was the license issued by NRC headquarters or Region 4? Was the license issued to the Navy in the Pentagon or directly to some local Navy authority, and what was the identity of the license holder in any case? To what authority in the Pentagon was the Master Material License issued, and what was the identity of the license/permit holder at Concord NWS?

2. Section 3.1 Site Description: This section should include the precise legal description of the parcel(s) comprising the property, as listed on file in the County Clerk's or County Assessor's office.

3. Section 4.4.1 Physical Boundaries: Note that this section points out that significant portions of the Concord NWS are NOT included in the Historical Radiological Assessment and describes specifically which areas are not included. If this is not a comprehensive list then it should be completed.

4. Section 4.4.6 HRA Site Reconnaissance: This section notes that during site walk-throughs, postings were still in place as evidenced by Photograph 4-2. It is a well-established principle of both occupational and radiation safety that postings *shall* be removed once they are no longer needed and most agencies with jurisdiction typically cite remaining postings as violations of their regulations or of local laws. The HRA should point out that, if these postings still remain, they should be removed in the very near future.

5. Section 6.2 Licensing: Please see my comment regarding Section 1.4. The Navy should decide how much of the needed details should be apportioned between Section 1.4 and 6.2.

6. Section 6.3.1 X-ray Machines and Particle Accelerators: Since particle accelerators have the potential for making target materials and shielding radioactive, some discussion needs to be provided about how this possibility was mitigated during operations and decommissioning. Unless that discussion can put to rest any present day concerns about this topic, the area where the particle accelerator was used may require a special survey.

7. Section 6.4 Tools for Nondestructive Examination: X-ray, particle beam and gamma radiography (Section 6.3) are all types of nondestructive testing. Sections 6.3 and 6.4 should be reorganized to reflect this fact.

8. Section 6.5 Depleted Uranium: This section is likely to be of greatest interest to present-day readers. Of particular interest will be storage of 20mm rounds and the potential for particles and other bits of DU to be sloughed off. This section should provide more detail about

mitigation of DU contamination during operations and decommissioning, and about potential health effects from residual contamination.

9. Section 6.12 Historical Radiological Investigations, Surveys, and Studies: The report should provide a summary of those investigations, and if possible the reports themselves should be attached on the accompanying compact disc.

10. Section 7 Assessment of Impacted Sites: Preliminary to Section 8, this section should reiterate the logical sequence of the scoping surveys, characterization surveys and final status surveys that were discussed in Section 4.3.5.

11. Section 8 Findings and Recommendations: The recommendations for scoping surveys for each of the impacted sites is appropriate. U.S. EPA recommends that some additional text be added that will give the reader some feel for the *expected* likelihood for follow-up characterization or final status surveys. U.S. EPA also recommends that someone who is familiar with details about the site should go through the inventory of impacted sites and make sure that the list is complete. Similarly, details about each of the impacted sites should be reviewed by someone who is familiar with the project.

CITY OF CONCORD
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Concord

CITY COUNCIL
Laura M. Hoffmeister, Mayor
Guy S. Bjerke, Vice Mayor
Helen M. Allen
Mark A. Peterson
William D. Shinn

Mary Rae Lehman, City Clerk
Thomas J. Wentling, City Treasurer

Daniel E. Keen, City Manager

October 15, 2009

Kathryn A. Stewart, P.E.
BRAC Environmental Coordinator
BRAC Program Management Office West
Navy Caretaker Site Office
1 Avenue of the Palms, Suite 161
Treasure Island
San Francisco, California 94130-1807

RE: City of Concord Comments on the Concord Naval Weapons Station Draft Historical Radiological Assessment

Dear Ms. Stewart:

The City of Concord has reviewed the Concord Naval Weapons Station Draft Historical Radiological Assessment. The City has also reviewed the comments provided by experts at the U.S. EPA regarding the radiological assessment. The City is in agreement with the general and specific comments provided by the U.S. EPA in their letter of October 13, 2009 with one exception. The first general comment addressing the potential efficiencies that might be achieved if the Navy extended its review to include the Tidal area is beyond the purview of the City and it is not appropriate to recommend expansion of the study area beyond the Inland portion of the CNWS for which we have jurisdiction.
We appreciate the opportunity to comment on the draft and request that any response to the U.S. EPA letter be copied to the City of Concord.

Very truly yours,

Pamela Capul for

Michael W. Wright
Director, Community Reuse Planning

cc: Phillip Ramsey, U.S. EPA
Jim Pinasco, California DTSC
Alan Friedman, RWQCB

RESPONSE TO COMMENTS ON
DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT
Dated August 11, 2009

FORMER NAVAL WEAPONS STATION SEAL BEACH
DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comments by: Mr. Jim Pinasco Hazardous Substances Engineer Department of Toxic Substances Control	Responses by: Ms. Kathryn A. Stewart, P.E. BRAC Environmental Coordinator BRAC Program Management Office West Navy Caretaker Site Office 1 Avenue of the Palms, Suite 161 Treasure Island San Francisco, CA 94130-1807
Comments: October 30, 2009	Responses: February 9, 2010
General Comments:	
Comment 1. The HRA reviewed the handling practices for radiological material from January 1945 to the present. The HRA found that 48 sites have the potential for radiological contamination. The sites are further broken down into 7 buildings or structures, 6 magazines housing depleted uranium (DU) munitions and 35 Special Weapons magazines. Potentially contaminated media include surface and subsurface soils, structures and their interiors, and drainage systems. The HRA further found no evidence of a pathway for potential contamination to migrate off-base and no impacted site is recommended for emergency action. The scope of the HRA was limited to the Inland Area. To address its findings the HRA proposes scoping surveys for the 48 sites. These include the Buildings IA-20, IA-21, IA-21A, IA-22, IA-58, 81, and 87, the 6 DU munitions storage magazines, and 35 Special Weapons magazines. DTSC concurs with this proposal. DTSCs primary concern regards limiting of scope of the HRA to the Inland Area. The Navy had maintained operational control of both the Tidal and Inland Areas of NWSSBDC until October 2008. At which time it relinquished control of the Tidal Area to the U.S. Army.	**Response 1.** The HRA is a means to document the extent of past radiological operations at specific sites within the Inland Area and assess any residual effects of those operations at specific sites within the Inland Area. It is not necessary to include an assessment of radiological operations within the Tidal Area to provide a complete picture of the current radiological status of sites within the Inland Area. The proposed scoping surveys will only evaluate the areas that are designated as impacted in the HRA. Transportation routes were not impacted in the HRA because no evidence was found to justify impacting these routes. While the procedures (packaging, routes, etc.) for special weapons transport are classified, there is no evidence of any transportation incident involving special weapons at former Naval Weapons Station Seal Beach Detachment Concord. Based on this and considering the tight administrative controls applied to such transport by the DON, it is highly unlikely that special weapons leaked during transport. There is no other extant record that would support considering transportation routes impacted.

Comment 1. (continued) Since both Areas have been under Navy operational control for the majority of their active life time, it is likely the Navy would have the most complete records regarding the handling of radiological materials. Therefore DTSC would recommend that the Navy also initiate a radiological assessment for the Tidal Area or closely coordinate with the Army to develop a Tidal HRA. DTSC requests a schedule be developed to accomplish this. DTSC would also like to have transportation routes used to move radiologic materials included in the proposed scoping surveys.	

RESPONSE TO COMMENTS ON
DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT
(USE OF GENERAL RADIOACTIVE MATERIALS)
Dated August 11, 2009

FORMER NAVAL WEAPONS STATION SEAL BEACH
DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comments by: Mr. Larry E. Morgan, Senior Health Physicist Emergency, Restoration and Waste Management Section Environmental Management Branch (EMB) California Department of Public Health P.O. Box 997377 Sacramento, California 95899-7377	Responses by: Ms. Kathryn A. Stewart, P.E. BRAC Environmental Coordinator BRAC Program Management Office West Navy Caretaker Site Office 1 Avenue of the Palms, Suite 161 Treasure Island San Francisco, CA 94130-1807
Comments: October 30, 2009	Responses: February 8, 2010
General Comments:	
Comment 1. This document was not received by the California Department of Public Health - Environmental Management Branch (CDPH-EMB) in a timely manner. The issue date for the subject document cover letter was dated August 11, 2009 with a due date of October 12, 2009 for submittal of document review comments. CDPHEMB did not receive the subject document until October 14, 2009. Please ensure and acknowledge receipt of future deliverables.	**Response 1.** The Department of the Navy (DON) submitted two copies of the Draft Historical Radiological Assessment (HRA) to California Department of Toxic Substances Control (DTSC). The package was shipped via Federal Express (priority overnight) on August 11, 2009, and was delivered to DTSC on the next day. The Federal Express tracking information indicates that it was received by the receptionist Ms. T. Teresa on August 12, 2009, at 9:40 A.M. In the future, the DON will send documents directly to the California Department of Public Health (with DTSC's concurrence) and confirm receipt.
Comment 2. An Associated Press news release, dated January 30, 1998, reported that shipments of "Asian nuclear waste" would arrive, via ship, at NAVWPNSTADET Concord and would be subsequently loaded onto rail for transport to the Idaho National Engineering and Environmental Laboratory. It has been reported that the "Asian nuclear waste" would be comprised of spent fuel rods from nuclear power generating plants. Please provide a status report for this Department of Energy (DOE) activity and any updates for current DOE activities.	**Response 2.** The shipment(s) of "Asian nuclear waste"/spent fuel rods was an activity confined to the Tidal Area. Evaluating this activity is outside the scope of this HRA. The DON appreciates the comment and will be prepared to address this question if it arises in the future.

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Specific Comments:	
Comment 1. Section 3.1, "Site Description", 4th paragraph, page 3-1: a. This paragraph suggests that this site was active and operational when it was listed in the NPL, is this correct? Please check the chronology of this paragraph. b. Did the 1994 NPL listing of NAWVPNSTADET Concord include the Inland Area, the Tidal Area or both? A search of the EPA website for NPL listings revealed that the Tidal Area was included in the NPL in 1988 and later de-listed in 1990.	**Response 1.** a. The text is correct. The base was active and operational in 1994 when it was listed in the United States Environmental Protection Agency's (EPA's) National Priority List (NPL). b. The 1994 listing of Concord included both the Inland and the Tidal Areas. No de-listing has occurred. This information can be found on the EPA's NPL website: http://www.epa.gov/superfund/sites/npl/nar1344.htm
Comment 2. Section 3.5, "Adjacent Population and Land Use", page 3-4: State Route 4 is a major thoroughfare for Sacramento/Stockton/Bay Area commuters. Please include estimates of weekday and weekend peak traffic volume along State Route 4.	**Response 2.** Section 3.5 has been revised and the following statement has been added to the end of the section: "State Route 4 is a heavily traveled highway and, on average, weekday traffic volume is much greater than weekend volume (as is typical of a major highway)."

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Comment 3. Section 4.2, "Purpose", pages 4-1 and 4-2: a. Sixth bullet, page 4-2: See General Comment *#2* above. b. Please include, as an additional bullet item, the on-site and off-site disposal of radioactive wastes generated by on-site activities at NAVWPNSTADET Concord. The sixth bulleted item of this section only addresses "receipt of radioactive materials and sources sent by other facilities to NAVWPNSTA Concord".	**Response 3.** a. The listing provided in Section 4.2 is intended to provide examples of uses and storage of general radioactive material (G-RAM) at the Inland Area at former Naval Weapons Station Seal Beach Detachment Concord (NAVWPNSTA Concord). The first sentence in Section 4.2 has been revised to clarify that the purpose of the HRA is to document radiological operations involving the use of G-RAM <u>at the Inland Area</u> at the former NAVWPNSTA Concord (emphasis added). Because the activities from General Comment #2 above were confined to the Tidal Area, this activity is not listed in this section. b. There is no evidence or records that indicate that radioactive waste was disposed of at former NAVWPNSTA Concord. Disposal of radioactive material was conducted in accordance with the DON's low-level radioactive waste (LLRW) program, in which excess radioactive materials were collected, packaged, transferred to, and disposed of by a licensed radioactive waste broker. The following bullet has been added to Section 4.2: "Generation and storage of small amounts of radioactive waste from NAVWPNSTA Concord activities pending shipment by the Department of the Navy (DON) for off-site disposal at a licensed disposal facility."

RESPONSE TO COMMENTS ON
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Comment 4. Section 4.3.2, "Nonimpacted and Impacted Sites", page 4-4 and Section 4.3.3, "Potentiallv Contaminated Media", page 4-5: Please address drainage systems such as industrial waste lines, storm drains sanitary sewer lines and leach fields.	**Response 4.** Historical records do not indicate that industrial waste lines, storm drains, sanitary sewer lines, or leach fields at former NAVWPNSTA Concord have been impacted by radiological contamination. During the research phase conducted for preparation of this HRA, each impacted site was evaluated for potential effects on drainage systems. The results of these evaluations were reported for each impacted site and described in Section 8.0. The DON will design scoping surveys that adequately address potential radioactive contamination in building drains as indicated in Section 8.0. If contamination is detected in building drains, additional surveys will be designed and performed to determine the extent of the contamination to potentially impacted drainage systems.
Comment 5. Section 4.4.3.2, "Radionuclide Identification", page 4-9, and Table 4-4: Please explain why cesium-1 37 was not included in Table 4-4.	**Response 5.** Cesium-137 has been added to Table 4-4.
Comment 6. Section 5.5.1, "CDPH", paqe 5-9: a. Second sentence: add "through its Radiologic Health Branch (RHB)." at the end of this sentence. b. Third sentence: Delete existing sentence and rewrite as. "CDPH will provide consultation to the California Environmental Protection Agency, Department of Toxic Substances and Control (DTSC) on radiological issues at BRAC sites on the NPL."	**Response 6.** The DON has incorporated both comments verbatim.

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Comment 7. Section 6.3.1, "X-ray Machines and Particle Generators", page 6-3: a. Second paragraph: Please specify "X-ray" after the words "Machine generated" in the first sentence of this paragraph. b. What was the Van de Graaff machine found empty of? c. Information about the particle accelerator is vague. Please provide additional information about the particle accelerator, such as, type, shielding, location and its use at this site. This information could be an aid to determine if specific supplemental surveys would be needed in the future. d. Please include a reference to the use of a particle accelerator in subsection 8.2.5, "Building IA-58 - WQEC X-ray Building", page 8-15.	**Response 7.** a. Section 6.3.1, second paragraph, first sentence has been revised to read: "Machine-generated X-ray radiation from the equipment used at former NAVWPNSTA Concord leaves no residual radioactivity and does not form the basis for declaring a site impacted, because the X-ray energy of the equipment was not powerful enough to cause materials that they penetrate to become radioactive." b. The second paragraph, sixth sentence has been changed to read: "The Van de Graaff machine was surveyed and inspected and found not to contain DU." c. Additional information concerning the linear electron particle accelerator is contained in reference HRA-7. The maximum X-ray energy output of the accelerator was not sufficient to activate the materials examined with the accelerator or any surrounding materials incident to the projected particle beam. For clarity, the third paragraph, first sentence in section 6.3.1 has been changed to read: "A linear electron particle accelerator with maximum energy output of 10 megaelectron volts (MeV), which utilized a DU collimator to focus the particle beam, was also used for radiography purposes in Building IA-58." d. The subsection 8.2.5, "Building IA-58 - WQEC X-ray Building", "Former Radiological Uses", page 8-16, second paragraph has been added to state: "The building housed the Van de Graaff, a linear electron particle accelerator, and other X-ray machines (Section 6.3.1)." For clarity, the title of Section 6.3.1 has been changed to read: "Van de Graaff, Other X-ray Machines, and Particle Accelerator"

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Comment 8. Section 6.3.2, "Sealed Source Gamma Radiography", page 6-5: a. Third paragraph: Please identify the "independent off-site facility" that measured potential leakage of radiography sources. b. The seventh and eighth sentences appear to contradict each other. One sentence claims: "there are no records of leakage.. .", while the next sentence refers to the IAS mentioning two or three events with positive leak tests. What mechanism did the IAS use to reveal the positive leak test results? c. The Navy may need to further investigate the use of radium-226 or cesium-137 as sources for gamma radiography prior to, or immediately after, the issuance of formal DON guidelines and licenses for the possession and use of by-product material on this site.	**Response 8.** a. Several facilities provided leak test services for former NAVWPNSTA Concord. These facilities are identified in the individual leak test reports that are included in HRA reference documents (e.g., HRA-10, HRA-449). For clarification, wording of the fourth paragraph, fourth sentence has been changed to read: "Potential leakage was measured at several independent off-site facilities licensed by the NRC to perform radioactive material leak testing, such as Radiation Detection Company." b. The Initial Assessment Study (IAS) states that x-ray radiography (as opposed to gamma radiography) operations occurred in Building IA-58. The text regarding the "2 or 3 events with positive leak tests" refers to non-radiography sources, possibly instrument response check sources for use with radiation survey instruments. For clarification, wording of the seventh, eighth, and ninth sentences has been changed to read: **"**There are no records of leakage detected from the leak tests performed on the radioactive sources used for gamma radiography. The IAS mentions that there were two to three events with positive leak tests of non-radiography sources, possibly instrument response check sources for use with radiation survey instruments or other sealed radioactive sources in Building IA-58. These sources were packaged and returned to the manufacturer for repairs (HRA-274). Those areas where gamma radiography is known or suspected of having been performed are not considered impacted for the purposes of this HRA."

Response 8. (continued)

c. The DON has performed an exhaustive search of records, and has uncovered no evidence indicating the use of radium-226 or cesium-137 in gamma radiography operations at NAVWPNSTA Concord prior to radioactive material licensing by the U. S. Atomic Energy Commission (AEC)/Nuclear Regulatory Commission (NRC).

Former NAVWPNSTA Concord operated under the auspices of a U.S. NRC radioactive materials license until the point at which the Chief of Naval Operations (CNO) obtained a U.S. NRC Master Materials license, and initiated the DON's Naval Radioactive Materials Permitting process. This was a seamless transition such that former NAVWPNSTA Concord radiography operations were under continuous regulation from the implementation of the initial NRC license until the Naval Radioactive Materials Permit (NRMP) issued for former NAVWPNSTA Concord gamma radiography was terminated. Neither the NRC license nor the NRMP indicate the use of radium-226 or cesium-137 in the conduct of gamma radiography operations.

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Comment 9. Section 6.7, "Radium-226", page 6-1 3, last paragraph:	**Response 9.**
a. Please provide additional information about "a radium-226 source stored in Building IA-58 (HRA-508)." Please note that Section 8.2.5 of this HRA does not reference HRA-508, but this section does mention the storage of a radium-226 source within IA-58. b. The IAS mentioned NAVWPNSTADET Concord as a homeport for a squadron of U.S. Navy ammunition ships (AE). One of the classes of AEs was constructed and commissioned during a timeframe that coincides with the widespread use of radium deck markers on naval surface craft, while other AE class of ships may have used strontium-90 deck markers. Homeport activities could have included limited repairs and modifications to naval surface craft that did not require berthing at naval shipyards. Is it possible that some of these activities could involve the removal and disposal of radioactive deck markers in NAVWPNSTADET Concord? c. Did NAVWPNSTADET Concord use radium-226 position markers, such as those used to mark above ground structures or roadways during blackout conditions during World War II?	a. Additional information is contained in reference HRA-508. The reference in Section 8.2.5 has been changed from HRA-509 to HRA-508. In addition, the wording of the referenced sentence in Section 6.7 has been changed to read: "In addition to the tensiometers, a 0.998 mCi ^{226}Ra source contained in a 3-inch by 5-inch solid cylinder was stored in Building IA-58 (HRA-508)." b. No records reviewed indicate that radium and/or strontium-90 deck markers were removed and/or disposed of at former NAVWPNSTA Concord. c. No records reviewed indicate the use of radium position markers at former NAVWPNSTA Concord.

Comment 10. Section 6.9, "G-RAM Storage and Disposal", page 6-14:	**Response 10.**
a. First paragraph: Please clarify the meaning of "other facilities" and "offsite".	a. "Other facilities" refers to facilities other than former NAVWPNSTA Concord, e.g., military installations such as shipyards. These facilities could also include foreign entities such as those listed in General Comment 2. "Offsite" also refers to "other facilities" as defined in the preceding sentence. For clarity, the first paragraph, first sentence has been changed to read: "The former NAVWPNSTA Concord was a transshipment facility for radioactive materials from other facilities (e.g., other military installations such as shipyards) either to vendors licensed to receive them or to licensed waste disposal facilities."
b. Second paragraph: It is well known that the DoD practice of on-site disposal of radiological wastes, prior to the 1960s, was generally uncontrolled and not documented. While NAVWPNSTADET Concord may not have possessed the quantity of G-RAM when compared to DoD installations, such as Hunters Point Naval Shipyard and Alameda Naval Air Station, this site did have the potential to store and maintain a variety of special weapons during a portion of the site's operational lifetime. It is probable that some of the earlier designed uranium fueled special weapons required disassembly of the warheads and these warheads were subjected to manual cleaning due to the spallation of uranium. This particular type of maintenance process may have been performed in a glove box and would have produced radiological wastes that would have been subject to proper disposal. How often this type of maintenance was performed is currently unknown, but the number of special weapons magazines may suggest that Building 81, where and when special weapons maintenance may have been carried out, would have produced a meaningful amount of radiological wastes over time. Also, it is unknown if any of the aforementioned special weapons maintenance was performed inside of the magazines throughout the confines of the Alpha Area, but outside of Building 81.	b. Because information concerning the use and maintenance of special weapons is classified, it is not possible to evaluate unclassified data to determine what radioactive wastes might have been generated from special weapons handling and maintenance in Building 81 or the special weapons magazines in the alpha area. As a conservative measure, the HRA has designated all buildings that available records indicated previously contained special weapons or where special weapons maintenance may have been performed, including Building 81, as radiologically impacted areas. The radionuclides of concern for these areas include uranium-235. The DON will investigate these areas with appropriately designed Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) scoping surveys.

RESPONSE TO COMMENTS ON
DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT
(USE OF GENERAL RADIOACTIVE MATERIALS)
Dated August 11, 2009

FORMER NAVAL WEAPONS STATION SEAL BEACH
DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comment 11. Section 6.10, "Black Pit At Red Rock", last paragraph, pages 6-14 and 6-1 5: a. Please cross check and resolve any potential conflicts related to surface dimensions of this site. The HRA states a length of 25 feet while the referenced HRA-274 (subsection 2.3.4) states a length of 15 feet, and referenced HRA-572 states a length of 25 feet.	**Response 11.** a. The dimensions listed in the IAS (HRA-274) are the most representative of the site. However, follow-on investigations expanded the area of investigation as a conservative measure. The HRA uses the more conservative estimate. The text in the HRA will be left as-is because it states that the dimensions are approximate.
b. CDPH does not concur with the Navy in deeming this site as nonimpacted due to the following: i. Prior to the mid-1 960s, the disposal of hazardous and radioactive wastes at military installations was generally, not documented or vague, therefore, it is likely that evidence of disposal activities would not be part of the historical record for this site. The potential for the on-site disposal of hazardous wastes is evident from the results of some of the investigations at the Black Pit, but the question regarding the disposal of radiological wastes at this particular site remains unanswered due to past radiological surveys that were limited to scans of the surface of the Black Pit, no sampling, and do not address subsurface conditions.	b. Based on the following information regarding the Black Pit area, the designation of the Black Pit as not impacted will not be changed. i. While early waste disposal practices may not have met the more rigid standards applied to these activities today, the DON has determined that the presence of assorted industrial chemical wastes at the Black Pit is not indicative of the potential disposal of radioactive wastes at the site. As stated in Section 6.10, the surveys/scans for radioactivity at the Black Pit were performed because some of the chemical wastes included metals that had "common" radioactive isotopes that could have been present if radioactive wastes had been disposed of at the site. For example, cobalt was one of the metals found in samples collected at the site. The resultant surface scans were sufficient to determine if gamma radioactivity from the radioactive isotope cobalt-60 was present. No evidence of cobalt-60 activity was found during any of the subsequent scans.

Comment 11. (continued)	**Response 11. (continued)**
ii. HRA-655 states that interviews of past employees of NAWVPNSTADET Concord had comments of miscellaneous waste disposal practices at this former Department of Defense (DoD) site. It is not clear if these practices are related to the disposal of radioactive wastes or material.	ii. The researchers for the HRA contacted the authors of the 2003 Weston document (HRA 655) and discussed the rationale for performing the radiation survey. It was learned that the radiation survey was conducted to obtain assurance that there was no radiological contamination at the site. The earlier 1983 IAS concluded that, "The sampling and analysis of the surface soil from this site indicate that it was used for the disposal of material generated at NAVWPNSTA Concord, particularly paints, pigments and other chemicals. The most probable explanation is that plating wastes, paints or solvents were disposed of here in the past." The 1995 Technical Memorandum conducted additional radiological screening of soil samples collected at depths of 0.5 and 2 feet below ground surface. The Technical Memorandum concluded that no anomalously high gamma counts were observed. Based on the soil sampling and radiological results, the site was recommended for no further action. Furthermore, the HRA determined that the primary activities using G-RAM at former NAVWPNSTA Concord were nondestructive examinations by gamma radiography. Very little radioactive waste was generated and it was primarily materials like protective clothing and wiping cloths from handling depleted uranium rounds. Potentially radioactive waste that was generated was collected and disposed of by the DON and private waste disposal contractors.

Comment 11. (continued)	**Response 11. (continued)**
iii. The radiological survey in the referenced HRA-655 has recommended that additional radiological screening should be performed at the Black Pit if trenching operations were to occur.	iii. The statement that additional radiological screening should be performed at the Black Pit if trenching operations to occur must be understood within the context that the radiological investigations were initiated. The original concern at the Black Pit consisted of nonradioactive chemical wastes. The list of potential wastes included the metal cobalt. This element (like all elements) has isotopes that are radioactive, particularly cobalt-60. The premise that cobalt-60 could have been present was not justifiable because there is no evidence of its disposal anywhere at former NAVWPNSTA Concord. As such, a radiological survey was <u>not</u> necessary. However, a surface radiation survey was performed to ensure cobalt-60 was not present. The resultant radiation levels at the Black Pit were not distinguishable from background levels. The report, however, still conservatively stated that additional radiological screening should be performed if trenching operations occurred, because the surface survey conducted would not be capable of detecting low-level cobalt-60 concentrations more that a foot or so below the surface. The decision to survey the Black Pit was a conservative overreaction to the presence of a relatively common metallic industrial waste at the Black Pit. There was no empirical evidence to support this decision and the soil samples that indicated there was cobalt present could easily have been counted to determine if the cobalt isotope present was indeed cobalt-60. Once the surveys were recommended and performed, they developed a life of their own with subsequent reviewers reacting more and more conservatively and continually recommending more surveys to confirm there is no radioactivity present at the site. The DON has determined these surveys are not justified and the Black Pit is not an impacted site.

Comment 11 c. Page 6-15: Is HRA-689 relevant for a discussion about background radiation levels at the Black Pit?	**Response 11 c. (continued)** The HRA-689 reference is not appropriate and has been removed.
Comment 12. Section 6.1 1, "Special Weapons", paqe 6-16: See comment 10(b) above.	**Response 12.** See response 10(b) above.
Comment 13. Section 6.12, "Historical Radiological Investigations, Surveys, and Studies", page 6-19: a. All bullet points: Please specify the entities that performed surveys or inspections. b. Last bullet point: The supplemental CD would not allow CDPH-EMB to access and review reference HRA-687. Please provide accessibility as needed.	**Response 13.** a. The identities of any entities performing the surveys or inspections are in the documents referenced for each bullet. For clarity, the wording of the bullets has been changed to read: "Black Pit at Red Rock Area: • Gamma radiation survey by the DON in 1993 (HRA-572) • Gamma radiation survey by PRC Environmental Management, Inc., on September 23, 1995 (HRA-572) • Radiological Survey by Weston Solutions, Inc., on January 23, 2003 (HRA-655) • Site inspection by Tetra Tech EMI on March 27, 2008 (HRA-687)" b. A fully functional supplemental compact disc (CD) with access to reference HRA-687 will be provided with future versions of this HRA.

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DCN: ECSD-3211-0005-0004

Comment 14. Section 8, "Findings and Recommendations":	**Response 14.**
a. Subsection 8.2.2, Building IA-21 – WQEC Material Testing Laboratory: In addition to the handling of low-level radioactive waste (LLRW), was LLRW stored at this facility? If so, then this "Contaminated Media" section may need to be revised to reflect storage issues.	a. There is no recorded evidence that LLRW was stored in the building. Because this subsection currently addresses handling of LLRW, no revision to the "Contaminated Media" section is necessary. The building has been designated as radiologically impacted and a scoping survey is recommended. The intent of the survey is to identify any radioactive isotopes that may remain in the building regardless of the activity that produced them. With respect to the issue of handling LLRW vs. storage of LLRW, handling LLRW could potentially entail a greater likelihood of radiologically impacting an area and adjacent media. However, the historic record provided no evidence this is the case in Building IA-21.
b. Subsection 8.2.5: See Comment 7(d) above.	b. The subsection 8.2.5, "Building IA-58 - WQEC X-ray Building," "Former Radiological Uses," page 8-16, second paragraph has been added to state: "The building housed the Van de Graaff, a linear electron particle accelerator, and other X-ray machines (Section 6.3.1)."
c. Subsection 8.2.9, Special Weapons – Bulk Magazines: i. The dimensions and number of these bulk magazines (17ea) could suggest that they would have contained sizable inventories of special weapons subjected to handling and transport for periodic maintenance [see Comment 10(b) above]. This periodic activity would have been made more efficient if maintenance for uranium spalling, which included the disassembly of the warheads, was performed within the confines of the magazines. The handling of sealed special weapons could suggest to movement only and does not describe any maintenance activity. Is it the Navy's intention to include the possible on-site maintenance of special weapons as "handling"? If this particular form of maintenance was not performed in the bulk magazines, but in Building 81, then this further suggests an increase in the handling and transport of special weapons from storage to the maintenance depot and back through a transport pathway, such as a road, and increasing a potential for contamination since the road handled special weapons.	c. i. All information concerning the use and maintenance of special weapons is classified. The HRA designates each building that previously contained special weapons as radiologically impacted areas. Roads used to transport special weapons are not considered to be radiologically impacted because the possibility of special weapons material degradation to the extent necessary to spread contamination outside of transport packaging and vehicles is not credible.

Comment 14. (continued)	**Response 14. (continued)**
ii. Has the Navy considered the potential accumulation of Radon-222 in the bulk magazines over time, including the magazines used to store conventional weapons?	ii. The site Radiation Protection Program for scoping surveys will ensure that buildings that have been sealed for a significant period of time will be ventilated prior to performing work in the area in order to: 1) ensure worker safety, and 2) decrease biasing radioactive contamination survey results based on elevated background radiation from naturally occurring materials. Radon and its daughter products are produced from the radioactive decay from uranium-238, whether naturally occurring or as a manufactured component of special weapons. In a closed space, radon and its daughter products will reach equilibrium in approximately 21 days. The probability of detecting elevated radon and daughter product concentration increases in tightly sealed buildings with minimal or no ventilation (such as weapons magazines). As such, the probability of finding elevated radon levels in a conventional weapon magazine that has been sealed for a significant period of time (i.e., months) is also elevated.

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RESPONSE TO COMMENTS ON
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FORMER NAVAL WEAPONS STATION SEAL BEACH
DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comments by: Mr. Phillip Ramsey United States Environmental Protection Agency Region IX 75 Hawthorne Street San Francisco, CA 94105	Responses by: Ms. Kathryn A. Stewart, P.E. BRAC Environmental Coordinator BRAC Program Management Office West Navy Caretaker Site Office 1 Avenue of the Palms, Suite 161 Treasure Island San Francisco, CA 94130-1807
Comments: October 13, 2009	Responses: February 8, 2010
General Comments:	
Comment 1. As indicated in Executive Summary, the focus of the HRA is the approximately 5,100 acres of the Inland Area portion of Concord Naval Weapons Station that has been retained by the Navy following the 2007 BRAC determination and 2008 transfer of the Tidal Area portion of Concord to the Army. U.S. EPA has concerns that the HRA does not assess radiological operations within the Tidal Area and believes that any additional information related to the Tidal Area would have benefited an understanding of site-wide radiological operations that were conducted by the Navy, reinforcing an understanding of the Inland Area. In Section 4.4, Preparation of This HRA, text indicates that "[t]his HRA reviews historical radiological operations and past radiological investigations to provide a complete picture..." (emphasis added). Also, given the 2008 transfer of the Tidal Area to the Army, U.S. EPA believes the Navy is in a much better position to assess past Navy radiological operations within the Tidal Area than shifting this responsibility to the Army for a future time. Further, U.S. EPA believes that only limited additional time and resources may be necessary to complete this more expanded assessment of the entire former Concord Naval Weapons Station, making the assessment more complete. Please expand the Navy's historical radiological assessment to include the Tidal Area or support the Draft HRA focus on the Inland Area.	**Response 1.** The HRA is a means to document the extent of past radiological operations at specific sites within the Inland Area and assess any residual effects of those operations at specific sites within the Inland Area. It is not necessary to include an assessment of radiological operations within the Tidal Area to provide a complete picture of the current radiological status of sites within the Inland Area.

RESPONSE TO COMMENTS ON
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DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comment 2. Building 97 (Guided Missile Department Rocket Motor Maintenance and Test Facility), was not identified in the HRA as an impacted site; however, Navy documentation indicates that radiological material was used in this building. In a letter report dated February 2, 2009, which provided summary information on several suspect building sites at Concord, including Building 97, text states that "Radiological monitoring was performed at Building 97 to evaluate the radiation transmission profiles of the Tomahawk missile family. The radiation source used during monitoring was 10 millicuries of cesium- 137, which posed a hazard only to personnel in the immediate vicinity of the source." In an April 16, 2009, electronic message from Navy RPM Dennis Parker to U.S. EPA, retransmitting the Building Evaluations summary report, the Navy indicates, "The use of cesium 137 at Bldg 97 is being evaluated as part of the HRA investigation. The specific content of the HRA report has not been finalized." HRA Table 4-5, Radionulcides (sic) of Concern at Former NAVWPNSTA Concord, lists cesium 137 as a check source used only in Building IA-58 (an impacted site). Text in Section 6.8, RADIACs, Calibrators, and Check Sources, discusses use of calibrators containing cesium 137; however, this discussion does not appear consistent with the Navy's February 2009 description of "radiological monitoring …to evaluate radiation transmission profiles…" Please include Building 97 as an impacted building requiring further assessments or clarify why the Navy believes Building 97 is not impacted.	**Response 2.** The radiological status of Building 97 was widely discussed by the HRA team prior to considering it not impacted for the purposes of the HRA. The decision not to consider it impacted is based on the description of the Radiation Transmission Profiling (RTP) evolution described in HRA reference HRA-724, which has been added as a reference. This RTP evolution was a short-term test analogous to radiography, performed by a contractor under the auspices of its State of California Radioactive Materials License. The radioactive source used was a 10 millicurie (mCi) cesium-137 (Cs-137) source that was under the control of the contractor, required to be leak tested every 6 months, and was only in Building 97 briefly. In the early 1990s, nondestructive examination techniques were developed for weapons systems to verify compliance with the limitations on nuclear weapons imposed by arms reduction treaties. Former Naval Weapons Station Seal Beach Detachment Concord (NAVWPNSTA Concord) was a transshipment, maintenance and storage facility for Tomahawk cruise missiles. These missiles can be fitted with either conventional or nuclear warheads, making them subject to compliance verification. Two verification methods developed at the time were magnetic profiling and RTP. On two occasions in 1990 and 1991, historical records documented RTP testing performed on Tomahawk missiles in Building 97 at NAVWPNSTA Concord. For these tests, RTP was performed by Campbell Pacific Nuclear Company (CPN: now doing business as National Scientific Corporation) using a 10 mCi Cs-137 source in a shielded container with a focused beam of gamma radiation aimed at a detector. The source holder and detector were mounted 180 degrees from each other in a frame that straddled the missile.

	Response 2. (continued) Because the intensity of the gamma rays measured by the detector varied depending on the density of the material through which they were projected as the frame moved along the length of the missile, the detector output could be calibrated to differentiate among fuel, conventional warheads, and nuclear warheads. These tests were conducted under the requirements of a license issued to CPN by the state of California. These license requirements included testing to ensure the source holder could withstand potential damage and the source did not leak any of its radioactive material. Radiation surveys were conducted by NAVWPNSTA Concord personnel at the time of the testing to ensure workers in the area were not exposed to radiation in excess of permissible levels. Source shielding and the relatively low level of the radiation beam did not produce significant radiation levels or dose rates. RTP is a form of gamma radiography, with a radiation detector used in lieu of an imaging system or film to record the results. The HRA team determined that Building 97 was not impacted by the two instances of RTP testing performed by CPN because gamma radiography (or RTP in this case) does not impact a building or area where it is performed. The reference in Table 4-5 to Cs-137 in Building IA-58 was for the storage of check sources and waste materials there. It was not meant to imply the building was impacted by the use of check sources or that it was the only place where they were used. The misspelling of "RADIONUCLIDES" in the title of Table 4-5 has been corrected.

	Response 2. (continued) As stated in Section 6.8, no instruments were calibrated at Concord. One calibrator containing Cs-137 was received from the *USS Acadia* upon its decommissioning. This calibrator was accepted because Concord intended to establish an instrument calibration facility following the closure of the Mare Island Shipyard where calibration of Concord's Radiation Detection, Indication and Computations (RADIACs) was performed. This facility, however, was never established and the calibrator was shipped off-site without being used. The use of a calibrator of any sort has nothing to do with "radiological monitoring ... to evaluate radiation transmission profiles . . ." nor is it applicable to Building 97.
Specific Comments:	
Comment 1. Section 1.4 Regulatory Involvement: Although excellent detail is provided in Sections 5.1 and 5.2, a little more detail should be provided. For example, when AEC/NRC issued the radioactive materials (RAM) license to Concord NWS, was the license issued by NRC headquarters or Region 4? Was the license issued to the Navy in the Pentagon or directly to some local Navy authority, and what was the identity of the license holder in any case? To what authority in the Pentagon was the Master Material License issued, and what was the identity of the license/permit holder at Concord NWS?	**Response 1.** Available license and permit documents are included in the HRA database (compact disc [CD]) for readers who desire to know specific details regarding the licenses. These details include information on the dates the licenses/permits were issued, by whom they were issued, and who was the license/permit holder. It is important to note that all licenses and permits were issued by the Atomic Energy Commission / U.S. Nuclear Regulatory Commission (AEC/NRC) or the DON. The office from which licenses and permits were issued is not important to the license or permit holder. At the time the NRC was issuing licenses to Concord, West Coast facilities under its jurisdiction were in Region 5, which has since been merged into Region 4. Section 1.4, second paragraph, first sentence has been changed to read: "In 1985, the NRC granted a Master Material License to the Chief of Naval Operations and permitted the DON to issue . . ."

RESPONSE TO COMMENTS ON
DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT
Dated August 2009

FORMER NAVAL WEAPONS STATION SEAL BEACH
DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comment 2. Section 3.1 Site Description: This section should include the precise legal description of the parcel(s) comprising the property, as listed on file in the County Clerk's or County Assessor's office.	**Response 2.** The DON is currently in the process of establishing the legal exterior boundary of the Inland Area. A recorded Record of Survey should be available by March 2010. The DON does not recommend including the legal description of the parcel in the HRA because the text is difficult for the general public to understand. The legal boundary was not available in Geographic Information System (GIS) for use in the Final HRA, however, existing data provides sufficient information for the purposes of the HRA.
Comment 3. Section 4.4.1 Physical Boundaries: Note that this section points out that significant portions of the Concord NWS are NOT included in the Historical Radiological Assessment and describes specifically which areas are not included. If this is not a comprehensive list then it should be completed.	**Response 3.** Section 4.4.1 lists those areas that were part of NAVWPNSTA Concord but not included in the HRA because they were outside the Inland Area boundary. The referenced map (Figure 4-1) shows the Inland Area, the area that is included in the HRA. The wording in Section 4.4.1 has been modified to state: "Figure 4-1 shows the boundary of the area included in the HRA, which excludes the 115 acres near the entry gate that were transferred to the Army."
Comment 4. Section 4.4.6 HRA Site Reconnaissance: This section notes that during site walk-throughs, postings were still in place as evidenced by Photograph 4-2. It is a well-established principle of both occupational and radiation safety that postings *shall* be removed once they are no longer needed and most agencies with jurisdiction typically cite remaining postings as violations of their regulations or of local laws. The HRA should point out that, if these postings still remain, they should be removed in the very near future.	**Response 4.** The DON removed those remaining radiation warning signs that were found during an inventory of the Inland Area. The following has been added to Section 4.4.6: "Radiation warning signs that remained at former NAVWPNSTA Concord were inventoried and have been removed. If any additional radiological postings are identified in the future, they will be removed after the circumstances for which they were installed have been investigated and the Navy has ensured no hazard remains."
Comment 5. Section 6.2 Licensing: Please see my comment regarding Section 1.4. The Navy should decide how much of the needed details should be apportioned between Section 1.4 and 6.2.	**Response 5.** The Navy does not plan to add the proposed detail to either section for the reasons stated in the response to Specific Comment 1 about Section 1.4.

RESPONSE TO COMMENTS ON
DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT
Dated August 2009

FORMER NAVAL WEAPONS STATION SEAL BEACH
DETACHMENT CONCORD, INLAND AREA
CONCORD, CALIFORNIA

DCN: ECSD-3211-0005-0004

Comment 6. Section 6.3.1 X-ray Machines and Particle Accelerators: Since particle accelerators have the potential for making target materials and shielding radioactive, some discussion needs to be provided about how this possibility was mitigated during operations and decommissioning. Unless that discussion can put to rest any present day concerns about this topic, the area where the particle accelerator was used may require a special survey.	**Response 6.** The maximum energy of any particle generated in a particle accelerator at former NAVWPNSTA Concord was 10 megaelectron volts (MeV). In order for a material to become activated (i.e., radioactive) through contact with an accelerator particle beam, the energy of the beam particles must exceed the "activation energy threshold" for that material. If the beam particles are beneath this threshold energy, it is physically impossible for the material to become activated. For typical accelerator components, the threshold energies are in the range of 13 MeV (e.g., aluminum [Al]: 13.1 MeV, iron [Fe]: 13.6 MeV). Copper (Cu) has a threshold value of 9.9 MeV, but its half-life of 12.9 hours would ensure that essentially all radioactivity would have decayed within a week of the accelerator shutting down. It should also be noted that significant activation (i.e., that which would be measurable with handheld radiation survey instrumentation) would not occur until an energy of at least 15 MeV was achieved. The following has been added to the end of the third paragraph in Section 6.3.1: "The maximum energy generated by the particle accelerator was beneath the threshold for inducing radioactivity in its surroundings or potential target materials."
Comment 7. Section 6.4 Tools for Nondestructive Examination: X-ray, particle beam and gamma radiography (Section 6.3) are all types of nondestructive testing. Sections 6.3 and 6.4 should be reorganized to reflect this fact.	**Response 7.** The title for Section 6.3 has been revised to read: "PRIMARY TOOLS FOR NONDESTRUCTIVE EXAMINATION." The title for Section 6.4 has been revised to read: "OTHER (NOT PRIMARY) TOOLS FOR NONDESTRUCTIVE EXAMINATION."

Comment 8. Section 6.5 Depleted Uranium: This section is likely to be of greatest interest to present-day readers. Of particular interest will be storage of 20mm rounds and the potential for particles and other bits of DU to be sloughed off. This section should provide more detail about mitigation of DU contamination during operations and decommissioning, and about potential health effects from residual contamination.	**Response 8.** The information in Section 6.5 about how the depleted uranium (DU) was handled at former NAVWPNSTA Concord was collected from the available documentation. Except for the procedures and written communication already referenced in Section 6.5, specific details of how the material was handled during operations and decommissioning were not available. The DON cannot speculate on handling practices beyond the written handling processes described and referenced in Section 6.5. The potential health effects of DU are described in Section 6.5, and World Health Organization (WHO) Fact Sheet No. 257 is included in the database as HRA-654 and referenced in Section 6.5 for any reader who desires more information about its uses and potential health effects. To enhance readers' understanding, the following has been added to Section 6.5: "Because of DU's pyrophoric properties, brittleness, and toxicity, military and industrial users of DU are careful to protect DU products (e.g., use cadmium plating on shielding [HRA-254] or plastic and metal casings on projectiles [Photograph 6-4]). Finished products made from DU, such as the radiation shielding and projectiles at former NAVWPNSTA Concord, were protected from degradation. Additionally, DU radiation shielding was inside a metal housing and the projectiles were required to be stored in sealed containers. The possibility of spreading DU contamination was low, and specific handling practices were created to minimize radiation exposure to personnel (HRA-106). The danger of exposure to DU is greatest from finely divided particles from firing and subsequent disintegration of projectiles or the oxides from burning metal. There is no evidence in any extant record that DU was ever burned or fired at the site. The potential of residual contamination from DU at former NAVWPNSTA Concord is extremely low, as handling and storage practices at the site were designed to protect both the DU and personnel and to minimize the spread of contamination." The following reference has been added to Section 10 following HRA-251: "HRA-254-Registration for use of Depleted Uranium Under General License-25 February 1982-DON."

	The caption for Photograph 6-4 has been changed to read: "CIWS Ammunition Aboard a Vessel: Protective Orange Nylon Covers the DU Projectile."
Comment 9. Section 6.12 Historical Radiological Investigations, Surveys, and Studies: The report should provide a summary of those investigations, and if possible the reports themselves should be attached on the accompanying compact disc.	**Response 9.** Records of surveys and studies that were found during the review of the historic record are included on the database CD. These records are identified by the HRA numbers included in the text in Section 6.12 of the HRA. The following has been added at the end of Section 6.12: "None of the referenced investigations and surveys found any indication that loose radioactive contamination or radiation levels in excess of naturally occurring background radiation existed at the investigated/surveyed sites at former NAVWPNSTA Concord at the time the investigations and surveys were conducted."
Comment 10. Section 7 Assessment of Impacted Sites: Preliminary to Section 8, this section should reiterate the logical sequence of the scoping surveys, characterization surveys and final status surveys that were discussed in Section 4.3.5.	**Response 10.** A note referring the reader to the descriptions in Section 4.3.5 has been added to the last sentence of the first paragraph of Section 7.4 stating: "A description of scoping, characterization, and final status surveys is contained in Section 4.3.5."
Comment 11. Section 8 Findings and Recommendations: The recommendations for scoping surveys for each of the impacted sites is appropriate. U.S. EPA recommends that some additional text be added that will give the reader some feel for the *expected* likelihood for follow-up characterization or final status surveys. U.S. EPA also recommends that someone who is familiar with details about the site should go through the inventory of impacted sites and make sure that the list is complete. Similarly, details about each of the impacted sites should be reviewed by someone who is familiar with the project.	**Response 11.** Given the nature of the use of G-RAM at the former NAVWPNSTA Concord, the DON does not expect the need to conduct any follow-up surveys for any of the impacted sites. The DON conducts radiation surveys in accordance with Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) guidance, and takes subsequent actions based on informed decisions. The DON plans on designing the scoping surveys to function as MARSSIM final status surveys. To avoid speculation, however, the HRA will not be revised to provide the reader with a feel for the expected likelihood for follow-up characterization or final status surveys. The draft HRA was reviewed by the current site Radiation Safety Officer, who has held the position since the mid-1980s. He had no comment on the sites identified as impacted and suggested no additions or deletions.